## College Vision & Mission

### Vision

- To evolve into a center of excellence in higher education through creative and innovative practices to social equity for women.

### Mission

- To provide sufficient learning infrastructure to the students to pursue their studies.
- To provide good opportunity for higher education and conducive environment to the students to acquire education.
- To provide quality academic programs training activities and research facilities.
- To facilitate industry-institute interaction.

## DEPARTMENT OF MCA

### Vision

- To generate groomed, technically competent and skilled intellectual professionals specifically from the rural area to meet the current challenges of the modern computing industry.

### Mission

- Enable the student's to solve software engineering problems independently.
- To prepare the students for the diverse work place of the Global Environment
- Empowering the youth in rural communities with computer education.
- Our efforts are to impart quality and value based education to raise satisfaction level of all stakeholders.

### Programme Educational Objectives

PEO 1: To develop the ability to plan, analyze, design, code, test, implement and maintain the software product for real time systems.

PEO 2: To excel in problem solving and programming skills in computing fields of IT industries.

PEO 3: To practice effectively as individuals and as team members in multidisciplinary projects involving technical, managerial, economical and social constraints.

PEO 4: To prepare the students to pursue higher studies in computing and related fields and to work in the fields of teaching and research.

**After completion of the program the Graduates will be able to**

PO1: An ability to use current techniques, skills, and modern tools necessary for computing practice.

PO2: An ability to analyze a problem, and identify and formulate the computing requirements appropriate to its solution.

PO3: An ability to analyze the local and global impact of computing on individuals, organizations, and society.

PO4: An ability to analyze the local and global impact of computing on individuals, organizations, and society.

## IV. ELIGIBILITY FOR ADMISSION

**a) Three Year Programme**

Candidates who have secured 55 % of marks or above in any one of the following or equivalent are eligible to apply.

- Bachelor's degree in any subject with mathematics at +2 level

**or**

- Bachelor's degree in any subject with Mathematics / Statistics as one of the subjects.

**b) For Lateral Entry (2 Years)**

Candidates who have secured 55 % of marks or above in the following are eligible to apply.

- Bachelor's degree in Computer Science or Computer Application or Computer Technology or Information Technology.

## V. DURATION OF THE COURSE

### a) Three Year Programme

- The course shall extend over a period of three academic years consisting of six semesters. Each academic year will be divided into two semesters. The First semester will consist of the period from July to November and the Second semester from December to March.
- The subjects of the study shall be in accordance with the syllabus prescribed from time to time by the Board of Studies of Vivekanandha College of Arts and Sciences for Women with the approval of Periyar University.
- Each subject will have four to six hours of lecture per week apart from practical training at the end of each semester.

**b) For Lateral Entry (2 Years)**

- The course shall extend over a period of two academic years consisting of four semesters. Each academic year will be divided into two semesters. The First semester will consist of the period from July to November and the Second semester from December to March.
- The subjects of the study shall be in accordance with the syllabus prescribed from time to time by the Board of Studies of Vivekanandha College of Arts and Sciences for Women with the approval of Periyar University.
- Each subject will have four to six hours of lecture per week apart from practical training at the end of each semester.

## VI ASSESSMENT

Assessment of the students would be made through Continuous Internal Assessment (CIA) and External Assessment (EA) for passing each subject both theory and practical papers.

A candidate would be permitted to appear for the External Examination only on earning 75 % of attendance and only when her conduct has been satisfactory. It shall be open to grant exemption to a candidate for valid reasons subject to conditions prescribed.

### A. CONTINUOUS INTERNAL ASSESSMENT (CIA)

The performance of the students will be assessed continuously by the teacher concern and the Internal Assessment Marks will be as follows:

**Distribution Of Continuous Assesment Marks (25/40)**

| Activity | Marks (25) | Activity | Marks (40) |
|---|---|---|---|
| Attendance | 5 | Attendance | 10 |
| CA Test I | 2.5 | Observation & Record | 10 |
| CA Test II | 2.5 | Model | 20 |
| Model | 5 | | |
| Assignment | 5 | | |
| Seminar | 5 | | |
| **Total** | **25** | | **40** |

**Distribution of attendance mark**

| S. No. | Percentage | Marks | |
|---|---|---|---|
| | | Theory | Practical |
| 1 | 76-80 | 1 | 1 |
| 2 | 81-85 | 2 | 2 |
| 3 | 86-90 | 3 | 3 |
| 4 | 91-95 | 4 | 4 |
| 5 | 96-100 | 5 | 5 |

### A. EXTERNAL ASSESSMENT (EA)

The performance of the students would be assessed by examination at the end of each semester with a written test for theory for three hours and practical examination at the end of even semesters for six hours. Question papers would be set by the selected external examiners in the prescribed format and valuated by the external examiners with the help of the teacher concern.

The pattern of assessment is as follows:

**Distribution Of Final Assesment Marks (75/60)**

| Section | Activity | Marks (75) | Activity | Marks (60) |
|---|---|---|---|---|
| A | One mark questions | 20 | Experiment I | 25 |
| B | Five marks (Either or) | 25 | Experiment II | 25 |
| C | Ten marks (any three) | 30 | Viva Voce | 10 |
| **Total** | | **75** | **Total** | **60** |

## VII. PASSING MINIMUM

**INTERNAL**

There is no passing minimum for CIA

**EXTERNAL**

In the EA, the passing minimum shall be 50% out of 75 Marks. (38 Marks)

## VIII. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Successful candidates passing the examination of Core Courses (main and allied subjects) and securing marks:

a) 75 % and above shall be declared to have passed the examination in first class with Distinction provided they pass all the examinations prescribed for the course at first appearance itself.

b) 60% and above but below 75 % shall be declared to have passed the examinations in first class without Distinction.

c) 50%and above but below 60% shall be declared to have passed the examinations in second class.

d) All the remaining successful candidates shall be declared to have passed the examinations in third class.

e) Candidates who pass all the examinations prescribed for the course at the first appearance itself and within a period of three consecutive academic years from the year of admission only will be eligible for University rank.

## IX. ELIGIBILITY FOR AWARD OF THE DEGREE

A candidate shall be eligible for the award of the degree only if she has undergone the above degree for a period of not less than three/two(lateral entry) academic years comprising of six/four(lateral entry) semesters and passed the examinations prescribed and fulfilled such conditions have been prescribed therefore.

## X. PROCEDURE IN THE EVENT OF FAILURE

If a candidate fails in a particular subject, she may reappear for the examination in the concerned subject in subsequent semesters and shall pass the examination**.**

## XI. COMMENCEMENT OF THESE REGULATIONS

These regulations shall take effect from the academic year 2017-18 (i.e.,) for the students who are to be admitted to the first year of the course during the academic year 2018-19 and thereafter.

## XII. TRANSITORY PROVISIONS.

Candidates who have undergone the PG Course of study before 2018-19 shall be permitted to appear for the examinations under those regulations for a period of two years i.e., upto and inclusive of the examination of April/May 2019-2020. Thereafter, they will be permitted to appear for the examination only under the regulations then in force.

Supplementary examination will be conducted within a month. In case of failure she has to complete within 5 years. (3+5).

# MCA

## QUESTION PAPER PATTERN

**MAXIMUM MARKS – 75 marks**

**DURATION – 3 hours**

**SECTION – A ( 20 X 1 = 20 marks)**

1. Multiple choice questions
2. From Each Unit 4 Questions

**SECTION – B (5 X 5 = 25 marks)**

1. Either or Type
2. From each unit one question

**SECTION – B (3 X 10 = 30 marks)**

1. Any three out of Five (open choice)
2. From each unit one question

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN**
**(AUTONOMOUS)**
**DEPARTMENT OF MCA**
**CBCS AND OBE PATTERN SYLLABUS - PG**
**(For candidates admitted from 2018-2019 onwards)**

| SEM | COURSE CODE | TITLE | HOURS | CREDIT | MARKS | | |
|---|---|---|---|---|---|---|---|
| | | | | | CIA | EE | TOTAL |
| I | 18P1CA01 | Core Course- 1 Programming in C | 4 | 4 | 25 | 75 | 100 |
| | 18P1CA02 | Core Course - 2 Digital Computers and Microprocessors | 4 | 4 | 25 | 75 | 100 |
| | 18P1CA03 | Core Course- 3 Data Structures and Algorithms | 4 | 4 | 25 | 75 | 100 |
| | 18P1CA04 | Core Course- 4 Discrete mathematics | 4 | 4 | 25 | 75 | 100 |
| | 18P1CA05 | Core Course- 5 Financial and Management Accounting | 4 | 4 | 25 | 75 | 100 |
| | 18P1CAP01 | Core Course Practical - 1 C & Data Structures Lab | 5 | 2 | 40 | 60 | 100 |
| | 18P1CAP02 | Core Course Practical - 2 Office Automation | 5 | 2 | 40 | 60 | 100 |
| | | **Total** | **30** | **24** | **205** | **495** | **700** |
| | | | | | | | |
| II | 18P2CA06 | Core Course - 6 Object Oriented Programming with C++ | 4 | 4 | 25 | 75 | 100 |
| | 18P2CA07 | Core Course - 7 Relational Data Base Management Systems | 4 | 4 | 25 | 75 | 100 |
| | 18P2CA08 | Core Course - 8 Software Engineering | 4 | 4 | 25 | 75 | 100 |
| | 18P2CA09 | Core Course - 9 Computer Networks | 4 | 4 | 25 | 75 | 100 |
| | 18P2CA10 | Core Course - 10 Operations Research | 4 | 4 | 25 | 75 | 100 |
| | 18P2CAP03 | Core Course Practical - 3 C++ Lab | 5 | 2 | 40 | 60 | 100 |
| | 18P2CAP04 | Core Course Practical - 4 RDBMS Lab | 5 | 2 | 40 | 60 | 100 |
| | | **Total** | **30** | **24** | **205** | **495** | **700** |
| | | | | | | | |
| III | 18P3CA11 | Core Course - 11 Design and Analysis of Algorithms | 4 | 4 | 25 | 75 | 100 |
| | 18P3CA12 | Core Course - 12 C# and .NET Programming | 4 | 4 | 25 | 75 | 100 |
| | 18P3CA13 | Core Course - 13 Advanced DBMS | 4 | 4 | 25 | 75 | 100 |
| | 18P3CA14 | Core course – 14 Management Information Systems | 4 | 4 | 25 | 75 | 100 |
| | 18P3CAE_ | Elective Course – I | 4 | 4 | 25 | 75 | 100 |
| | 18P3CAP05 | Core Course Practical - 5 Algorithms Lab | 4 | 2 | 40 | 60 | 100 |
| | 18P3CAP06 | Core Course Practical – 6 C# and .NET Programming Lab | 4 | 2 | 40 | 60 | 100 |
| | 18P3CAJ01 | Job Oriented Course - I Soft Skills | 2 | 1 | 25 | 75 | 100 |
| | | **Total** | **30** | **25** | **230** | **570** | **800** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| IV | 18P4CA15 | Core Course - 15 Advanced Java Programming | 4 | 4 | 25 | 75 | 100 |
| | 18P4CA16 | Core Course - 16 Open Source Technologies | 4 | 4 | 25 | 75 | 100 |
| | 18P4CA17 | Core Course - 17 Advanced Software Engineering | 4 | 4 | 25 | 75 | 100 |
| | 18P4CA18 | Core Course - 18 Data mining and warehousing | 4 | 4 | 25 | 75 | 100 |
| | 18P4CAE0_ | Elective Course – II | 4 | 4 | 25 | 75 | 100 |
| | 18P4CAP07 | Core Course - Practical - 7 Adv Java Lab | 4 | 2 | 40 | 60 | 100 |
| | 18P4CAP08 | Core Course - Practical - 8 Open Source Technologies Lab | 4 | 2 | 40 | 60 | 100 |
| | 18P4CAP09 | Core Course Practical - 9 (Job oriented) Multimedia Lab | 2 | 1 | 40 | 60 | 100 |
| | | **Total** | **30** | **25** | **245** | **555** | **800** |
| | | | | | | | |
| V | 18P5CA19 | Core Course - 19 Advanced Networks | 4 | 4 | 25 | 75 | 100 |
| | 18P5CA20 | Core Course - 20 Compiler Design | 4 | 4 | 25 | 75 | 100 |
| | 18P5CA21 | Core Course - 21 Big Data Analysis | 4 | 4 | 25 | 75 | 100 |
| | 18P5CAE_ | Elective Course – III | 5 | 4 | 25 | 75 | 100 |
| | 18P5CAE_ | Elective Course – IV | 5 | 4 | 25 | 75 | 100 |
| | 18P5CAP10 | Core Course Practical-10 Case Tools Lab | 4 | 2 | 40 | 60 | 100 |
| | 18P5CAPR01 | Core Course Project - 1 (Mini Project) | 4 | 2 | 40 | 60 | 100 |
| | | **Total** | **30** | **24** | **205** | **495** | **700** |
| | | | | | | | |
| VI | 18P6CAPR02 | Core Course Project – 2 Dissertation and Viva Voce | - | 18 | 50 | 150 | 200 |
| | | **Total** | **0** | **18** | **50** | **150** | **200** |
| | | **Grand Total** | **150** | **140** | **1125** | **2775** | **3900** |

**Elective : I**

| | Course Code | Title |
|---|---|---|
| **Semester III** | 18P3CAE01 | Professional Ethics |
| | 18P3CAE02 | E-Commerce |
| | 18P3CAE03 | Mobile Computing |
| | 18P3CAE04 | Advance Operating System |

**Elective II**

| | Course Code | Title |
|---|---|---|
| **Semester IV** | 18P4CAE05 | Distributed Computing |
| | 18P4CAE06 | Artificial Intelligence & Expert System |
| | 18P4CAE07 | Mobile Application Development |
| | 18P4CAE08 | Graphics and Multimedia |

**Elective III**

| | Course Code | Title |
|---|---|---|
| **Semester V** | 18P5CAE09 | XML and Web Services |
| | 18P5CAE10 | Soft Computing |
| | 18P5CAE11 | Middleware Technologies |
| | 18P5CAE12 | Cloud Computing |

**Elective IV**

| | Course Code | Title |
|---|---|---|
| **Semester V** | 18P5CAE13 | Digital Image Processing |
| | 18P5CAE14 | Cryptography and Network Security |
| | 18P5CAE15 | Enterprise Resource Planning |
| | 18P5CAE16 | Internet of Things |

## YEAR II – SEMESTER III
## DESIGN AND ANALYSIS OF ALGORITHMS

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CA11** | External | : 75 |

**Aim:**

To understand the analysis of various algorithms, different categories of algorithms and implementation of algorithms.

**Objective:**

- To introduce general techniques for analyzing computer algorithms
- To learn different algorithm design techniques
- To understand the limitations of Algorithm power

**OUTCOME:**

CO1 Recognize general principles and good algorithm design techniques for developing efficient algorithms.

CO2 Estimate the time and space complexities of algorithms.

CO3 Apply mathematical preliminaries to the analysis and design stages of different types of algorithms

CO4 Compare the time and space complexities of different types of algorithms.

CO5 Analysis the algorithms based on that which algorithm is an efficient one for specifi input.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): INTRODUCTION:** Algorithms: Structure, properties – analysis of iterative and recursive algorithms – best case, worst case, average case complexities- Notations. **BINARY SEARCH TREES:** Operations: Insert, delete, search–implementation-Analysis.

**Unit II – (12 Hrs.): AVL TREES:** Definition – Height – searching – insert, delete operations- AVL rotations – Examples. **MULTI-WAY SEARCH TREES:** m-way search trees – B-Tree – B+ trees - Tries – Operations: Insert, delete, retrieve- Examples.

**Unit III – (12 Hrs.): GRAPHS:** Definition – terminologies- Representations: Adjacency matrix, Adjacency list, – Graph search methods: Breadth first Search; Depth first Search. **DIVIDE AND CONQUER:** Method – Examples – Merge sort, Binary Search– analysis.

**Unit IV – (12 Hrs.): GREEDY METHOD :** Method – Examples – Minimum cost spanning tree, Kruskal's algorithm, Prim's algorithm. **DYNAMIC PROGRAMMING:** Method – Examples – All pairs shortest path problem – Traveling salesman problem.

**Unit V – (12 Hrs.): BACK TRACKING:** Method–Examples-Eight queen's problem, Hamiltonian Cycles. **NP-HARD, NP-COMPLETE CLASSES :** Basic concepts – Non deterministic algorithms – Satisfiability problem – NP-hard and NP-complete Problems.

**TEXT BOOKS:**

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein "Introduction to Algorithms", The MIT Press, 2009.
2. Horowitz Ellis, Sartaj Sahni and Sanguthevar Rajasekaran, 'Fundamentals of Computer Algorithms', Second Edition Reprint 2012.

**REFERENCE BOOKS:**

1. Vijayalakshmi Pai G.A, "Data Structures and Algorithms: Concepts, Techniques and Applications", Tata Mc Graw Hill. , 2009.
2. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Publications, 3rd Edition, 2012.

**WEB SOURCES**

1. https://www.cs.usfca.edu/~galles/visualization/Algorithms.html
2. https://onlinecourses.nptel.ac.in/noc16_cs04/preview
3. https://www.coursera.org/learn/introduction-to-algorithms

**PEDOGOGY: CHALK and Talk, ICT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**

**MODEL QUESTION PAPER - MCA**

**YEAR II – SEMESTER II**

**DESIGN AND ANALYSIS OF ALGORITHMS**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section - B (5X5) | : 25 |
| Time | : Three Hours | Section - C (3X10) | : 30 |
| Paper Code | : 18P3CA11 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. Evaluate 5*(x+y)-4*y/(z+6) where x = 2, y = 3, and z = 6
   a) 1 b) 24 c) 5 d) 10
2. Examples of O(1) algorithms are_____.
a) Multiplying two numbers b) assigning some value to a variable
   c) displaying some integer on console d) All of the above
3. The space factor when determining the efficiency of algorithm is measured by
   a) Counting the maximum memory needed by the algorithm
   b) Counting the minimum memory needed by the algorithm
   c) Counting the average memory needed by the algorithm
   d) Counting the maximum disk space needed by the algorithm
4. The height of the binary search tree is
   a) O(log n) b) O( n log n) c) O(n3) d) None of these
5. The acceptable Balancing Factor in AVL trees are
   a) {0,1,2} b) {-1,0,1} c) {1,2,3} d) {-1,1,2}

6. The Balancing Factor to be calculated in AVL with the formula
   a) BF=height(left sub tree)- {right sub tree} b) BF=height(right sub tree)- (left sub tree)
   c) Both a) and b) d) Neither a) Nor b)
7. For a tree of order m, all internal nodes have _____ keys and _____ pointers a) m+1 and m b) m and m+1 c) m-1 and m d) m and m-1
8. The time complexity of search operation in tries
   a) O(m) b) O(m2) c) O(m log m) d) None of these
9. A complete undirected graph has exactly _____ edges
   a) n-1 b) n c) n (n-1) /2 d) None of these
10. Breadth first traversal is a method to traverse
   a) All successors of a visited node before any successors of any of those successors
   b) A single path of the graph as far it can go c) Graph using shortest path d) None of these
11. The worst-case time complexity of Merge Sort is_____.
   a) O(n2) b) O(log n) c) O(n) d) O(n log n)
12. The time complexity of binary search is_____.
   a) O(1) b) O(log n) c) O(n) d) O(n log n)

13. Any subset that satisfies the constraints in objective function is called
a) an optimal solution b) feasible solution c) Both a) and b) d) Neither a) Nor b)

14. _____ keeps two sets of vertices; S, the set of vertices whose shortest paths from the source have already been determined and V-S, the remaining vertices.
a) Kruskal's algorithm b) Prim's algorithm c) Dijkstra algorithm d) Bellman ford algorithm

15. Algorithms: From the following algorithm design techniques which one is used to find all the pairs of shortest distances in a graph?
a) Backtracking b) Greedy c) Dynamic programming d) Divide

16. We use dynamic programming approach when
a) It provides optimal solution b) The solution has optimal substructure
c) The given problem can be reduced to the 3-SAT problem d) It's faster than Greedy

17. What is the type of the algorithm used in solving the 8 Queens problem?
a)Greedy b)Dynamic c)Branch and Bound d)Backtracking.

18. A problem which is both _____ and _____ is said to be NP complete.
a) NP, P b) NP, NP hard c) P, P complete d) None of the mentioned

19. Which of the following is true about NP-Complete and NP-Hard problems.
a) If we want to prove that a problem X is NP-Hard, we take a known NP-Hard problem Y and reduce Y to X b) The first problem that was proved as NP-complete was the circuit satisfiability problem. c) NP-complete is a subset of NP Hard d) All of the above

20. Let X be a problem that belongs to the class NP. Then which one of the following is TRUE?
a) There is no polynomial time algorithm for X.
b) If X can be solved deterministically in polynomial time, then P = NP.
c) If X is NP-hard, then it is NP-complete. d) X may be undecidable.

**Section B (Answer all the questions)** **5 X 5 = 25**

21. (a)Write about analysis of non-recursive algorithms. (OR)
(b)Summarize the various time complexities of algorithm analysis.

22. (a)Explain about AVL tree rotations & its types. (OR)
(b)Describe B- trees with suitable examples.

23. (a)Discuss about graph representations.( OR)
(b)Describe binary search using divide and conquer method .

24. (a)Elucidate minimum cost spanning tree with Kruskal's algorithm. (OR)
(b)Write a brief note on all pairs shortest path problems .

25. (a)Describe the Hamiltonian cycles with suitable examples.( OR)
(b)Discuss about non-deterministic algorithms..

**Section – B (Answer any Three questions)** **3 X 10=30 Marks**

26. Elucidate the algorithm notations with examples.
27. Narrate the AVL tree operations with examples.
28. Explain in detail about merge sort with examples.
29. Discuss about minimum cost spanning tree with Prim's algorithm.
30. Describe about 8-queens problem with examples.

## YEAR II – SEMESTER III
### C# and .NET Programming

| | | | |
|---|---|---|---|
| Paper | : Core 12 | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CA12** | External | : 75 |

**Aim:**

To understand the concepts of .NET technologies with C# Programming.

**Objective:**

students gain the skills to exploit the capabilities of **C# and** of the .**NET** Framework to develop programs useful for a broad range of desktop **and** Web applications. Experience with a modern language such as VB, Java, Pascal or C/C++ is assumed.

CO1 After completion of the course the student will be able to use the features of Dot Net.

CO2 Able to realize the revolution of .NET frame work.

CO3 Able to understand building blocks of .NET framework

CO4 Able to understand Window applications and console applications.

CO5 Able to web applications with realtime examples.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Introduction: Evolution & Benefits of .NET Framework- Architecture& Components of .NET Framework 3.5- CLR-CLS-CTS-Metadata and Assemblies. Introduction of C#: Need and Features of C#-Creating Console Application- Identifiers-Keywords.

**Unit II – (12 Hrs**Data Types, Variables and Constants: Value Types-Reference types-Pointer Types-Type Conversions- Boxing and Unboxing. Delegates and Events: Declaring Delegate-Defining & Creating Delegate objects. Flow control and exception handling: Control flow statements-selection statements-iteration statement –jump statements-exception handling-try catch finally statements –throw statements.

**Unit III – (12 Hrs.):** Introducing windows presentation foundation: main features of WPF3.5 – improved application model – improved controls- support for data validation and data binding models and LINQ. Working with WPF 3.5 controls, resources, styles , templates and commands: WPF 3.5 controls – Adding controls through XAML code – adding controls in the code behind file – container controls – simple controls – content controls.

**Unit IV – (12 Hrs.):** Data access with ADO.NET: Introducing data bases – introducing SQL - introducing ADO.NET – creating connection string – creating a connection to database – creating command objects – working with data adapters – using data reader work with databases.

**Unit V – (12 Hrs.):** The control class – the web control class – using css in web applications – the label control – button control – text box control – the file upload control – image control – the List box control –the drop down control – Validation controls: Base validator class – the required field validator control – the range validator control - regular expression validator control – compare validator control – the custom validator control .

**TEXT BOOKS:**

1. .NET 3.5 Programming, Covering .NET framework, VB2008, c# 2008 and ASP.NET 3.5, Black Book, Kogent Learning solution Ltd., Dreamtech Press, 2010.
2. Ramakrishna Rao B, "Programming with C# Concepts and Practice ", Prentice Hall of India, New Delhi, 2007.
3. 2. Jesses Liberty, "Programming C#", O' Reilly & Associates, 2001.

**REFERENCE BOOKS:**

1. Tom Archer, "Inside C#", Microsoft Press, 2001.
2. Matt Telles, "C# Black Book", First Edition, Dream Tech, 2002.

**WEB SOURCES**

1. www.wifinotes.com
2. www.ctparts.com
3. www.indianmba.com
4. www.techopedia.com

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**C# and .NET Programming**

| | | | |
|---|---|---|---|
| Paper | : Core 12 | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P3CA12** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20 X 1 = 20**

1. Which of the following statements are TRUE about the .NET CLR?
   - It provides a language-neutral development & execution environment.
   - It ensures that an application would not be able to access memory that it is not authorized to access.
   - It provides services to run "managed" applications.
   - The resources are garbage collected.
   - It provides services to run "unmanaged" applications.

   A.Only 1 and 2 C.1, 2, 3, 4 D.Only 4 and 5 E.Only 3 and 4
2. Which of the following are valid .NET CLR JIT performance counters?
   1. Total memory used for JIT compilation
   2. Average memory used for JIT compilation
   3. Number of methods that failed to compile with the standard JIT
   4. Percentage of processor time spent performing JIT compilation
   5. Percentage of memory currently dedicated for JIT compilation

   A. 1, 5 B.3, 4 C.1, 2 D.4, 5
3. Which of the following statements is correct about Managed Code?
   A. Managed code is the code that is compiled by the JIT compilers.
   B. Managed code is the code where resources are Garbage Collected.
   C. Managed code is the code that runs on top of Windows.
   D. Managed code is the code that is written to target the services of the CLR.
   E. Managed code is the code that can run on top of Linux.
4. Which of the following utilities can be used to compile managed assemblies into processor-specific native code?

   A. gacutil B. ngen C.sn D. dumpbin E.ildasm
5. Which of the following are NOT true about .NET Framework?

   1. It provides a consistent object-oriented programming environment whether object code is stored and executed locally, executed locally but Internet-distributed, or executed remotely.
   2. It provides a code-execution environment that minimizes software deployment and versioning conflicts.
   3. It provides a code-execution environment that promotes safe execution of code, including code created by an unknown or semi-trusted third party.
   4. It provides different programming models for Windows-based applications and Web-based applications.
   5. It provides an event driven programming model for building Windows Device Drivers.

   A. 1, 2 B. 2, 4 C.4, 5 D.1, 2, 4
6. Which of the following components of the .NET framework provide an extensible set of classes that can be used by any .NET compliant programming language?

   A. .NET class libraries B.Common Language Runtime
   C.Common Language Infrastructure D.Component Object Model

E.Common Type System

7. Which of the following jobs are NOT performed by Garbage Collector?
   1. Freeing memory on the stack.
   2. Avoiding memory leaks.
   3. Freeing memory occupied by unreferenced objects.
   4. Closing unclosed database collections.
   5. Closing unclosed files.

   A. 1, 2, 3 B.3, 5 C.1, 4, 5 D.3, 4

8. Which of the following .NET components can be used to remove unused references from the managed heap?

   A. Common Language Infrastructure B. CLR
   C. Garbage Collector D. Class Loader
   E. CTS

9. Which of the following statements correctly define .NET Framework?

   A. It is an environment for developing, building, deploying and executing Desktop Applications, Web Applications and Web Services.

   B. It is an environment for developing, building, deploying and executing only Web Applications.

   C.It is an environment for developing, building, deploying and executing Distributed Applications.

   D.It is an environment for developing, building, deploying and executing Web Services.

   E.It is an environment for development and execution of Windows applications.

10. Which of the following constitutes the .NET Framework?
    1. ASP.NET Applications
    2. CLR
    3. Framework Class Library
    4. WinForm Applications
    5. Windows Services

    A. 1, 2 B.2, 3 C.3, 4 D.2, 5

11. Which of the following assemblies can be stored in Global Assembly Cache?

    A.Private Assemblies B.Friend Assemblies C.Shared Assemblies
    D.Public Assemblies E.Protected Assemblies

12. Code that targets the Common Language Runtime is known as

    A.Unmanaged B.Distributed C.Legacy
    D.Managed Code E.Native Code

13. Which of the following statements is correct about the .NET Framework?

    A. .NET Framework uses DCOM for achieving language interoperability.
    B..NET Framework is built on the DCOM technology.
    C..NET Framework uses DCOM for making transition between managed and unmanaged code.
    D..NET Framework uses DCOM for creating unmanaged applications.
    E..NET Framework uses COM+ services while creating Distributed Applications.

14. Which of the following is the root of the .NET type hierarchy?

    A.System.Object B.System.Type C.System.Base
    D.System.Parent E.System.Root

15. Which of the following benefits do we get on running managed code under CLR?

    1.Type safety of the code running under CLR is assured.

    2.It is ensured that an application would not access the memory that it is not authorized to access.

3.It launches separate process for every application running under it.
4.The resources are Garbage collected.
A. Only 1 and 2 B.Only 2, 3 and 4 C.Only 1, 2 and 4
D.Only 4 E.All of the above

16. Which of the following security features can .NET applications avail?
1.PIN Security
2.Code Access Security
3.Role Based Security
4.Authentication Security
5.Biorhythm Security
A. 1, 4, 5 B.2, 5 C.2, 3 D.3, 4

17. Which of the following jobs are done by Common Language Runtime?
1.It provides core services such as memory management, thread management, and remoting.
2.It enforces strict type safety.
3.It provides Code Access Security.
4.It provides Garbage Collection Services.
A. Only 1 and 2 B.Only 3, 4 C.Only 1, 3 and 4
D.Only 2, 3 and 4 E.All of the above

18. Which of the following statements are correct about a .NET Assembly?
1.It is the smallest deployable unit.
2.Each assembly has only one entry point - Main(), WinMain() or DLLMain().
3.An assembly can be a Shared assembly or a Private assembly.
4.An assembly can contain only code and data.
5.An assembly is always in the form of an EXE file.
A.1, 2, 3 B.2, 4, 5 C.1, 3, 5 D.1, 2

19. Which of the following statements are correct about JIT?
1.JIT compiler compiles instructions into machine code at run time.
2.The code compiler by the JIT compiler runs under CLR.
3.The instructions compiled by JIT compilers are written in native code.
4.The instructions compiled by JIT compilers are written in Intermediate Language (IL) code.
5.The method is JIT compiled even if it is not called
A. 1, 2, 3 B.2, 4 C.3, 4, 5 D.1, 2

20. Which of the following are parts of the .NET Framework?
1. The Common Language Runtime (CLR)
2. The Framework Class Libraries (FCL)
3. Microsoft Published Web Services
4. Applications deployed on IIS
5. Mobile Applications
`A. Only 1, 2, 3 B.Only 1, 2 C.Only 1, 2, 4 D.Only 4, 5 E.All of the above

**Section B ( Either or) 5 X 5 = 25**

21. (a) List the Components of .NET Framework (or)

(b) Basic structure of Console program.

22. (a) Define deligates explain with an example(or)

    (b) Explain the exception handling life cycle.

23. (a) List out any three data controls and its validation methods (or)

    (b) Write about Regular expression validator control.

24. (a) Explain Data access with ADO.NET. (or)

    (b) Explain about creating connection string.

25. (a) Describe about using css in web applications. (or)

    (b) Write on the custom validator control.

**Section – C**

**(Answer any THREE questions)**

**3 X 10=30**

26. What is mean by frame work and explain its architecture
27. Explain Reference types with suitable example
28. Describe the main features of WPF3.5
29. Explain about adding controls in the code behind file.
30. Write in detail. Validation controls.

## YEAR II – SEMESTER III
## ADVANCED DATABASE MANAGEMENT SYSTEM

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section – B (3X5) | : 15 |
| Time | : Three Hours | Section – C (4X10) | : 40 |
| Paper Code | : 18P3CA13 | Maximum Marks | : 75 |

**Aim:**

To understand the various databases, design techniques, distributed environment, web databases with real-time examples.

**Objective:**

Students will be explored to various databases and its design techniquesof the distributed distributed environment. They are also able to design temporal, spatial & web databases.

**OUTCOME:**

| | |
|---|---|
| CO1 | Understand various databases such as object oriented, parallel, distributed, spatial, distributed, geographic & multimedia databases |
| CO2 | Understand query processing, transaction management, concurrency control etc. in distributed environment |
| CO3 | Understand various design issues and techniques of different databases |
| CO4 | Understand web databases and various concepts of wb related to DBMS |
| CO5 | Understand how to develop an application using an advanced database system |

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Object Oriented Databases And Object: Relational Databases: Object oriented databases - Complex data types, Object-oriented data model, Object-oriented languages, Persistent programming languages – Object relational databases - Nested relations, Complex types, Inheritance, Reference types, Querying with complex types, Functions and procedures, Object-oriented versus object-relational.

**Unit II – (12 Hrs.):** Distributed Databases And Parallel Databases: Distributed databases - Homogeneous and heterogeneous databases, Distributed data storage, Distributed transactions, Commit protocols, Concurrency control in distributed databases, Availability, Distributed query processing, Heterogeneous distributed databases.

**Unit III – (12 Hrs.):**. Directory systems – Parallel databases - I/O parallelism, Inter query parallelism, Intra query parallelism, Intra operation parallelism, Interoperation parallelism, Design of parallel systems.

**Unit IV – (12 Hrs.):** Specialized Databases: Spatial databases and spatial, Geographic data - Representation of geometric information - Design databases, Geographic data, Spatial queries, Indexing of spatial data – Temporal and time series databases - Time in databases- Time specification in SQL, Temporal query language.

**Unit V – (12 Hrs.):** Other Databases: Multimedia databases – Multimedia data formats, Continuous media data, Similarity-based retrieval - Web databases – Web fundamentals, URL, HTML, Client side scripting and Applets, Web servers and sessions, Servlets, Server side scripting, Improving performance.

**TEXT BOOKS:**

1. Henry Korth, F., Abraham Silberchatz, Sudarshan, S.,Database System Concepts, 4th Edition , Mc Graw Hill International Editions.
2. Elmasri, R., Navathe, S.B., Fundamentals of Database Systems , Addison Wesley, 2000.

**REFERENCE BOOKS:**

1. Gary Hanson,W., James Hanson, V., Database Management and Design, Prentice Hall of India Pvt. Ltd., 1999.
2. Alex Benson, Stephen Smith and Kurt Thearling, Building Data Mining Applications for CRM, Tata McGraw-Hill,2000.
3. Stefano Ceri, Giuseppe Pelagatti, Distributed Databases: Principles and Systems , Mc Graw-Hill Computer Science Series.

**WEB SOURCES**

4. https://onlinecourses.nptel.ac.in/noc16_cs04/preview
5. https://www.coursera.org/learn/database-management-systems

**PEDOGOGY: CHALK and Talk, ICT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**ADVANCED DATABASE MANAGEMENT SYSTEM**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section – B (5X5) | : 25 |
| Time | : Three Hours | Section – C (3X10) | : 30 |
| Paper Code | : 18P3CA13 | Maximum Marks: 75 | |

**PART- A**

**Answer all questions** **(20 X 1 = 20)**

1. Which one is the highest level of Data Abstraction
   a) Physical Level
   b) Logical Level
   c) View Level
   d) None of the above
2. How many relational operations are available in DBMS
   a) 2
   b) 3
   c) 4
   d) None of the above
3. In a relational schema, each tuple is divided into fields called
   a) Relations
   b) Domains
   c) Queries
   d) All of the above
4. Which function is used to get the count of records in a table
   a) Average
   b) Total
   c) Count
   d) Max
5. In an ER model, ……. is described in the database by storing its data.
   a) Entity
   b) Attribute
   c) Relationship
   d) Notation
6. ……..defines the structure of a relation which consists of a fixed set of attribute-domain pairs.
   a) Instance
   b) Schema
   c) Program
   d) Super Key
7. Which keyword is not used for modification of the Database

a) Select
b) Insert
c) Update
d) delete

8. Which one is supports character data in large object types
   a) Clob
   b) Blob
   c) Both
   d) None of the above
9. A relational database developer refers to a record as
   a) a criteria
   b) a relation
   c) a tuple
   d) an attribute
10. ----------calls the function dynamically
    a) Recursive queries
    b) Functions
    c) Procedures
    d) All the above
11. A top-to-bottom relationship among the items in a database is established by a
    a) Hierarchical schema
    b) Network schema
    c) Relational Schema
    d) All of the above
12. ----------is desktop unit used by single person with one processor and one or more hard disk.
    a) Single user system
    b) Multiple user system
    c) Both
    d) None of the above
13. …… is a full form of SQL.
    a) Standard query language
    b) Sequential query language
    c) Structured query language
    d) Server side query language
14. Which one is receive user query, executes them and send results back
    a) Server process
    b) Lock manager
    c) Process monitor process
    d) Log writer process
15. Key to represent relationship between tables is called
    a) primary key
    b) secondary key
    c) foreign key
    d) none of the above

16. ……. keyword is used to find the number of values in a column.
    a) TOTAL
    b) COUNT
    c) ADD
    d) SUM
17. ----------refers to reduce the time required relation to retrieve from disk by relations on multiple disks
    a) I/O Parallelism
    b) Inter Query Parallelism
    c) Intra Query Parallelism
    d) All the above
18. The collection of information stored in a database at a particular moment is called as ……
    a) Schema
    b) instance of the database
    c) data domain
    d) independence
19. Grant and revoke are ……. statements.
    a) DDL
    b) TCL
    c) DCL
    d) DML
20. Which is used to abort from the execution
    a) <commit T>
    b) <abort T>
    c) Both
    d) None of the above

**PART- B**

**Answer all questions** **(5 X 5 = 25)**

21. a) List out the types of database languages. Explain. **(OR)**
    b) Define scheme. List out the types of schema.
22. a) Explain the Parallel databases.
    b) Discuss about Interoperation parallelism.
23. a) What is Heterogeneous Databases. Explain.
    b) Explain Concurrency Control in Distributed Databases.
24. a) Explain the Parallel databases . (OR)
    b) Discuss about Interoperation parallelism.
25. a) What is Heterogeneous Databases. Explain. (OR)
    b) Explain Concurrency Control in Distributed Databases

**PART- C**

**Answer any four questions** **(4 X 10 = 40)**

26. Explain structure of Relational Databases model.
27. Explain in detail about views and its types.
28. Elaborate the Procedure to modify the database.
29. Explain in detail about dynamic SQL queries.
30. Write about the Distributed databases.

## YEAR II – SEMESTER III
## MANAGEMENT INFORMATION SYSTEMS

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 5 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CA14** | External | : 75 |

**Aim:**

To provide the fundamental concepts of information system and the process of management.

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**Objective:**

To understand the usage of Information Systems in management**.** The students also would understand the activities that are undertaken in acquiring an Information System in an organization.

**OUTCOME:**

CO1 Students would be able to understand the usage of MIS in organizations and the constituents of the MIS

CO2 The student would understand the classifications of MIS, understanding of functional MIS and the different functionalities of these MIS.

CO3 Able to Trends in Telecommunication–Telecommunication Network Model

CO4 Able to understand Functional Business Systems - Accounting, Finance, Manufacturing and Systems

CO5 Student understandabout emerging MIS technologies like ERP, Strategic and managerial implication of Information systems.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | M | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | M | S | S |
| **CO5** | S | S | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Foundation concepts of information systems: Fundamental roles of information – Trends in Information systems – The role of e-Business in business – Types of information systems - System Concept – Components of Information system – Information System resources – Information system activities - Meaning and Definition of MIS - MIS design, Development.

**Unit II – (12 Hrs.):** Fundamental of Strategic IT – competitive strategy concepts – Strategic uses of Information Technology – Role of information technology – Building Knowledge creating company – Knowledge Management systems -Computer Hardware Types of Computer system – Mainframe computer systems & Computer peripherals – Computer software – system software: OS – Application software –spread sheet – graphic packages.

**Unit III – (12 Hrs.):** Telecommunications and Networks: Trends in Telecommunication– Telecommunication Network Model – Types of telecommunication networks – Telecommunication Media – Processors – Network Architectures and protocols..

**Unit IV – (12 Hrs.):** e-Business systems - introduction - IT in business: Functional Business Systems - Accounting, Finance, Manufacturing and Systems, Marketing - Human resource Information System – ERP – benefits and Challenges – cost of ERP – Trends in ERP. e-commerce, Scope, technologies.

**Unit V – (12 Hrs.):** Strategic and managerial implication of Information system – Managing information system resources . Decision support system: Executive Information System – Artificial Information system –Expert Systems. Security, Ethical & society – ethical responsibility of Business professionals.

**TEXT BOOKS:**

1. Jame O'Brien, "Management Information System", Tata McGraw-Hill Publishing Company Ltd 2007(Sixth Reprint)..
2. Woman S Jawadekar," Management Information System ", The McGraw-Hill Companies. Eight reprint 2008

**REFERENCE BOOKS:**

1. Kenneth C.Laudon & Jane P.Laudon ," Management Information System ",Prentice Hall of India(P)Ltd 2007.
2. D.P.Goyal, "Management Information System ", Macmillan Publishers India Limited, 2010.

**WEB SOURCES**

1. www.wifinotes.com
2. www.ctparts.com
3. www.indianmba.com
4. www.techopedia.com

**PEDOGOGY: CHALK and Talk , ICT, Seminar.**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**MANAGEMENT INFORMATION SYSTEMS**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section – B (3X5) | : 15 |
| Time | : Three Hours | Section – C ( 4x10) | : 40 |
| Paper Code | : **18P3CA14** | Maximum Marks | : 75 |

**SECTION – A**

**(1 X 20 = 20 marks)**

**Answer all questions**

1. The information of MIS comes from the
A) Internal source B)External source C)Both internal and external source D)None of the above
2. The back bone of any organization is
A) Information B)employee C)management D) capital
3. In management information system which is the correct order of reference of activites that the manger process?
**A**) Planning, Organising, Staffing, Coordinating, Directing, Controlling
B) Planning, Staffing, Coordinating, Organising, Directing, Controlling
C) Planning, Organising, Staffing, Coordinating, Directing, Controlling
D) Planning, Directing, Organising, Staffing, Coordinating, Controlling
4. Mangement is linked to information by
A) Decision B) Data **C**) Both A&B D) None of the above.
5. One byte is made of
A) Four bits B) Eight bits C) Tweleve bits D) Sixteen bits
6. Prototype is a _____
A) Working model of a existing system B) Mini model of existing system
C) Mini model of processed system D) None of the above.

7. MIS is an integrated _____ system for providing information.
A) Computer B) User C) User-Machine D) Machine

8. _____ decision has no pre-established decision procedure
A) Non- Programmed B) Structured C) Programmed D) Routine
9. The Human body system is an example for _____ system
A) Closed B) Open C) Conceptual D) Artificial
10. The value of _____ information may be defined as expected value of opportunity losses
A) Formal B) Informal C) Perfect D) Imperfect
11. _____ in an organization refers to the ability to obtain and utilize human and material resources to accomplish objectives
A) Culture B) Power C) Stress D) Change
12. The second stage of information system development life cycle is _____
A) Development B) Definition C) Installation D) Design
13. _____ is caused by the ability of individuals to exercise discretion in information presentation

A)Error B) Inference C) Bias D)Quality

14. _____ include handling of exceptions, detection of errors, error correction, and various exceptions, error and control reports

A) Feasibility study B) Quality Assurance C) Post audit D) Technical Evaluation

15. _____ refers to the process through individual organize and change information during decision making process

A)Bias B) Decision Tree C) Heuristics D) Cognitive style

16. Which of the following is included in the office automation systems?

A) Word processing B) Electronic mail C) Voice mail D) All the above.

17. _____ is developed to support day to day operations of the firm

A) OSS B) TPS` C) MSS D) ESS.

18. _____ include handling of exceptions, detection of errors, error correction, and various exceptions, error and control reports

A) Feasibility study B) Quality Assurance C) Post audit D) Technical Evaluation

19. The second stage of information system development life cycle is _____

A) Development B) Definition C) Installation D) Design

20. _____ in an organization refers to the ability to obtain and utilize human and material resources to accomplish objectives

A) Culture (B) Power (C) Stress (D) Change

## SECTION – B

**( 3 X 5 = 15 marks)**

**Answer all questions**

21. a) Explain Trends in information systems (OR)

b) Explain Types of information systems

22. a) Describe strategic uses of Informatin Technology. **(OR)**

b) Discuss Knowledge management systems

23. a) Describe the trends in telecommunication **(OR)**

b) Describe Network Architectures and protocals

24. a) Write about human resource information systems **(OR)**

b) Discuss functional business systems.

25. a) Write short notes on domains & applications of AI

b) Explain Executive Information Systems

## SECTION – C

**Answer any four questions** **( 4 X 10 = 40 marks)**

26. Briefly explain about hardware peripherals with neat diagram

27. Explain about various types of telecommunication networks

28. Explain about accounting and financial systems

29. Discuss in detail about marketing and human resource systems

30. Explain in detail about executive information systems

## YEAR II – SEMESTER III
## CORE PRACTICAL – IV DESIGN AND ANALYSIS OF ALGORITHMS LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical III | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P3CAP05** | External | : 60 |

CO1 Apply different problem solving techniques to find a solution to a problem

CO2 Analysis of implementing the various algorithms

CO3 Propose an efficient algorithm for a problem

| LIST OF EXPERIMENTS | Number of Sessions |
|---|---|
| **PROGRAMMING LIST:**<br><br>1. To perform operations on Binary Search Trees<br>2. To represent graphs using Adjacency Matrix<br>3. To represent graphs using Adjacency List<br>4. Implementation of Breadth First Search methods<br>5. Implementation of Depth First Search methods<br>6. To implement Binary search using Divide and Conquer method.<br>7. Implementation of Merge sort using Divide and Conquer method.<br>8. Implementation of Minimum cost spanning Trees<br>9. To implement Travelling salesman problem<br>10. To implement 8-Queens Problem | **60 Hrs** |

**REFERENCE BOOKS:**


1. Horowitz Ellis, Sartaj Sahni and Sanguthevar Rajasekaran, 'Fundamentals of Computer Algorithms', Second Edition Reprint 2012.
2. Vijayalakshmi Pai G.A, "Data Structures and Algorithms: Concepts, Techniques and Applications", Tata Mc Graw Hill. , 2009.
3. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Publications, 3rd Edition, 2012.

## YEAR II – SEMESTER III
## CORE PRACTICAL – IV DESIGN AND ANALYSIS OF ALGORITHMS LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical III | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P3CAP05** | External | : 60 |

1. Write a C++ program to implement the various operations binary search trees.
2. a) Write a C++ program to implement depth first search method. (OR)
   a) Write a C++ program to implement merge sort using divide & conquer method.

Internal: Record -10
Model-20
Attendance-10

## YEAR II – SEMESTER III
## CORE Practical 6 - C# and .NET Programming Lab

| | | | |
|---|---|---|---|
| Paper | : Core Practical 6 | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P3CAP06** | External | : 60 |

CO1 Create the console applications

CO2 Create window applications

CO3 Create web applications using ASP .NET

**List of Experiments:**

1. Write a program to accept any character from keyboard and display whether it is vowel or not.
2. Accept a character from console and check the case of the character.
3. Write a program to handle the exception
4. Create a DLL and use the function which has the DLL in another program
5. Develop a menu based .Net application to implement a text editor with cut, copy, paste, save and close operations.
6. Develop a .Net application to perform timer based quiz of 10 questions.
7. Develop a window based .Net application using Datagrid to display records.
8. Create an online bookstore that includes all validation controls available in .NET
9. Create a component that receives two numbers from the user through a Web Form, and based on the user's selection add or subtract the two numbers and returns the result to the Web Form. The result should be displayed in the Web Form using ASP.NET
10. Develop an online train ticket reservation system using .NET with the provision of insert, modify, update and delete operations.

**REFERENCE BOOKS:**


1. .NET 3.5 Programming, Covering .NET framework, VB2008, c# 2008 and ASP.NET 3.5, Black Book, Kogent Learning solution Ltd., Dreamtech Press, 2010.
2. Ramakrishna Rao B, "Programming with C# Concepts and Practice ", Prentice Hall of India, New Delhi, 2007.
3. 2. Jesses Liberty, "Programming C#", O' Reilly & Associates, 2001.

## YEAR II – SEMESTER III
### CORE Practical 6 - C# and .NET Programming Lab

| | | | |
|---|---|---|---|
| Paper | : Core Practical I | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P3CAP06** | External | : 60 |

I**.** Create a DLL and use the function which has the DLL in another program (30 Marks)

(Compulsory)

II. a) Write a program to accept any character from keyboard and display whether it is vowel or not.

(Or)

b) Write a program to accept any character from keyboard and display whether it is vowel or not. (30 Marks)

Internal: Record -10

Model-20

Attendance-10

## YEAR II – SEMESTER III

| | | | |
|---|---|---|---|
| Paper | : Job Oriented Course- I Soft Skills | Total Hours | : 25 |
| Hours/Week | : 2 | Exam Hours | : 03 |
| Credit | : 1 | Internal | : 25 |
| Paper Code | : 18P3CAJ01 | External | : 75 |

**Aim:**

To give each student a realistic perspective of work and work expectations, to help formulate problem solving skills.

**Objective:**

To emulate students to the current needs of Software Industries and to impart self awareness and self development to pace with the growth of IT field with hundred percent self confidence.

**OUTCOME:**

CO1 Articulate and enunciate words and sentences clearly and efficiently

CO2 Read and analyze text and be able to summarize ideas in writing

CO3 Demonstrate the ability to research topics and present them using various mediums, including written reports, group presentations, and multimedia projects

CO4 Analyze how communication models impact the sender/receiver in various formats

CO5 Assess your strength and weaknesses to better assist you in career development

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (5 Hrs.): The Mind** - Positive thinking & Attitude, Motivation, Character Building, Self Esteem, Goal Setting.

**Unit II – (5 Hrs.): Effective Communication** - English Conversation, Pronunciation, Voice Modulation, Stressing and stretching, Accent Improvisation, Facial Expressions.

**Unit III – (5 Hrs.): Effective Communication** Body language, Writing skills. **Business Etiquettes** -Business Etiquettes Office Etiquettes, Phone Etiquettes, Dining Etiquettes, Party Etiquettes **Corporate Look** - Office Wear, Meetings/Interviews, Business Presentations

**Unit IV – (5 Hrs.): Executive Skills** - Writing a profile (Personal/ Company), Group

Discussion, Facing an Interview, Business Presentation Skills.
**Unit V – (5 Hrs.): Special Corporate Skills** - Interpersonal Relationship, Leadership Qualities, Time Management, Stress Management.

**TEXT BOOKS:**

1. Enhancing Employability : Connecting Campus with Corporate : M.S. Rao

**REFERENCE BOOKS:**

1. Corporate Softskills : Sarvesh Gulati
2. The ACE of Soft Skills: Attitude, Communication and Etiquette for Success: Gopalaswamy Ramesh, Mahadevan Ramesh

**WEB SOURCES**

1. www.dupont.co.in/soft-skill-development.
2. www.wfskillscollege.org.
3. mass.educationalinnovation.org

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**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**SOFT SKILLS**

| | | | |
|---|---|---|---|
| Paper | : Job Oriented Course- I | Section - A (1X20) | : 20 |
| Examination | : External | Section – B (5X5) | : 25 |
| Time | : Three Hours | Section – C (3X10) | : 30 |
| Paper Code | : 18P3CAJ01 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X1 = 20**

1. Which of the following is NOT a component in the Communication Model?
   a)Sender (2) Messenger (3) Encoding (4) Receiver
2. What kind of information should be included in a resume?
   a)Work experience (2) Education (3) Affiliation and membership (4) Letter of recommendation
3. What are the common barriers that impede communication?
   a)Barriers with people (b) Barriers with words (c) Barriers made by cultural differences (d) Barriers made by distance
4. Effective communication can ONLY be achieved when:
   a) The audience is understood (2) Feedback is encouraged (3) Thoughts are organised
5. The following is (are) non-verbal communication
   a) Facial Expression b) Appearance c) Posture d) All of the above
6. The handshake that conveys confidence is
   a) Limp b) Firm c) Loose d) Double
7. Communication is the task of imparting _____
   a) Training b) Information c) Knowledge d) Message
8. The whole concept of achieving success begins with how you _____
   a) Behave b) Think c) Work d) All of the above
9. When introducing ourselves, we should use:
   a) only our designation b) only our first name c) both the first name and the surname d) only the surname
10. In different cultures, colors represent:
    ***a)*** insignificant things b) arbitrary things c) the same thing d) different things
11. In business telephone calls, when making a request always use:
    ***a)*** direct categorical statements b) the imperative form c) the interrogative form d) the passive form
12. People from other countries can be easily put at ease by speaking to them in:
    a) your own language b) their language c) sign language d) English
13. At what point does the analysis of qualitative data begin?
    a) Before data collection b) During data collection c) After data collection
    d) None of the option given
14. The face-to-face focus group is the best tool to:
    a) probe intimate situations b) trigger unexpected views c) interview geographically dispersed respondents d) administer a questionnaire
15. The most common public sector interview is

a) one to one interview b) competency based interview c) panel interview d) screening interview

16. What are communication problems otherwise known as
a) Enquire b) Barriers c) Encoding d) Decoding
17. Another name for interpersonal communication is
a) mass communication b) face to face public communication c) dyadic communication
d) virtual reality
18. Which is a characteristic of private relationships (in comparison to public relationships)?
a) substitutability b) use of particularistic knowledge c) extrinsic rewards d) normative rules
19. Which of the following are the basic sources of stress?
a) The Environment b) Social Stressors c) Physiological d) All of the above
20. This time is yours to use as you please, use it for the things you value most
a) Committed time b) Discretionary time c) Maintenance time d) Family time

**Section A ( Either or)** **5 X 5 = 25**

21. a) Enumerate the importance of soft skills. **(Or)**
b) Explain the art of public speaking.

22. a) Enumerate the purpose of benefits and advantages of listening **(Or)**
b) How to change our attitudes positively.

23. a) Bring out the reasons for selecting and rejecting candidates for a job. **(Or)**
b) Enumerate benefits and tips for career planning.

24. a) Discuss in detail about the obstacles for creating positive attitude. **(Or)**
b) Explain about Business Presentation Skills.

25. a) Briefly explain about Business Etiquettes. **(Or)**
b) Tell about Stress Management.

**Section – B (Answer any Three questions)** **3 X 10= 30 Marks**

26. Analyse the attributes of soft skills regarding social, thinking, negotiating and exhibiting soft Skills.
27. Describe in detail about self discovery and SWOT analysis.
28. Discuss in detail about communication and the barriers of communication.
29. Critically analyze listening in every aspect.
30. Explain the process of interviews and how to procure a job.

## YEAR II – SEMESTER IV
## ADVANCED JAVA PROGRAMMING

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CA15** | External | : 75 |

**Aim:**

To understand the various advanced Java concepts to create web applications.

**Objective:**

- To introduce advanced java concepts
- To learn about basic concepts web applications
- To understand how to create, test, debug and deploy an web applications

**OUTCOME:**

CO1 To revisit the important concepts of Core Java Programming.

CO2 To understand the concepts of creating software components using BDK and to implement RPC mechanism through RMI.

CO3 To learn about the server side scripting using servlets

CO4 To understand the elements of JSP and its syntax and creating custom tags

CO5 To acquire knowledge in connecting databases with JSP and creating,testing,debugging and deploying web applications

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | S | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | M | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): An Overview of Java:** Packages and Interfaces-Multithreaded Programming-The Applet Class- Event Handling-Introducing the AWT: Working with Windows, Graphics and Text-Using AWT Controls, Layout Manager and Menus.

**Unit II – (12 Hrs.): An Overview of Java Beans**: The software component - The java beans development kit- Starting with BDK-Building Simple Beans-Your First Bean-Introspection Naming Conventions- Persistence-Customizers-Java beans API –A tour of SWING- RMI: An Overview of RMI-Building a Simple Client/Server Application-Using RMI in a Bean.

**Unit III – (12 Hrs.): Servlets**: The Life Cycle of a Servlet-A Simple Servlet-The Servlet API-The javx.servlet Package-Reading Servlet Parameters- The javax.servlet.http Package-Handling HTTP Requests and Responses-Using Cookies-Session Tracking.

**Unit IV – (12 Hrs.): JSP** – Elements of JSP-JSP Syntax and Semantics- Expressions, Scriptlets, and Declarations-Request Dispatching-Session and Thread Management-JSP Tag Extensions: Introduction to Custom Tag-Developing your first Custom Tag.

**Unit V – (12 Hrs.): JSP Applications:** –Database Access with JDBC-Overview of JDBC-JDBC Drivers-Connecting to a Database with DriverManager-The Statement Interface-Result Sets-Using Metadata-JSP and XML-JSP Testing and Debugging-Deploying Web Applications..

**TEXT BOOKS:**

1. H. Schildt, 2002, Java 2 Complete Reference, 5th Edition, Tata McGraw Hill, New Delhi.(Unit I,UnitII,Unit III)
2. Joseph O'Neil, 1998, Java Beans Programming from the ground Up, Tata McGraw Hill, New Delhi(Unit II)
3. Phil Hanna ,JSP 2.0: The Complete Reference, Tata McGraw Hilll Edition,2003 New Delhi,(?Unit IV, Unit V).

**REFERENCE BOOKS:**

1. James Koegh,2003, J2Me: The complete Reference, Tata McGraw Hill, Ne Delhi.
2. J.McGovern, R.Adatia,Y.Fain,2003,J2EE 1.4 Bible, Wiley-Dreamtech India Pvt.Ltd, New Delhi.

**WEB SOURCES**

1. www.w3schools.com
2. www.javatpoint.com
3. https://java-made-easy.com
4. www.geeksforgeeks.com

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**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER IV**

**ADVANCED JAVA PROGRAMMING**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section – B (5X5) | : 25 |
| Time | : Three Hours | Section – C (3X10) | : 30 |
| Paper Code | : 18P4CA15 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. Which of the following is the default package in Java?
   a) java.io b) java.util c) java.lang d) None of these
2. In java multi-threading, a thread can be created by
   a) Extending Thread class b) Implementing Runnable interface c) Using both d) None
   c) displaying some integer on console d) All of the above
3. Which of these methods can be used to output a sting in an applet?
   a) display() b) print() c) drawString() d) transient()
4. Which of the following is a component in AWT that can contain another components like buttons, textfields, labels etc.?
   a) Window b) Container c) Panel d) Frame
5. Expand BDK?
   a) Based on Developer Kit b) Bean Developer Kit
   c) Basic Document Kit d) Button Display Kit
6. . ---------has the ability to save a Bean to nonvolatile storage and retrieve it at a later time.
   a) Introspection b) Customizers c) Persistence d) Constrained
7. Which of the following interface allows a designer to provide a graphical user interface through which a Bean maybe configured?
   a) Design Mode b) Property Editor c) Visibility d) Customizer
8. The RMI stands for
   a) Resource Method Invocation b) Remote Method Interface c) Resource Method Interface
   d) remote Method Interface
9. How many methods in life cycle of a servlet?
   a) 5 b) 4 c) 3 d) 2
10. The doGet() in the example extracts the value of the parameter's type and number by using
    a) response.getAttribute b) request.getParameter() c) response.getParameter d) request.getAttribute
11. Which cookie it is valid for single session only and it is removed each time when the user closes the browser?
    a) Persistent cookie b) Non-persistent cookie c) All the above d) None of the above

12. Which of the following are the session tracking techniques?

a) URL rewriting, using session object, using response object, hidden form fields

b) URL rewriting, using session object, using cookies, hidden form fields

c) URL rewriting, using response object, using cookies object, hidden form fields

d) URL rewriting, using session object, using request object, using response object

13. How many types of JSP Elements?

a) 2 b) 3 c) 4 d) 5

14. Which of the scripting of JSP not putting content into service method of the converted servlet?

a) Declarations b) Scriptlets c) Expressions d) None of the above

15. Which is not a directive?

a) Page b) Include c) Export d) Usebean

16. Which is one of the following in user defined language elements?

a) Custom tag b) Session c) Scriptlets d) Thread management

17. JDBC stands for?

a) Java database connectivity b) Java database concept c) Java database communications d) None of the above

18. Which one of the following contains date and time information?

a) java.sql.TimeStamp b) java.sql.Time c) java.io.Time d) java.io.TimeStamp

19. Which of the following is advantage of using PreparedStatement in Java?

a) Slow performance b) Encourages SQL injection c) Prevents SQL injection d) More memory usage

20. Which type of data that describes other data?

a) Descriptive b) Metadata

c) Qualitative data d) Hypothatical data

**.Section B (Answer all the questions) 5 X 5 = 25**

21. a) Describe Multithreading with an example. **(OR)**

b) Summarize the various Layout managers in AWT with examples.

22. a) How to create a simple bean in Java? Give an example. **(OR)**

b) Write a brief note on Java Swing.

23. a) Explain session tracking mechanisms with an example. **(OR)**

b) Discuss about handling the Http request and responses.

24. a) What is JSP? Give brief note on Syntax and semantics? **(OR)**

b) Explain about thread management in JSP.

25. a) Describe overview of JDBC. **(OR)**

b) Discuss about Result sets in JSP.

**Section – B (Answer any Three questions) 3 X 10=30 Marks**

26. Narrate packages and interfaces with an example.

27. Explain in detail about RMI in Java with an example.

28. Narrate creating, compiling & executing servlets with an example program.

29. Summarize the various elements of JSP.

30. How to develop and deploying web applications? Explain.

## YEAR II – SEMESTER IV
## OPEN SOURCE TECHNOLOGIES

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : 18P4CA16 | External | : 75 |

**Aim:**

To learn about open source technologies with PHP and MySQL concepts.

**Objective:**

- Exposure on developing websites for any domain using PHP & MySQL Server Technologies
- Exposure on designing databases using MySQL Server Technology

**OUTCOME:**

CO1 Understand the history and importance of Open source softwares and basics of PHP.

CO2 Learn about PHP control structures, functions, string handling and arrays.

CO3 Acquire knowledge in file system, cookies and sessions and undertand how to secure a PHP file.

CO4 Implement connecting database with PHP and MySQL.

CO5 Understand database administration and web forms.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Introduction:** Introduction to Open Source Software-History of Open Source Softwares-Applications of Open Source Software. **Introducing PHP:** Why PHP and MySQL-Server-Side Scripting Overview - Getting Started with PHP - Learning PHP Syntax and Variables. **(Chapters 1, 2, 3, 4)**

**Unit II – (12 Hrs.): Introducing PHP**: Learning PHP Control Structures and Functions-Passing Information with PHP- Learning PHP String Handling - Learning Arrays. **(Chapters 5, 6, 7, 8)**

**Unit III – (12 Hrs.): Introducing PHP**: Learning PHP Number Handling**. More PHP:** Working with the File System -Working with Cookies and Sessions - Learning PHP Types- Securing PHP. **(Chapters 9, 23, 24,25, 28)**

**Unit IV – (12 Hrs.): More PHP:** Handling Exceptions with PHP- Learning PHP Style. **MySQL Database Integration:** Introducing Databases and MySQL –Intsalling MySQL- Learning Structured Query Language (SQL). **(Chapters 30, 32,11,12,13)**.

**Unit V – (12 Hrs.): MySQL Database Integration**: Learning Database Administration and Design - Integrating PHP and MySQL Performing Database Queries - Integrating Web Forms and Databases. (Chapters 14, 15, 16, 17).

.

**TEXT BOOKS:**

1. Steve Suehring, Tim Converse, and Joyce Park, "PHP6 and MySQL Bible", Wiley Publishing, Inc., 2010. **(Units I, II, III, IV & V)**

**REFERENCE BOOKS:**

1. Jay Greenspan and Brad Bulger, "MySQL/PHP Database Applications", M & T Books, 2001.
2. 2. Adam Trachtenberg and David Sklar, "PHP Cookbook" , O"Reilly, 2nd Edition, 2006.
3. 3. W. Jason Gilmore, "Beginning PHP and MySQL from Novice to Professional", Apress, 4th Edition, 2010.
4. 4. Luke Welling, Laura Thomson, "PHP and MySQL® Web Development", Pearson Education, Inc., 4th Edition, 2009.

**WEB SOURCES**

1. https://www.w3schools.com/php/
2. https://www.tutorialspoint.com/php/
3. https://www.guru99.com/php_tutorials.html
4.

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**YEAR II – SEMESTER IV**

**OPEN SOURCE TECHNOLOGIES**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section - B (5X5) | : 25 |
| Time | : Three Hours | Section - C (3X10) | : 30 |
| Paper Code | : 18P4CA16 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. What does PHP stand for?

i) Personal Home Page ii) Hypertext Preprocessor iii) Pretext Hypertext Processor
iv) Preprocessor Home Page

A. Both (i) and (ii) B. Both (ii) and (iv) C. Only (ii) D. Both (i) and (iii)

2. PHP files have a default file extension of.

a) .html b) .xml c) .php d). .ph

3. PHP is an example of _____ scripting language.

A. Server-side B. Client-side C. Browser-side D. In-side

4. A PHP script can start and with _____?

a) <php> b) <? php ?>c) <? ?> d) <?php ?>

5. Which of the looping statements is/are supported by PHP?

i) for loop ii) while loop iii) do-while loop iv) foreach loop

a) (i) and (ii) b) (i), (ii) and (iii) c) All of the mentioned d) None of the mentioned

6. Which of the following function returns the number of characters in a string variable?

a) count($variable) b) len($variable) c) strcount($variable) d) strlen($variable)

7. When you need to obtain the ASCII value of a character which of the following function you apply in PHP?

A. chr( ); B. asc( ); C. ord( ); D. val( );

8. Which of the following function returns a text in title case from a variable?

A. ucwords($var) B. upper($var) C. toupper($var) D. ucword($var)

9. In PHP, cookies are set by using the

a) setcookie ( ) function b) set ( ) function c) cookie_set ( ) function d)None of them

10. When a session ia active, PHP provides a special constant called

a) SID b) CID c) DID d) None of them

11. The filesize() function returns the file size in ___.

a) bits b) bytes c) kilobytes d) gigabytes

12. Which one of the following function is capable of reading a specific number of characters form a file?

a) fgets() b) fget() c) fileget() d) filegets()

13. The "father" of MySQL is _____.

A. Michael Widenius B. Bill Joy C. Bill Gates D. Stephanie Wall

14. Which function checks for an already open connection:

a. mysql_connect b. mysql_pconnect c. mysqli_connect d. mysqli_pconnect

15. Which declaration doesn't use the same number of bytes and consumption of bytes depends on the input data?

a) Varchar b) Char c) Both Varchar and Char d) None of the mentioned

16. The maximum length of the char columns is

a) 255 bytes b) 65, 535 bytes c) 256 bytes d) None of the mentioned

17. Which one is the correct declaration for choosing the character set other than default?

a) Varchar(20) character set utf8; b) Varchar(20); c) Varchar(20) character set; d) None of these

18. The main MySQL program that does all the data handling is called

a) mysql b) mysqld c) mysql.exe d) httpd

19. MySQL Access security is controlled through

a) . MySQL login accounts, and priveliges set for each account

b). The ID that the user logged into the server through, and priveliges set up for that account.

c) . A table of valid IP addresses, and priveliges set up for each IP address

d). The normal login security is sufficient for MySQL, and it does not have any extra controls of its own.

20. The program called mysql is

a) There isn't a program just called mysql

b) A wrapper through which Java clients must connect to the databases

c) A client program that lets you send SQL commands to the database engine

d) The database engine

**Section B (Answer all the questions)** **5 X 5 = 25**

21. a) Elucidate applications of open source software. **(Or)**

b) Write aboutserver-side scripting.

22. a) Explain passing information in PHP.**(Or)**

b) Describe arrays in PHP.

23. a) Discuss about Number handling in PHP**. (Or)**

b) How to secure your PHP? Explain.

24. a) Describe learning PHP styles. **(Or)**

b) How to install MySQL?Explain.

25. a) Explain about database administration**. (Or)**

b) Write short notes on Web forms.

**Section – B (Answer any Three questions)** **3 X 10=30 Marks**

26. Narrate learning PHP syntax and variables with neccessary examples.
27. Summarize the various control structures in PHP.
28. Narrate working with cookies and sessions.
29. Explain in detail about handling exceptions in PHP.
30. Write a PHP program for library management system

## YEAR II – SEMESTER IV
## ADVANCED SOFTWARE ENGINEERING

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CA17** | External | : 75 |

**Aim:**

To enrich the students by learn about Software Development Phases, aoftware quality assurance, testing strategies, applications and advanced trends in software engineering.

**Objective:**

- Knowledge of basic SW engineering methods and practices, and their appropriate application; A general understanding of software process models such as the waterfall and evolutionary models
- An understanding of software testing approachs such as unit testing and integration testing.
- Acquiring an adequate knowledge in applications of software engineering

**OUTCOME:**

CO1 Understand the software engineering concepts and various process models

CO2 Learn about the quality management and software quality assurance

CO3 Analyze the various testing strategies and testing fundamentals

CO4 Acquire knowledge in testing of various applications such as object-oriented and web applications

CO5 Understand the estimation for software projects and advanced trends in software engineering

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Software and Software Engineering: Natural Software – The Unique nature of WebApps – Software Engineering – The Software Process – Software Engineering Practices – Software Myths. The Software Process: Process Models: A Generic Process Model– Process Assessment And Improvement – Prescriptive Process Models – Specialized Process Models – The Unified Process – Personal and Team Process Models. (Chapter 1 & 2).

**Unit II – (12 Hrs.):** Quality Management: Quality Concepts – What is Quality? – Software Quality – Software Quality Dilemma – Achieving Software Quality. Review Techniques: Cast Impact of Software Defects – Defect Amplification and Removal – Review Metrics and Uses – Reviews (A Formality Spectrum) – Informal Reviews – Formal Technical Reviews.
Software Quality Assurance: Background Issues – Elements of Software Quality Assurance – SQA Tasks – Goals and Metrics – Formal Approaches to SQA – Statistical Software Quality Assurance – Software Reliability – ISO 9000 Quality Standards – The SQA Plan. (Chapter 14, 15 & 16).

**Unit III – (12 Hrs.):** Software Testing Strategies: A Strategic Approach to Software Testing – Strategic Issues – Test Strategies for Conventional Software – Test Strategies For Object-Oriented Software – Test Strategies for WebApps -Validation Testing - System Testing – Art of Debugging.
Testing Conventional Applications: Software Testing Fundamentals – Internal and External Views of Testing – White-Box Testing – Basis Path Testing – Control Structure Testing – Black-Box Testing – Model-Based Testing. (Chapter 17 & 18)..

**Unit IV – (12 Hrs.):** Testing Object-Oriented Applications: Broadening the View of Testing – Testing OOA and OOD Models – Object-Oriented Testing Strategies – Object-Oriented Testing Methods – Testing Methods Applicable at the Class Level – Interclass Test-Case Design. Testing Web Applications: Testing Concepts for WebApps – The Testing Process – Content Testing – User Interface Testing – Component Level Testing – Navigation Testing – Configuration Testing – Security Testing – Performance Testing (Chapter 19 & 20).

**Unit V – (12 Hrs.):** Estimation for Software Projects - Observations on Estimation, The Project Planning Process-Software Scope and Feasibility- Resources -Software Project Estimation - Decomposition Techniques -Empirical Estimation Models - Estimation for Object-Oriented Projects -Specialized Estimation Techniques (Chapter 26)
Advanced Topics: Emerging Trends in Software Engineering: Technology Evolution – Observing Software Engineering Trends – Identifying Soft Trends – Technology Directions – Tools-Related Trends (Chapter 31).

**TEXT BOOKS:**

4. Roger Pressman, "Software Engineering A Practitioner's Approach" McGraw Hill India Pvt. Ltd. 7th Edition, 2014

**REFERENCE BOOKS:**

3. Rod Stephens, "Begininng Software Engineering", An Imprint of Wiley Publications 2015 Edition.
4. Frank Tsui, Orlondo Karam, "Essentials of Software Engineering" Second Edtion.

**WEB SOURCES**

1. https://www.geeksforgeeks.org/software-engineering/
2. https://www.tutorialspoint.com/software_engineering/

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**YEAR II – SEMESTER IV**

**ADVANCED SOFTWARE ENGINEERING**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section - B (3X5) | : 15 |
| Time | : Three Hours | Section - C (4X10) | : 40 |
| Paper Code | : 18P4CA17 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. Which executes the activities in a "circular "manner?
   a) Linear process flow b) Iterative process flow c) An evolutionary process flow
   d) Parallel process flow
2. Which pattern defines a problem associated with a framework activity for the process?
   a) Process pattern b) Stage pattern c) Force pattern d) Task pattern
3. The waterfall model, sometimes called life cycle model
   a) Classic model b)V-model c) Evolutionary model d) Spiral model
4. how many phases are in unified model
   a) 6 b) 3 c) 5 d) 7
5. The---------- argues that quality is something that you immediately recognize, but cannot explicitly define.
   a) Transcendental view b) User view c) Manufacturer's view d) Value-based view
6. ----------refers to the characteristics that designers specify for a product.
   a) Quality of structure b) Quality of service c) Quality of product d) Quality of design
7. The quality factor which is used for the purpose of operations and information can be located or initiated
   a) Efficiency b) Robustness c) Richness d) Intuitiveness
8. The quality factor which is used for to handle software bad input data or inappropriate user interaction.
   a) Efficiency b) Intuitiveness c) Richness d) Robustness
9. Which is used to remove the inherent problems associated with letting the builder test the thing that has been built?
   a) Inheritance test group b) Software testing c) Independent test group d) Product test group
10. Which type of testing focuses verification effort on the smallest unit of software design—the software component or module.
    a)integration testing b) Unit testing c) Validation testing d)Software testing
11. ----------provides final assurance that software meets all informational, functional, behavioural, and performance requirements.
    a) Code testing b) Unit testing c) Integration testing d) Validation testing

12. Which following type of testing is an incremental approach to construction of the software architecture?
    a) Top-down integration testing b) Bottom-up integration testing c) Depth-first integration testing d) Breadth-first integration testing
13. Expand OOA
    a) Other Operating Assets b) Object-Oriented Arithmetic c) Object-Oriented Analysis
    d) Oracle of Ages
14. ----------integrates the set of classes required to respond to one input or event for the system
    a) Use-based testing b)Thread-based testing c) Cluster testing d) Top-down testing
15. ----------begins the construction of the system by testing those classes that use very few of server classes.
    a) Thread-based testing b) Black-box testing c) White-box testing d) Use-based testing
16. Which is used to evaluate both a syntactic and semantic level?
    a) Function b) Content c) Structure d)Uusability
17. ----------is another important factor that can affect the accuracy and efficacy of Estimates
    a) Project size b) Degree of structural uncertainty c) Project complexity d) Project design
18. Which describes the functions and features that are to be delivered to end users
    a) Project complexity b) Time window c) Software scope d) Degree of structural uncertainty
19. Expand COTS
    a) Commercial off-the-shelf b) Cost Off-The-Shelf c) Consumer Off-The-Shelf
    d) Commercial Orbital Transportation Services
20. Which is used when a project encompasses the use of existing software that must be modified in some way as part of a project?
    a) Fuzzy logic sizing. b) Standard component sizing c) Function point sizing
    d)Change sizing.

**Section B (Answer all the questions)** **5 X 5 = 25**

22. a) Describe the software myths. **(OR)**
    b) Summarize unified process models.
22. a) Discuss about review metrics and its uses. **(OR)**
    b) Write a brief note on tasks of SQA.
23. a) Summarize the test strategies for object-oriented software. **(OR)**
    b) Explain about system testing.
24. a) Describe navigation testing. **(OR)**
    b) Write short notes on performance testing.
25. a) Discuss about various resources. **(OR)**
    b) Describe tools-related trends in software engineering .

**Section – B (Answer any Three questions)** **3 X 10=30 Marks**

26. Summarize the various prescriptive process models.
27. Narrate the software reliability.
28. Explain in detail about a strategic approach to Software Testing.
29. Discuss about User Interface Testing.
30. Summarize the various decomposition techniques.

## YEAR II – SEMESTER IV
## DATA MINING AND WAREHOUSING

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CA18** | External | : 75 |

**Aim:**

**Objective:**

- To introduce general techniques for analyzing computer algorithms
- To learn different algorithm design techniques
- To understand the limitations of Algorithm power

**OUTCOME:**

| | |
|---|---|
| CO1 | Demonstrate an understanding of the importance of data mining and the basic concepts of data mining |
| CO2 | Organize and Prepare the data needed for data mining using pre preprocessing techniques |
| CO3 | Understand the various data mining classification methods on large sets |
| CO4 | Implementing the appropriate clustering or Frequent Pattern mining on large data sets. |
| CO5 | Apply the data mining techniques in large databases and also learn about trends in data mining |

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Introduction** – Data mining – Data mining functionalities – kinds of patterns can be mined – classification – major issues. Data warehouse – A multidimensional data model – Data warehouse architecture – Data warehouse implementation – From data warehouse to data mining.

**Unit II – (12 Hrs.): Data pre-processing** – Data cleaning – Data Integration and Transformation – Data Reduction – Discredidation and concept hierarchy generation – Data mining primitives – Data mining Task.

**Unit III – (12 Hrs.): Association Rule Mining** – Mining single dimensional Boolean association rules from transactional databases –. Classification and prediction – Issues regarding classification and prediction – Bayesian classification- Classification by Back propagation – classification based on concepts from association rule mining.

**Unit IV – (12 Hrs.): Cluster Analysis** – A categorization of Major clustering methods - Partitioning methods- Hierarchical methods – Grid based methods -Model based clustering methods – Density – based methods.

**Unit V – (12 Hrs.): Applications and Trends in Data Mining** – Data mining system products and Research prototypes – Additional themes on Data mining – Social Impacts of Data Mining – Trends in Data mining-Mining Spatial Databases – Mining Time-series and sequence data – Mining the World wide web.

**TEXT BOOKS:**

1. Jaiwei Han, Michelien Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers an Imprint of Elsevier, 2001

**REFERENCE BOOKS:**

5. Arun K.Pujari, "Data Mining Techniques", Universities Press (India) Limited, 2001.
6. George M. Marakas, Modern Data warehousing, Mining and Visualization: core concepts, Printice Hall, First Edition, 2002.
7. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson, 2008.
8. Soman K. P, Shyam Diwakar, V. Ajay, Data Mining, Printice Hall, 2008.

**WEB SOURCES**

1. https://www.guru99.com/data-mining-tutorial.html
2. https://www.tutorialspoint.com/data_mining/
3. www.knowledge-management-tools.net/**data-warehousing**.html

**PEDOGOGY: CHALK and Talk, ICT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN**
**(AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER IV**

**DATA MINING AND WAREHOSUING**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section - B (5X5) | : 25 |
| Time | : Three Hours | Section - C (3X10) | : 30 |
| Paper Code | : 18P4CA18 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. Which of the following is not a data mining functionality?
a) Selection and interpretation b) Classification and regression
c) Characterization d) Clustering and analysis
2. Acronym of KDD
a) Knowledge database definition b) Knowledge data house
c) Knowledge discovery database d) Knowledge data definition
3. Data warehouse stores data that is extracted from ------&external sources.
a) Data sources b) Data marts c) Data ingestion d) None of the above
4. From the following which is a data mining task?
a) Clustering b) Classification c) Prediction d) All of the above
5. ---------- attempt to fill in missing values, smooth out noise while identifying outlier and correct inconsistencies in the real world data.
a) Data cleaning b) Data integration c) Data transformation d) Data reduction
6. Which one of the following identifies the relationships between objects?
a) Prediction b) Association c) Clustering c) Timeseries
7. Types of hierarchy?
a) 1 b) 3 c) 4 d) 5
8. Issues of data integration?
a) Tuple duplication b) Redundancy c) Detecting data value conflict d) All of the above
9. -------- is a graphical model for depicting probabilistic relationships among a set of variables.
a) Bayesian network b) Back propagation c) Neural network d) None of the above
10. Back propagation is --------- learning algorithm.
a) Decision trees b) Neural network c) Kernal estimation d) Quadratic classification
11. Which type of models can be predict categorical class labels and predicts continuous values functions?
a) Classification b) Prediction c) All of the above d) None of the above
12. Decision tree generation consists of ------ phases?
a) 1 b) 2 c) 5 d) 6

13. How did we call clustering in some applications?

a) Automatic application b) Data segmentation c) Both A and B d) None of the above

14. --------- is grid based multi resolution clustering technique.

a) OPTICS b) DENCLUE c) STING d) WAVECLUSTER

15. Clustering methods are classified in to ------ types?

a) 1 b) 5 c) 7 d) 8

16. From the following which one is the density based methods?

a) OPTICS b) STING c) CLIQUE d) BIRCH

17. Which techniques analyze experimental data for two or more populations described by a numeric response variable and one or more categorical variables?

a) Analysis of variance b) Mixed effect models c) Time series d) Leggards

18. Which of the following is not belongs to statistical data mining techniques?

a) Factor analysis b) Survival analysis c) Time and series d) Descriptive analysis

19. Inactive data mining visualization tool can be used to?

a) Make smart data mining decision b) Make smart data visualization

c) Process visualization d) Data mining decision tree

20. Which method is used to predict the value of response variable from one or more predicts the variables?

a) Regression b) Quality c) Recurrent d) Time series

**Section B (Answer all the questions)** **5 X 5 = 25**

21. a) Elucidate data mining tasks. **(Or)**

b) Write about Data warehouse implementation.

22. a) What do you mean by Data Integration?Explain.**(Or)**

b) Describe Data cleaning and mention its importance.

23. a) Discuss about Classification and Prediction**. (Or)**

b) Write short note on back propagation.

24. a) Describe hierarchical method. **(Or)**

b) What is outlier analysis? Explain.

25. a) Summarize the social impacts of Data Mining**. (Or)**

b) Explain about mining spatial databases.

**Section – B (Answer any Three questions)** **3 X 10=30 Marks**

26. Summarize the various classifications of Data Mining.

27. Elucidate data reduction techniques.

28. Narrate Bayesian classification with eaxmples.

29. Explain in detail about clustering in partition.

30. Summarize the applications and trends in data mining.

## YEAR II – SEMESTER IV
## CORE PRACTICAL – VII ADVANCED JAVA PROGRAMMING LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical VII | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P4CAP07** | External | : 60 |

| | |
|---|---|
| CO1 | Design & develop complex Graphical user interfaces using principal Java Swing classes |
| CO2 | Design and develop simple server side scripting programs using Servlets & JSP. |
| CO3 | Design and develop database connectivity and simple web applications |

| LIST OF EXPERIMENTS | Number of Sessions |
|---|---|
| **PROGRAMMING LIST:**<br>1. Create a simple application using swing<br>2. HTML to Servlet Applications<br>3. Create a simple servlet program to display cookie's information<br>4. Designing online applications with JSP<br>5. Creating JSP program using JavaBeans<br>6. Working with Enterprise JavaBeans<br>7. Accessing Database using Java Database Connectivity<br>8. Updating database using JDBC<br>9. Creating Web services with RMI<br>10. Building web applications | **60 Hrs** |

**REFERENCE BOOKS:**


1. . H. Schildt, 2002, Java 2 Complete Reference, 5th Edition, Tata McGraw Hill, New Delhi
2. Phil Hanna ,JSP 2.0: The Complete Reference, Tata McGraw Hilll Edition,2003 New Delhi.
3. J.McGovern, R.Adatia,Y.Fain,2003,J2EE 1.4 Bible, Wiley-Dreamtech India Pvt.Ltd, New Delhi.

## YEAR II – SEMESTER IV
## CORE PRACTICAL – IV ADVANCED JAVA PROGRAMMING LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical VII | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P4CAP07** | External | : 60 |

1. Write a program to communicate HTML to Servlet applications.

2. a) Write a JSP program for designing an online application. (OR)

   b) Write a program to implement RMI.

## YEAR II – SEMESTER IV
## CORE PRACTICAL – VII OPEN SOURCE TECHNOLOGIES LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical VIII | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P4CAP08** | External | : 60 |

| | |
|---|---|
| CO1 | Implement working with cookies and sessions in PHP |
| CO2 | Connecting PHP and MySQL in real time applications |
| CO3 | Counting the visited no. of times by using session tracking |

| LIST OF EXPERIMENTS | Number of Sessions |
|---|---|
| **PROGRAMMING LIST:** | |
| 1. Implementation of cookies.<br>2. Implementation of session tracking.<br>3. Students Feedbacks System.<br>4. Job Registrations.<br>5. Library Management System.<br>6. Banking Transaction System.<br>7. Simple Shopping Application.<br>8. Webpage Kit Counters using Session.<br>9. Airline Reservation System. | **60 Hrs** |

**REFERENCE BOOKS:**


1. Steve Suehring, Tim Converse, and Joyce Park, "PHP6 and MySQL Bible", Wiley Publishing, Inc., 2010.
2. Jay Greenspan and Brad Bulger, "MySQL/PHP Database Applications", M & T Books, 2001.
3. W. Jason Gilmore, "Beginning PHP and MySQL from Novice to Professional", Apress, 4th Edition, 2010.
4. Luke Welling, Laura Thomson, "PHP and MySQL® Web Development", Pearson Education, Inc., 4th Edition, 2009

## YEAR II – SEMESTER IV
## CORE PRACTICAL – VIII OPEN SOURCE TECHNOLOGIES LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical VIII | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P4CAP08** | External | : 60 |

1. Write a PHP program to implement cookies in PHP.

2. a) Write a PHP program to implement library management system. (OR)
   b) Write a PHP program to implement airline reservation system.

## YEAR II – SEMESTER IV
## CORE PRACTICAL – IX MULTIMEDIA LAB

| | | | |
|---|---|---|---|
| Paper | Core Practical IX | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P4CAP09** | External | : 60 |

CO1 To apply the various effects in flash and creating a simple animation

CO2 To design a layout for website

CO3 To understand the design principles for creating logos and publishing

| LIST OF EXPERIMENTS | Number of Sessions |
|---|---|
| **PROGRAMMING LIST:**<br><br>1. Create an animation using shape Tween effect in flash<br>2. Create an animation using motion Tween in flash<br>3. Creating a Layer mask effect in flash<br>4. Text effect using Photoshop.<br>5. Filter effects for image in Photoshop.<br>6. Wallpaper using pattern marker.<br>7. Digital drawing for a image<br>8. Edit a image using Clone stamp tool in Photoshop<br>9. Designing Webpage layout for a website.<br>10. Merging images in Photoshop<br>11. Image editing and colour options in Photoshop<br>12. Create a logo using Coreldraw with various effects. | **30 Hrs** |

**REFERENCE BOOKS:**

1. . Ramesh Bangia, "Learning Desktop Publishing", Khanna Book Pubishing, Second Edition, 2016
2. . Lisa Deyley, Brad Deyley, "Photoshop CS5 Bible",
3. . CoralDRAW X6 in Simple Steps – Kogent Solutions Inc. DreamTech Press

## YEAR II – SEMESTER IV
## CORE PRACTICAL – IX MULTIMEDIA LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical IX | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P4CAP09** | External | : 60 |

1. Create an animation using motion Tween in flash.

2. a) Edit a image using Clone stamp tool in Photoshop. (OR)
   b) Designing Webpage layout for a website.

## YEAR III – SEMESTER V
## ADVANCED NETWORKS

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CA19** | External | : 75 |

**Aim:**

The aim of the course is that the students have to learn the advanced concepts of computer networks.

**Objective:**

The objective of this course is to introduce students to a set of advanced topics in networking and lead them to the understanding of the networking research with a target of accomplishing a research paper of their own.

CO1 Able to Understand the concepts of network and data link layer

CO2 Able to understand the network layer and unicast routing

CO3 Able to understand Transport and Application Layer

CO4 Able to understand the High Speed Networks and Congestion Control.

CO5 Able to understand TCP and ATM Congestion Control

.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | M | M |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | M | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Introduction: Networks:** Standards and Administration – Protocol Layering – OSI model –TCP/IP protocol suite. Transmission Media – Guided Media – Unguided Media. **Data Link Layer:** Introduction – Link Layer Addressing–Error Detection and Correction – Introduction – Types of Errors – Redundancy – Detection Vs Correction – Coding. DLC services – Framing – Flow Control and Error control – Connectionless and Connection Oriented.

**Unit II – (12 Hrs.): Network Layer:** Network Layer Services – Packet Switching – Network Layer Performance– Internet Protocol (IP) – Datagram Format – Fragmentation – Options – Security of IPv4 Datagrams– Unicast Routing : Introduction – Routing Algorithms.

**Unit III – (12 Hrs.): Transport and Application Layer**: Introduction to Transport Layer - Transport-Layer Protocols - Introduction to Application Layer - Standard Client-Server Protocols

**Unit IV – (12 Hrs.): High Speed Networks and Congestion Control:** Frame Relay Networks – Asynchronous transfer mode – ATM Protocol Architecture, ATM Logical Connections, ATM Cells – ATM Service Categories – AAL – High Speed LAN's: Fast Ethernet, Gigabit Ethernet, Fiber Channel – Wireless LANs – Queuing Analysis- Queuing Models – Single Server Queues.

**Unit V – (12 Hrs.): TCP and ATM Congestion Control:** TCP Flow control – TCP Congestion Control – Retransmission Timer Management – Window management – Performance of TCP over ATM. Traffic and Congestion control in ATM – Requirements – Attributes – Traffic Management Frame work – Traffic Control – ABR traffic Management.

**TEXT BOOKS:**

1. Behrouz A. Forouzan, "Data Communication and Networking", 5th Edition, Tata McGraw Hill, 2013.
2. Stallings, William., "High Speed Networks and Internets: Performance and QoS", Second Edition, Pearson Education, 2002

**REFERENCE BOOKS:**

1. Andrew S. Tanenbaum and David J. Wetherall, "*Computer Networks",* 5th Edition, Pearson Education, 2011
2. Larry L. Peterson and Peter S. Davie, "Computer Networks", 5th Edition, Elsevier, 2012.
3. Tanenbaum Andrew S., "Computer Networks", 5th Edition, Prentice Hall of India, New Delhi, 2013.

**WEB SOURCES**

1. http://developer.android.com/develop/index.html
2. https://docs.docker.com
3. www.microchip.com
4. www.sanfoundry.com
5. www.oxfordreference.com
6. www.nist.gov

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**ADVANCED NETWORKS**

| | | | |
|---|---|---|---|
| Paper | : Core | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CA19** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**
**20 X 1 = 20**

1. Transport layer aggregates data from different applications into a single stream before passing it to:
A. network layer B. data link layer C. application layer D. physical layer

2. Which one of the following is a transport layer protocol used in internet?
A. TCP B. UDP C. both (a) and (b) D. none of the mentioned

3. User datagram protocol is called connectionless because:
A. all UDP packets are treated independently by transport layer
B. it sends data as a stream of related packets
C. both (a) and (b)
D. none of the mentioned

4. Transmission control protocol is:
A. connection oriented protocol
B. uses a three way handshake to establish a connection
C. receives data from application as a single stream
D. all of the mentioned

5. An endpoint of an inter-process communication flow across a computer network is called:
A. socket B. pipe C. port D. none of the mentioned

6. The data link layer takes the packets from _____ and encapsulates them into frames for transmission.
A. network layer B. physical layer C. transport layer D. application layer

7. Which one of the following task is not done by data link layer?
A. framing B. error control C. flow control D. channel coding

8. Which sub layer of the data link layer performs data link functions that depend upon the type of medium?
A. logical link control sub layer B. media access control sublayer
C. network interface control sub layer D. none of the mentioned

9. Header of a frame generally contains:
A. synchronization bytes B. addresses C. frame identifier D. all of the mentioned

10. Automatic repeat request error management mechanism is provided by:
A. logical link control sub layer B. media access control sublayer

C. network interface control sub layer D. none of the mentioned

11. The ____ translates internet domain and host names to IP address.
A. domain name system B. routing information protocol
C. network time protocol D. internets relay chat

12. Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host?
A. HTTP B. FTP C. telnet D. none of the mentioned

13. Application layer protocol defines:
A. types of messages exchanged
B. message format, syntax and semantics
C. rules for when and how processes send and respond to messages
D. all of the mentioned
14. Which one of the following protocol delivers/stores mail to receiver server?
A. simple mail transfer protocol B. post office protocol
C. internet mail access protocol D. hypertext transfer protocol

15. The ASCII encoding of binary data is called:
A. base 64 encoding B. base 32 encoding C. base 16 encoding D. base 8 encoding

16. The sharing of a medium and its link by two or more devices is called _____
A. Fully duplexing B. Multiplexing C. Both a and b D. None of the mentioned

17. Multiplexing is used in _____
A. Packet switching B. Circuit switching C. Data switching D. None of the mentioned

18. Which multiplexing technique transmits digital signals?
A. FDM B. TDM C. WDM D. None of the mentioned

19. If there are n signal sources of same data rate than TDM link has _____ slots
A. n B. n/2 C. n*2 D. 2^n

20. If link transmits 4000frames per second, and each slot has 8 bits, the transmission rate of circuit this TDM is
A. 32kbps B. 500bps C. 500kbps D. None of the mentioned

**Section B ( Either or) 5 X 5 = 25**

21. (a) Write short note on network standards (or)
(b) List the types of transmission media. Explain unguided media.
22. (a) Briefly explain about Internet Protocol(or)
(b) Explain Fragmentation
23. (a) Write short note on Transport Layer Protocols (or)
(b) Explain Standard Client-Server Protocols.
24. (a) Explain ATM Protocol Architecture (or)
(b) Explain Queuing Models
25. (a) Explain the TCP Flow control (or)
(b) Explain Traffic Control.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. List and explain the OSI Layers
27. Explain Network Layer Services
28. Explain briefly about Application Layer
29. Discuss about Frame Relay Networks
30. Explain in detail about Window management.

## .YEAR III – SEMESTER V
## COMPILER DESIGN

| | | | |
|---|---|---|---|
| Paper | : Core | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CA20** | External | : 75 |

**Aim:**

To introduce the major concept areas of language translation and compiler design and to develop an awareness of the function and complexity of modern compilers.

**Objective:**

- To study about various phases of compiler
- To understand the various parsing techniques and intermediate code generations
- To learn about code optimization techniques and code generation

**OUTCOME:**

| | |
|---|---|
| CO1 | Learn about the structure of the compiler |
| CO2 | Understand the concept of syntactic analysis |
| CO3 | Study about generating the intermediate code |
| CO4 | Acquire knowledge in the concepts of code generation run time environments |
| CO5 | Implement the code genetaror |

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Introduction:** The structure of a Compiler- Applications of Compiler Technology- Compiler construction tools. Lexical Analysis: Role of Lexical Analyzer – Input Buffering – Specification of Tokens-Recognition of Tokens-Finite Automata- From Regular Expression to Finite Automata..

**Unit II – (12 Hrs.): Syntax Analysis-** Role of the parser –Writing Grammars –Context-Free Grammars – Top Down parsing – Recursive Descent Parsing – Predictive Parsing – Bottom-up parsing – Shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser –

Canonical LR Parser – LALR Parser.

**Unit III – (12 Hrs.): Intermediate Code Generation**: Three address Code-Types and declarations-Translation of Expressions-Type Checking-Control Flow-Back patching-Switch-Statements-Procedure Calls.

**Unit IV – (12 Hrs.): Code Optimization and Run Time Environments-** Introduction– Principal Sources of Optimization – Optimization of basic Blocks: DAG representation of Basic Blocks - Introduction to Data Flow Analysis – Runtime Environments: Storage Organization – Storage Allocation strategies – Access to non-local names.

**Unit V – (12 Hrs.): Code Generation-** Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next-use Information – A simple Code generator – Peephole Optimization-Registration Allocation and Assignment-Dynamic Programming Code Generation.

**TEXT BOOKS:**

5. Alfred V. Aho, Jeffrey D Ullman, “Compilers: Principles, Techniques and Tools”, Pearson Education Asia, 2008

**REFERENCE BOOKS:**

1. Jean Paul Tremblay, Paul G Serenson, "The Theory and Practice of Compiler Writing", BS Publications, 2005.
2. Dhamdhere, D. M., "Compiler Construction Principles and Practice", 2nd edition, Macmillan India Ltd., New Delhi, 2008
3. Kenneth C. Louden, “Compiler Construction: Principles and Practice”, Thompson Learning, 2003

**WEB SOURCES**

1. https://www.tutorialspoint.com/compiler_design/
2. https://www.geeksforgeeks.org/compiler-design-tutorials/
3. https://www.javatpoint.com/compiler-tutorial
4. https://www.guru99.com/compiler-design-tutorial.html

**PEDOGOGY: CHALK and Talk, ICT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN**
**(AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**

**COMPILER DESIGN**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section - B (3X5) | : 15 |
| Time | : Three Hours | Section - C (4X10) | : 40 |
| Paper Code | : 18P5CA20 | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. How many parts of compiler are there?
a) 1 b)2 c) 4 d) 8
2. The output of a lexical analyser is
a) Intermediate code b) machine code c) a stream of tokens d) none of these
3. The another name for the lexical analyzer is
a) scanner b) LEX c) both a) and b) d) none of these
4. Which one of the following is uded to recognize tokens?
a) Finite automata b) parser c) context free grammar d) None of these
5. A grammar that produces more than one parse tree is called
a) Unambiguous grammar b) ambiguous grammar c) context sensitive grammar d) None
6. A bottom up parser generates
a) Right most derivation b) Rightmost derivation in reverse
c) Leftmost derivation d) Leftmost derivation in reverse
7. A grammar that produces more than one parse tree for some sentence is called
a) Ambiguous b) Unambiguous c) Regular d) None of these
8. Shift reduce parsers are
a) Top down Parser b) Bottom Up parser c) May be top down or bottom up
d) None of these
9. Three address code involves
a) exactly three address b) at the most 3 address c) no unary operators d) None of these
10. When is the type checking usually done
a) during syntax directed translation b) during lexical analysis c) during code optimization
d) during sysntax analysis
11. An intermediate code form is
a) postfix notation b) syntax trees c) three address code d) all of the above
12. Which of the following is not an intermediate code form
a) postfix notation b) syntax trees c) three address code d) Quadruples
13. Which of the following is a code optimization technique
a) eliminating common sub expressions b) reduction in strength c) dead code elimination d) All
14. The linker is

a) is similar to interpreter b) uses source code as its output c) its required to create aload module d) None of these

15. Local and loop optimization in turn provide mechanism for

a) data flow analysis b) constant folding c) peephole optimization d) none

16. Which of the following is not a principal sources of optimization

a) constant folding b) eliminating common sub expressions c) reduction in strength d)back patching

17. An absolute loading scheme which loader function is accomplished by the assembler.

a) re-allocation b) allocation c) linking d) loading

18. Pee phole optimization

a) Loop Optimization b) Local Optimization c) Constant folding d) Data Flow analysis

19. The optimization which avoids test at every iteration is

a) Loop unrolling b) Loop jamming c) Constant folding d) None of these

20. The graph that shows basic blocks and their successor relationship is called

a) DAG b) Flow Graph c) Control Graph d) Hamiltonian Graph

**Section B (Answer all the questions)** **5 X 5 = 25**

21. Write short notes on input buffering. (or)

(b) Explain about recogninzing tokens.

22. (a) How to write a Grammar? Explain.(or)

(b) Describe canonical LR parsers.

23. (a) Elucidate declarations with an example.(or)

(b) Write about backpathing in intermediate code generation.

24. (a)Explain DAG representation of basic blocks. (or)

(b) Wtrite a brief note on stirage organization.

25. (a) Describe the target machine.(or)

(b) Discuss aboutregister allocation and assignment.

**Section – C (Answer any Three questions)** **3 X 10=30 Marks**

26. Summarize the various phases of compiler with neat diagram.

27. Narrate the top down parsing with an example

28. Elucidate the translation of expressions.

29. Narrate theprincipal sources of optimizations.

30. Discuss about a simple code generator with an algorithm.

## YEAR III – SEMESTER V
## BIG DATA ANALYSIS

| | | | |
|---|---|---|---|
| Paper | : **Core** | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CA21** | External | : 75 |

**Aim:**

To provide practical foundation level training that enables immediate and effective participation in big data

**Objective:**

To provide grounding in basic and advanced methods to big data technology and tools, including MapReduce and Hadoop

CO1 Able to understand the introduction of Big data

CO2 Able to understand the introduction of Hadoop

CO3 Able to understand the concepts of Hadoop architecture

CO4 Able to understand Hadoop Ecosystem and YARN

CO5 Able to understand HIVE and HIVEQL

.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | M | M |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | M | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): INTRODUCTION TO BIG DATA** Introduction – distributed file system – Big Data and its importance, Four Vs, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

**Unit II – (12 Hrs.): INTRODUCTION HADOP** Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

**Unit III – (12 Hrs.): HADOOPP ARCHITECTURE:** Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job,

Task trackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering –Monitoring & Maintenance

**Unit IV – (12 Hrs.): HADOOP ECOSYSTEM AND YARN:** Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features- NameNode High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

**Unit V – (12 Hrs.): HIVE AND HIVEQL, HB :** Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries, HBase concepts- Advanced Usage, Schema Design, Advance Indexing - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

**TEXT BOOKS:**

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.
2. Chris Eaton, Dirk deroos et al. , "Understanding Big data ", McGraw Hill, 2012
3. Tom White, "HADOOP: The definitive Guide" , O Reilly 2012

**REFERENCE BOOKS:**

1. Vignesh Prajapati, "Big Data Analytics with R and Haoop", Packet Publishing 2013
2. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
3. Jy Liebowitz, "Big Data and Business analytics",CRC press, 2013

**WEB SOURCES**

7. http://www.bigdatauniversity.com

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**BIG DATA ANALYSIS**

| | | | |
|---|---|---|---|
| Paper | : Core | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CA21** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20 X 1 = 20**

1. All of the following accurately describe Hadoop, EXCEPT-
   a) Open source
   b) Real-time
   c) Java-based
   d) Distributed computing
   e) approach
2. Which tool could be used to move data from RDBMS data to HDFS?
   a) Flume
   b) Sqoop
   c) Both the above
   d) Hive
3. Which of these provides a Stream processing system used in Hadoop ecosystem?
   a) Hive
   b) Solr
   c) Tez
   d) Spark
4. During Safe mode Hadoop cluster is in-
   a) Read-only
   b) Write-only
   c) Read-Write
   d) None of the above
5. Which one of the following statements is false about Distributed Cache?
   a) It is used to cache files needed by applications
   b) Disk I/O is avoided because data in the cache is stored in memory
   c) Distributed Cache tracks modification timestamps of the cache files
   d) None of the above
6. Which among the following are the features of Hadoop
   a) open source
   b) fault tolerant
   c) high availability
   d) ALL of the above
7. The need for data replication can arise in various scenarios like-
   a) Replication Factor is changed

b) DataNode goes down
c) Data Blocks get corrupted
d) All of the mentioned

8. For the frequently accessed HDFS files the blocks are cached in-
a) the memory of the datanode
b) in the memory of the namenode
c) Both the above
d) None of the above

9. Clients connect to _____ for I/O
a) NameNode
b) DataNode
c) Secondary NameNode
d) None of the above

10. The HDFS command to create the copy of a file from a local system is which of the following?
a) copyFromLocal
b) CopyFromLocal
c) CopyLocal
d) Copyfromlocal

11. Is it mandatory to set input and output type/format in MapReduce?
a) YES
b) NO

12. Which of the following permits to use multiple Mapper classes within a single Map Task?
a) Identity Mapper
b) Chain Mapper
c) Both of the above
d) None of the above

13. Which of the following command is used to set the number of reducers for the job?
a) Job.confNumreduceTasks(int)
b) Job.setNumreduceTasks(int)
c) Job.setNumreduceTasks()
d) Job.confNumreduceTasks()

14. Which among following is true about KeyValueTextInputFormat-?
a) Key- byte offset. Value- It is the contents of the line
b) Key- Everything up to tab character. Value- Remaining part of the line after tab character.
c) Key and value- Both are user-defined
d) None of the above

15. Which of the following is not a complex data type in Hive?
a) Matrix
b) Array
c) Map
d) STRUCT

16. The drawback of managed tables in hive is-
a) They are always stored under default directory
b) They cannot grow bigger than a fixed size of 100GB
c) They can never be dropped

d) They cannot be shared with other applications

17. What is the default size of distributed cache?
    a) 10 GB
    b) 12 GB
    c) 8 GB
    d) 16 GB
18. In which mode each daemon runs on a single node as a single java process?
    a) Local (Standalone) Mode
    b) Pseudo-Distributed Mode
    c) Fully Distributed mode
    d) ALL of the above
19. HDFS provides a command line interface called _____ used to interact with HDFS
    a) HDFS Shell
    b) FS Shell
    c) DFS Shell
    d) None of the mentioned
20. Which of the following is the feature of PIG?
    a) Rich Set of Operators
    b) Extensibility
    c) Optimization opportunities
    d) All of the above

**Section B ( Either or) 5 X 5 = 25**

21. (a) Write short note on drivers for big data (or)
    (b) Explain the applications of big data.
22. (a) Briefly explain about hadoop eco system (or)
    (b) Explain data serialization
23. (a) Write short note on hadoop architecture (or)
    (b) Explain HDFS administering.
24. (a) Explain hadoop eco system components(or)
    (b) Explain MRv2
25. (a) Explain the HiveQL (or)
    (b) Explain Schema Design.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. Matrix-Vector Multiplication by Map Reduce
27. Explain Understanding inputs and outputs of MapReduce
28. Explain briefly about Anatomy of File Write and Read
29. Discuss about MRv1 in YARN
30. Explain in detail about Sorting and Aggregating.

## YEAR III – SEMESTER V
## CORE PRACTICAL – CASE TOOLS LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical 10 | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P5CAP10** | External | : 60 |

CO1 To have practical understanding of software development using case tools

CO2 Design and develop the UML diagram using Agro UML

CO3 Design and develop the UML diagram for the real time applications

| LIST OF EXPERIMENTS | Number of Sessions |
|---|---|
| **PROGRAMMING LIST:**<br><br>Diagrams using UML for a system whose description is given below.<br>UML diagrams to be developed :<br>1. Use Case Diagram.<br>2. Class Diagram.<br>3. Sequence Diagram.<br>4. Collaboration Diagram.<br>5. State Diagram<br>6. Activity Diagram.<br>7. Component Diagram<br>8. Deployment Diagram.<br>A possible set of applications may be the following:<br>a. Library System<br>b. Student Marks Analyzing System.<br>c. ATM system,<br>d. Inventory System. | **60 Hrs** |

**REFERENCE BOOKS:**


1. Wendy Boggs, Michael Boggs, MASTERING UML WITH RATIONAL ROSE, Wiley India Pvt. Limited, 2009
2. Paul Harmon and Mark Watson, Understanding UML The developers guide, Morgan Kaufmann Publishers Inc, 1998.
3. Kurt Bittner, Ian Spence, Use Case Modeling, Pearson Education, 2003.

## YEAR III – SEMESTER V
## CORE PRACTICAL – CASE TOOLS LAB

| | | | |
|---|---|---|---|
| Paper | : Core Practical 10 | Total Hours | : 75 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 2 | Internal | : 40 |
| Paper Code | : **18P5CAP10** | External | : 60 |

1. Draw the Use Case Diagram, Class Diagram, Sequence Diagram, Collaboration Diagram for Inventory System
2. a) Draw the Use Case Diagram, Class Diagram, Sequence Diagram, and Collaboration Diagram for Student Mark Analysis System. (OR)

   b) Draw the State Diagram, Activity Diagram, Component Diagram, Deployment Diagram for ATM System.

## YEAR II – SEMESTER III
### Professional Ethics

| | | | |
|---|---|---|---|
| Paper | : Elective-I | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CAE01** | External | : 75 |

**Aim:**

To understand the concepts of human values and ethics.

**Objective:**

Students gained about the values in human society, social integration, ethics and its values and Industrial Standards.

CO1 The students will understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field.

CO2 Able to realize the importance of values.

CO3 Able to understand ethics and its values.

CO4 Able to understand about industry and industrialization.

CO5 Able to give importance for human resources.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | M | S |
| **CO2** | M | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | M | S | S |
| **CO5** | M | S | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs):** Values in Human Society: Understanding of Values: Definition and Concepts-Culture and Value, Formation of Values: Socialization, Formation of Self and Integration of Personality-Different theories. Types of Values: Societal Values-Justice, Rules of Law, Democracy, Indian Constitution, Secularism, Psychological Values, Mental Health. Aesthetic Values - Perception and Appreciation of Beauty. Organizational Values: Relationships, Obligations, Rights. Spiritual Values: Their role in our day to day life, Meaning of Good Life, Value Spectrum of a Good Life, Spiritual Values.

**Unit II – (12 Hrs):** Value Crisis in Contemporary Society: Importance of Values-Value crisis at the individual level, Societal Level, Cultural Level, Social Disorganization, Value crisis management. Ethics and Ethical Values: Canons of Ethics-Virtue of Ethics, Standardisation,

codification, acceptance and application. Types of Ethics-Ethics of duty, Ethics of Responsibility, Ethics of Moral Judgment, Work ethics and Quality of life at work.

**Unit III – (12 Hrs):** Professional Ethics: Overview - Ethics in Engineering Profession, Code of Professional Ethics, Organizational Ethics. Violation of code Ethics: Causes and consequences. Whistle blowing-famous whistle blowers-famous whistle blowers.

**Unit IV – (12 Hrs):** Industry and Industrialization: Man and Machine Interaction, Problems of man machine interaction, Impact of assembly line and automation, Industrial relations, Ethics and industrial Law: Institutionalizing ethics. Science, Technology and Engineering: Origin- Nature of scientific knowledge, Social Function of Science, Practical Application of Science. Engineering as a profession: Engineering and Ethics. Renewable and non renewable resources: Energy crisis, Indian context, Sustainable development.

**Unit V – (12 Hrs):** Environment & Eco friendly technology: Environment-Components of Environment. Human development and environment: Depletion of natural resources-Environmental degradation, Fertilizers and plant protection chemicals, Impact of industrialization, Impact of urbanization, Impact of Energy Generation. Pollution and Pollution Control: Water Pollution, Water Quality Parameters, Air Pollution. Eco-Friendly technologies: Implementation, Impact of assessment, Strategies to meet the challenges, Eco-Friendly Technology (EFT), Green Technology in industry. Ethics & Management of Human Resources: Ecological Ethics-Depletion of Non renewable natural resources.

**TEXT BOOKS:**

1. Values of Ethics in Business and Profession, Samita Manna, Suparna Chakraborti, PHI Learning Private Limited, 2010.
2. Ethics and the Conduct of Business, John R. Boatright, 5th Edition, Pearson Education 2007.

**REFERENCE BOOKS:**

1. Business Ethics-An Indian Perspective, P.S. bajaj, Raj Agrawal, Biztantra, 2004.

**WEB SOURCES**

1. https://www.physio-pedia.com
2. *www.eng.ufl.edu*

**PEDOGOGY: CHALK and Talk, Seminar, Models, ICT**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**Professional Ethics**

| | | | |
|---|---|---|---|
| Paper | : Elective I | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P3CAE01** | Maximum Marks | : 75 |

**Section A (Answer all the questions) 20 X 1 = 20**

1. Values are the part of
   a) Cultural system b) Social System c) School System d) Bio system
2. Values, Norms, Sanctions and Roles are system parts of.
   **a)** Parsons b) Sigmund Freud c) Herbert d) Fernandez
3. The most important part of value is ……..
   a) Culture b) Civilization c) education d) Society
4. Knowledge, beliefs and ideas can be transmitted through ……
   a) Culture b) behavior c) speak d) language
5. Cooley defined self with ……..
   a) Self glass b) Looking glass-self c) mirror look d) image
6. As per Sigmund freud parts of personality is
   a) 1 b) 2 c) 3 d) 4
7. The root cause of social problem is
   a) Value crisis b) value increase c) value decrese d) value equal
8. Breakdown of older institutions are called …….
   a) Disorganization b) disqualify c) discharge d) dismantled
9. Expand SEBI
   a) Securities and Exchange Board of India
   b) Sensor and Exchange Board of India
   c) Similar and Exclude of India
   d) Security and essential board of india
10. Professionals working in an organization have to follow certain value based systems called
    a) Professional ethics b) Personal traits c) Professional encode d) Personality ethics
11. General guidelines for professionals in known as
    a) Code of ethics b) code of effective c) confident and code d) code of end
12. Expand TWI
    b) Training within the industry b) Training within the individual c) trade within the industry
    d)training within the individuality
13. Meaning of 'scientia' in latin
    a) Knowledge b) wisdom c) science d) technology
14. Resources once used not generated by nature is known as
    a) Non renewable resources b) renewable resources c) resist resource d) non recurring
15. Phenomenon of the removal of forests ..

a) Deforestation b) demonetization c) green revolution d) reduce of trees

16. Agent that contaminates the environmental component
    a) Pollutant b) safer c) destroyer d) wastage
17. Pollutants can be categorized in to ….. categories
    a) 2 b) 3 c) 4 d) 5
18. Any physical and chemical change in water is called
    a) pollution b) water pollution c) water damage d) waste water
19. Ethical behavior is the key to …
    a) ecological ethics b) ecology c) eco system d) ethical reason
20. Expand EFT
    a) Eco Friendly technology b) eco friend technology c) eco final technology d) Ecology

**Section B ( Either or)**

**5 X 5 = 15**

21.(a) Explain about understanding of values. (Or)

(b) Explain societal values.

22.(a) Define importance of values. (Or)

(b) Explain types of ethics.

23.(a) Explain about human development and environment. (Or)

(b) Explain about Ethics in engineering profession.

24.(a) Explain about renewable and non renewable resources. (Or)

(b) Explain about Industrial law.

25. (a) Explain about components of environment. (Or)

(b) Explain about (EFT) eco friendly technology.

**Section – C (Answer any THREE questions)**

**3 X 10=30**

26. Explain Values in Human society.

27. Explain about importance of values.

28. Discuss ethics and ethical values.

29. Describe professional ethics.

30. Explain about pollution and pollution control.

## YEAR II – SEMESTER III
## E - COMMERCE

| | | | |
|---|---|---|---|
| Paper | : Elective I | Total Hours | : 60 |
| Hours/Week | : 5 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CAE02** | External | : 75 |

**Aim:**

To enable the students to gain knowledge in Electronic Commerce and provide a customer specific solution.

.

**Objective:**

To learn about current marketing trend using E-commerce techniques in Internet and Extranet and payment systems.

**OUTCOME:**

CO1 Students would be able to understand Electronic Commerce, Business Models Identifying Electronic Commerce Opportunities

CO2 Students would understand E-Business Technology and Web Server and E-Mail Technologies

CO3 Able to understand Trends in E-Business Law and Taxation

CO4 Able to understand Web Hosting and E-Business Software and Online Security Issues

CO5 Student understand about Online Payment Systems and Internet Technologies.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | M | M |
| **CO2** | S | M | S | S |
| **CO3** | S | S | M | S |
| **CO4** | M | S | S | M |
| **CO5** | S | S | M | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): The Second wave of Global E-Business:** Introduction- Electronic Commerce: The second wave-Business Models, Revenue Models and Business Processes- Advantages and Disadvantages of Electronic commerce- Identifying Electronic Commerce Opportunities- Internet Nature of Electronic Commerce

**Unit II – (12 Hrs.): E-Business Technology Basics:** Introduction- The Internet and The World Wide Web- Packet switched Networks- Internet Protocols- Markup Languages and the web- Intranets and Extranets- Internet Connection Options – Internet2 and the Semantic Web. **Web Server and E-Mail Technologies:** Introduction- Web Server Basics-Software for Web Servers-

Electronic Mail (E-mail).

**Unit III – (12 Hrs.): E-Business Law and Taxation:** Introduction- The Legal Environment of Electronic Commerce- Use and Protection of Intellectual Property in Online Business- Online Crime, Terrorism, and Welfare- Ethical issues- Taxation and Electronic Commerce.

**Unit IV – (12 Hrs.): Web Hosting and E-Business Software:** Introduction - Web Hosting Alternatives - Basic Functions of Electronic Commerce Software - Advance Functions of Electronic Commerce Software. **Online Security:** Introduction- Online Security Issues Overview - Security for Client Computers- communication Channel Security - Security for Server Computers- Organizations that Promote computer Security.

**Unit V – (12 Hrs.): Online Payment Systems:** Introduction- Online Payment Basics- Payment Cards- Electronic Cash- Electronic Wallets- Stored Value Cards- Internet Technologies and the Banking Industry- Criminal Activity and Payment Systems: Puishing and Identity Theft

**TEXT BOOKS:**

1. Gary P.Schneider "E-Commerce: Strategy, Technology and Implementation, 9th Edition, Cengage Learning India Private Limited 2012.
2. Kamalesh K.Bajaj, Debjani Neg, "E-Commerce the Cutting Edge of Business", TMH, 2000.

REFERENCE BOOKS:

1. S. Jaiswal, "Doing Business on the Internet E-Commerce", Galgotia, 2002.

**WEB SOURCES**

1. www.referenceforbusiness.com .
2. cyber.law.harvard.edu/olds/ecommerce/library
3. tps://www.humanrights.gov.au/working-paper-e-commerce-reference-...

**PEDOGOGY: CHALK and Talk , ICT, Seminar.**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN**
**(AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**E - COMMERCE**

| | | | |
|---|---|---|---|
| Paper | : Elective I | Section - A (20X1) | : 20 |
| Examination | : External | Section – B (3X5) | : 15 |
| Time | : Three Hours | Section – C (4X10) | : 40 |
| Paper Code | : **18P3CAE02** | Maximum Marks | : 75 |

**SECTION – A**

**Answer all questions**

1. Which of the following describes e-commerce
   A) Doing Business B) Doing Business Electronically C) Sales of Goods D) All the above
2. Which of the following is not one of the major tupes of e-commerce
   A) C2B B) B2C C)B2B D) C2C
3. Which segment do eBay , Amazon..com belong
   A) B2Bs B)B2Cs C) C2Bs D) C2Cs
4. The primary source of financing during the early stages of e-commerce was
   A) Bank loans B) Large retail firms C) Venture capital funds D) Intial capital funds
5. For carrying out B2C e-Commerce the following infrastructure is essential
   **A**) World Wide Web B) Corporate network C) EDI standards D) All the above
6. EDI over internet uses
   **A**) MIME to attach EDI forms to e-mail messages
   B) FTP to send business forms.
   C) HTTP to send business forms
   D) SGML to send business forms
7. A _____ is the set of planned activities designed to result in a profit ina marketplace.
   **A**) Business Model B) Profit model C) Business Plan D) Revenue Model
8. Which of the following is not a key element of a business model?
   A) Value propotion B) Competitive Advantage C) Market Strategy **D**)Universal Standards
9. Which product are people most likely to be more uncomfortable buying on the internet?
   A) Books B) Furniture C) Movies D) All the above.
10. The solution for all the business needs is
    A) EDI **B**) ERP C) SCM D) None of the above
11. Which term represent a count of the number of people who visit one site, click on ad, and are taken to the site of the advertiser?
    A) Affliate programs **B**) Click-through C) Spam D) All the above
12. All of the following are techniques B2C e-commerce companies use to attract customers, except
    A) Registering with search engines B) Viral marketing C) Online Ads **D)** Virtual marketing
13. In the e-commerce security environment, which of the following constitutes the inner-most layer?

A) people **B**) data C) technology solutions D)organizational policies & procedures

14. All of the following are metrics for e-mail campaigns except
A) open rate B) delivery rate C) bounce-back rate **D**) cart conversion rate

15. A person to person payment system
A) supports electronic payment for on-line and physical store purchases of goods or services after the purchase has takes place.
**B**) Sends money using the web to individuals who are not setup to accept credit card payments
C) refers to digital currency that can be used for micro-payments
D) provides secure services for credit card payments on the internet

16. What is the name of the card which can be used by the buyers during the time of purchase and in which the amount will be immediately debited from the buyers account?
A) E-Distributor **B**) Debit Card C) Credit Card D) Power Card

17. The two main types of Internet based B2B commerce are
A) Net marketplaces and private industrial networks
B) EDI and collaborative commerce
C) Net marketplaces and collaborative commerce
**D)** EDI and private industrial networks

18. All of the following are advantages of using an intranet Except
A) cross-platform capability
**B)** security restrictions so employees cannot access the company network from home
C) open standards
D) reduced hardware and software costs

19. In Electronic cash payment
A) a debit card payment system is used
**B**) a customer buys several electronic coins which are digitally signed by coin issuing bank
C) a credit card payment system is used
D) RSA cryptography is used in the transactions

20. Which of the following is not considered to be a drawback of Internet auctions?
**A)** market inefficiency B) trust risks C) fulfillment costs D) delayed consumption costs

**SECTION – B**

**(5 X 5 = 25 marks)**

**Answer all questions**

21. a) Describe second wave-Business Models. **(OR)**

c) Write about internet natue of Electronic Commerce

22. a) Explain about Packet switched Networks

b) Discuss Web Servers

23. a) Discuss about The Legal Environment of Electronic Commerce **(OR)**

b) Describe taxation and electronic commerce

24. a) Explain basic functions of electronic commerce softwares

b) Discuss communication Channel Security

25. a) Explain puishing and identity Theft **(OR)**

b) Describe Payment Cards and Electronic Cash

## SECTION – C

**Answer any three questions** **(3 X 10 = 30 marks)**

26. Explain Revenue Models and Business Processes.
27. Discuss in detail Use and Protection of Intellectual Property in Online Business.
28. Describe Security for Server Computers.
29. Discuss Internet Technologies and the Banking Industry.
30. Explain in detail about criminal activities and payment systems.

## YEAR II – SEMESTER III
### Mobile Computing

| | | | |
|---|---|---|---|
| Paper | : Elective I | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CAE03** | External | : 75 |

**Aim:**

To understand the concepts of Mobile computing technologies with network concepts.

**Objective:**

students gain the knowledge to develop the capabilities in the area of mobile applications and computing technologies with latest networking trends.

CO1 After completion of the course the student will be able to use the features of mobile computing.

CO2 Able to realize the revolution networking.

CO3 Able to understand building blocks of network.

CO4 Able to understand mobile application languages.

CO5 Able to utilize the languages and its usages in mobile environment.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | M | S | M | S |
| **CO3** | S | S | M | S |
| **CO4** | S | S | S | S |
| **CO5** | S | M | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Introduction to Mobile computing: Mobile communication – Mobile computing – Mobile computing architecture – Mobile devices. Mobile computing technology: GSM, SMS, GPRS, CDMA and 3G.

**Unit II – (12 Hrs) Wireless LAN:** Introduction – Wireless LAN advantages – IEEE 802.11 standards – Wireless LAN architecture – Mobility in wireless LAN – Deploying wireless LAN – Mobile Ad Hoh networks and sensor networks – Wireless LAN security – WIFI versus 3G.

**Unit III – (12 Hrs.): Mobile IP Network Layer:** IP and Mobile IP network layers – Packet delivery and Handover management – Location management – Registration – Tunneling and

Encapsulation – Route optimization – Dynamic Host Configuration Protocol.

**Unit IV – (12 Hrs.): Mobile Transport Layer:** Conventional TCP/IP Transport layer protocols – Indirect TCP – Snooping TCP Mobile TCP – Other methods of TCP – Layer transmission for mobile networks – TCP over 2.5G/3G Mobile networks.

**Unit V – (12 Hrs.):** Mobile application languages and Operating Systems: J2ME – Palm OS – Windows CE –Symbian OS – Linux for Mobile devices.

**TEXT BOOKS:**

1. Computer Networks: A Systems Approach, 4th edition, by Larry L. Peterson, Bruce S. Davie,Publisher Elsevier/Morgan Kaufmann.
2. MPLS: Next Steps, by Bruce S. Davie, Adrian Farrel, Publisher: Morgan Kaufmann.

**REFERENCE BOOKS:**

1. Metro Ethernet, by Sam Halabi, Publisher: Cisco Press
2. Emerging Optical Network Technologies, by Krishna M. Sivalingham, Suresh Subramaniam, Publisher: Springer
3. Computer Networks, by A. S. Tanenbaum, Publisher: Prentice Hall;
4. Emerging Optical Network Technologies, by Krishna M. Sivalingham, Suresh Subramaniam, Publisher: Springer
5. Mesh Based Survivable Networks, by Wayne Grover, Publisher: Prentice Hall.

**WEB SOURCES**

1. www.doc.ic.ac.uk
2. www.humanergology.com
3. www.ncbi.nlm.nih.gov
4. www.ijarcsse.com
5. https://www.interaction-design.org
6. www.oxfordreference.com

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**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER III**
**Mobile Computing**

| | | | |
|---|---|---|---|
| Paper | : Elective I | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P3CAE03** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20 X 1 = 20**

1) The modulation technique used for mobile communication systems during world war II was
a. Amplitude modulation b. Frequency modulation
c. ASK d. FSK
2) ——— introduced Frequency Modulation for mobile communication systems in 1935.
a. Edwin Armstrong b. Albert Einstein
c. Galileo Galilei d. David Bohm
3) The early FM push-to-talk telephone systems were used in
a. Simplex mode b. Half duplex mode
c. Full duplex mode d. None of the above
4) DECT stands for
a. Digital European Cellular Telex b. Digitized Emergency Cellular Telephone
c. Digital European Cordless Telephone d. Digital European Cellular Telephone
5) World's first cellular system was developed by
a. Nippon Telephone and Telegraph (NTT) b. Bellcore and Motorola
c. AT&T Bell Laboratories d. Qualcomm
6) Paging systems were based on
a. Simplex systems b. Half duplex systems
c. Full duplex systems d. None of the above
7) Paging systems could be used to
a. Send numeric messages b. Send alphanumeric messages
c. Voice message d. All of the above
8) Garage door opener is a
a. Transmitter b. Receiver
c. Transceiver d. None of the above
9) Carrier frequency of a TV remote control is in the range
a. of Infra red b. < 100 MHz
c. < 1 GHz d. < 2 GHz
10) Half duplex system for communication has
a. Communication in single direction b. Communication in single direction at a time
c. Communication in both directions at the same time
d. None of the above
11) MIN stands for
a. Mobile Identification Number b. Mobile Internet
c. Mobility In Network d. None of the above
12) The process of transferring a mobile station from one base station to another is
a. MSC b. Roamer
c. Hand off d. Forward channel
13) PCN is
a. Wireless concept of making calls b. For receiving calls
c. Irrespective of the location of the user d. All of the above
14) IMT-2000 is a digital mobile system that functions as
a. Pager b. Cordless
c. Low earth orbit satellites d. All of the above

15) The 2G cellular network uses
a. TDMA/FDD b. CDMA/FDD
c. Digital modulation formats d. All of the above
16) NADC is a 2G standard for
a. TDMA b. CDMA
c. Both a & b d. None of the above
17) 2G CDMA standard – cdma one supports up to
a. 8 users b. 64 users
c. 32 users d. 116 users
18) 2G standards support
a. Limited internet browsing b. Short Messaging Service
c. Both a & b d. None of the above
19) The 2G GSM technology uses a carrier separation of
a. 1.25 MHz b. 200 KHz
c. 30 KHz d. 300 KHz
20) 3G W-CDMA is also known as
a. UMTS b. DECT
c. DCS-1800 d. ETACS

**Section B ( Either or)**

**5 X 5 = 25**

21. (a) Briefly explain about mobile communication. (or)

    (b) Basic structure CSM.

22. (a) What are the advantages of wireless LAN. (or)

    (b) Explain mobility in wireless LAN.

23. (a) Explain packet delivery and handover management. (or)

    (b) Write about tunneling and encapsulation.

24. (a) Explain Layer transmission for mobile networks. (or)

    (b) Explaint about TCP/IP .

25. (a) Describe about J2ME. (or)

    (b) Write about Palm OS.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. What is mean mobile computing architecture
27. Explain Mobile Ad Hoh networks and sensor networks.
28. Describe the main features Dynamic Host Configuration Protocol.
29. Explain about TCP over 2.5G/3G Mobile networks.
30. Write in detail about Mobile application languages and Operating Systems.

## YEAR II – SEMESTER III
### Advanced Operating System

| | | | |
|---|---|---|---|
| Paper | : Elective I | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P3CAE04** | External | : 75 |

**Aim:**

To understand the concepts of various operating system and its usage.

**Objective:**

To provide the overview of computer system and the operating system, the concepts of process management, memory management, storage management, protection and security issues, and distributed systems. To gain knowledge on Distributed operating system.

CO1 After completion of the course the student will be able to use the system with knowledge of operating system.

CO2 Able to recognize the process management.

CO3 Able to understand building blocks operating system.

CO4 Able to understand security issues of operating system.

CO5 Able to utilize the languages in all the types of operating environment.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | M | M | S |
| **CO3** | S | S | S | S |
| **CO4** | S | S | S | S |
| **CO5** | S | S | M | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): An Overview of Operating System and Its Structures: Introduction** : Definition of OS- Operating System Structure-System Components-System Calls- Process-Concepts-Process Scheduling-Scheduling Concepts-Criteria-Scheduling Algorithms.

**Unit II – (12 Hrs) Process Synchronization and Dead Locks:** Process Synchronization – Background, Critical Section-Synchronization Hardware-Semaphores-Problems of Synchronization-Critical Regions-Monitors-Deadlocks-System model, Characterization-Methods of Handling Deadlocks-Deadlock Prevention-Avoidance-Detection-Deadlock Recovery.

**Unit III – (12 Hrs.): Memory Management :** Background , Swapping ,Contiguous-Non

Contiguous Storage Allocation-Paging - Segmentation – Segmentation with paging - Virtual Memory-Basic Concepts- Page Replacement Methods-Allocation of frames-Thrashing.

**Unit IV – (12 Hrs.): I/O And File Systems:** File Concepts-File System Structure-Access Methods-Directory Structure-Protection-Directory Implementation- Distributed systems – Goals, Software concepts – Network Operating systems- True distributed systems – Multiprocessor, Time sharing system,- Distributed File system design- system structure.

**Unit V – (12 Hrs.): Distributed Operating Systems** Issues in Distributed Operating System –Architecture. **Linux System**: Design Principles -Kernel Modules -Process Management Scheduling -Memory Management -Input-Output Management -File System – Inter process Communication. iOS and Android: Architecture and SDK Framework -Media Layer -Services Layer.

**TEXT BOOKS:**

1. Silberschatz and Galvin, Operating System Concepts, 6th Edition, John Wiley & Sons, (Asia) Pvt Ltd , 2005.
2. Andrew and Tanenbaum , Distributed Operating System, 4th Edition, Pearsons Ltd, 2002.
3. Daniel P Bovet and Marco Cesati, "Understanding the Linux kernel", 3rd edition, O'Reilly, 2005.

**REFERENCE BOOKS:**

1. Milankovic M., Operating System Concepts and Design, 2nd Edition, McGraw Hill, 1992
2. P.C.Bhatt, An Introduction to Operating Systems-Concepts and Practice, Prentice Hall Of India, 2004
3. H.M.Deitel, An Introduction to Operating Systems, 2nd Edition, Pearson Education, 2002
4. Mukesh Singhal and Niranjan G. Shivaratri, "Advanced Concepts in Operating Systems – Distributed, Database, and Multiprocessor Operating Systems", Tata McGraw-Hill, 2001
5. Rajib Mall, "Real-Time Systems: Theory and Practice", Pearson Education India, 2006.
6. Neil Smyth, "iPhone iOS 4 Development Essentials –Xcode", Fourth Edition, Payload media, 2011.

**WEB SOURCES**

1. https://technet.microsoft.com
2. https://en.wikipedia.org
3. www.tutorialspoint.com
4. https://books.google.co.in
5. www.webopedia.com

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**YEAR II – SEMESTER III**
**Advanced Operating System**

| | | | |
|---|---|---|---|
| Paper | : Elective I | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P3CAE04** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20 X 1 = 20**

1.When a thread needs to wait for an event it will
1. Block 2. Execute
1. Terminate 4.Update

2.Memory tables are used to keep track of
1. Real and Virtual Memory 2. I/O Devices
3. Resources 4.I/O Modules+J77

3.Logical extension of multiprogramming operating system is
1. Time sharing 2. multi-tasking
3.single programming 4.both a and b

4.With deadlock detection, requested resources are granted to
1. Resources 2.Programs
3.Processes 4.Users

5.In a pure Kernel Level Thread facility all of work of thread management is done by the
1. Application 2.Program
3.Kernel 4.Threads

6.UNIX was initially developed at
1. Bell Labs 2.NASA Labs
3.Microsoft Labs 4.Kaspersky Labs

7. Multiprocessor system have advantage of
1. Increased Throughput 2. Expensive hardware
3.operating system 4.both a and b

8. Win32 application programming interfaces is for
1. Windows 2.UNIX
3.Linux 4.Solaris

9. User level context contains basic elements of
1. User's Program 2.System
3.Application Program 4.None

10. Scheduling of threads are done by
1. Input 2. output
3.operating system 4.memory

11. In Computer systems authentication is fundamental building block in
1. Security Context 2.Control Context
3.Execution Context 4.Performance Context

12. Run time support system is system that is provided by
1. System call routines are mostly written in 2.system programs
3.system calls interface 4.processes

13. System structure of Linux is
1. Microsoft Windows 2.UNIX

3.Window Vista 4.Monolithic Kernel

14. For procedure, system prevent overlap of buffer
    1. Procedure 2.Programs
    3.Operations 4.Information
15. Getting device attributes of computer system is a
    1. process control 2.file management
    3.device management 4.information maintenance
16. Environment for execution of programs is provided by
    1. inputs 2.outputs
    3. operating system 4.memory
17. Multiprogramming of computer system increases
    1. memory 2.storage
    3.CPU utilization 4. cost of computation
18. Intruders are most common security threat which is known to be
    1. Account Access 2. Data Access
    3.Hacker or Cracker 4.Computer Access
19. Another type of multiple-CPU system is the
    1. mini Computer 2.Super Computer
    3.Clustered System 4.Systematic system
20. Interfaces of operating system provides
    1. Optimization 2.designing
    3.Reusability 4.portability

**Section B ( Either or)**

**5 X 5 = 25**

21. (a) Briefly explain about Structure of Operating System. (or)

    (b) Describe about System Calls.

22. (a) Discuss about Semaphores. (or)

    (b) Explain about Methods of Handling Deadlocks.

23. (a) Explain about segmentation. (or)

    (b) Write about Virtual memory.

24. (a) Explain File System Structure. (or)

    (b) Explaint about Distributed File system.

25. (a) Describe Inter process Communication. (or)

    (b) Write about iOS and Android.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. What is meant by Process Scheduling.
27. Explain the concepts of process synchoronization.
28. Describe Memory Management.
29. Explain about I/O And File Systems.
30. Write in detail Linux systems.

## YEAR II – SEMESTER IV
### Distributed Computing

| | | | |
|---|---|---|---|
| Paper | : Elective – II | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CAE05** | External | : 75 |

**Aim:**

To understand and brings the view of distributed computing and its applications.

**Objective:**

The students gain the knowledge about the Characterization of Distributed Systems, System models, Inter process Communication, Distributed objects and Remote Invocation, Distributed File Systems, Time and Global states, Coordination and Agreement and Distributed Transactions.

CO1 After completion of the course the student will get the knowledge about Characterization of Distributed Systems, System models, Inter process

CO2 Able to realize the distributed objects and remote invocation.

CO3 Able to understand Distributed File Systems, Time and Global states

CO4 Able to understand Coordination and Agreement.

CO5 Able to understand Distributed Transactions.

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**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | S | S |
| **CO3** | S | S | S | S |
| **CO4** | M | M | M | M |
| **CO5** | M | M | M | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Characterization of Distributed Systems:** Introduction- Examples of Distributed Systems- Resource sharing and the challenges. **System models:** Architectural models-Fundamental Models. **Inter process Communication:** The API for the Internet Protocols, External data representation and marshalling, multicast communication.

**Unit II – (12 Hrs.): Remote Invocation:** Request reply protocols, Remote Procedure call, Remote method invocation. **Operating System Support:** The operating system layer-Protection-Processes and threads-Communication and invocation-Operating system architecture.

**Unit III – (12 Hrs.): Distributed File Systems:** File service architecture-Sun network file system- The Andrew file system. **Name services:** Name services and DNS, Directory services. **Time and Global states:** clocks, events and process states, synchronizing physical clocks-Logical time and logical clocks-Global states.

**Unit IV – (12 Hrs.): Coordination and Agreement:** Distributed mutual exclusion- Election. **Transaction and concurrency control:** Transaction, Nested transaction, Locks, Optimistic concurrency control, Timestamp ordering.

**Unit V – (12 Hrs.): Distributed Transactions:** Flat and nested distributed transaction, Atomic commits protocols, concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery.

**TEXT BOOKS:**

4. George Coulouris, Jean Dollimare,Tim Kindberg, Distributed Systems Concepts and Design, AWL,4th Edition, 2005
5. Cloud computing, ( A Practical Approach)- Anthony T.Velte, Toby J.Velte, Tata McGraw-Hill Edition 2010.

**REFERENCE BOOKS:**

1. Pradeep K. Sinha, Distributed Operating Systems: Concepts and Design Wiley-IEEE Press.
2. Andrew S. Tanenbaum, Maartenvan Steen, Distributed Systems- Principles and Paradigms, Pearson Education, 2002.

**WEB SOURCES**

1. https://en.wikipedia.org
2. www.elsevier.com
3. https://books.google.co.in
4. *dl.acm.org/citation.*
5. www.encyclopedia.com
6. www.scirp.org

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**YEAR II – SEMESTER IV**
**Distributed Computing**

| | | | |
|---|---|---|---|
| Paper | : Elective – II | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P4CAE05** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20 X 1 = 20**

1. Job throughput, data access and storage are elements of
   a) Adaptation b) Efficiency c) Dependability d) Flexibility
2. Over massive data sets, ability to support billions of job requests is known as
   a) Dependability b) Adaptation c) Flexibility d) Efficiency
3. Cloud computing offers a broader concept than
   a) Centralized computing b) Utility computing
   c) Decentralized computing d) Parallel computing
4. Transparency that allows movement of resources and clients within a system is called
   a) Concurrency transparency b) Performance transparency
   c) Replication transparency d) Mobility transparency
5. A distributed computer running a distributed program is known as
   a) Distributed process b) Distributed application
   c) Distributed computing d) Distributed program
6. Type of architecture that is considered responsible for success of
   a) Two-tier b) Three-tier c) n-tier architecture d) Peer-to-Peer
7. A set of highly integrated machines that run same process in parallel is known to be
   a) Tightly coupled b) Loosely coupled c) Space based d) Peer-to-Peer
8. Most of web applications are of
   a) Master/slave architecture b) Peer-to-Peer architecture
   c) Three-tier architecture d) Client/Server architecture
9. Three-tier architecture simplifies application's
   a) Initiation b) Implementation c) Deployment d) Maintenance
10. Uni processor computing is known as
    a) Centralized computing b) Parallel computing
    c) Distributed computing d) Grid computing
11. Transparency that enables multiple instances of resources to be used, is called
    a) Replication transparency b) Scaling transparency
    c) Concurrency transparency d) Performance transparency
12. A paradigm of multiple autonomous computers, having a private memory, communicating through a computer network, is known as
    a) Distributed computing b) Cloud computing
    c) Centralized computing d) Parallel computing
13. Cloud computing and web service platforms are focused on applications like

a) HPC b) HTC c) HCC d) HRC

14. Type of architecture that is considered responsible for success of
    a) Two-tier b) Three-tier c) n-tier d) Peer-to-Peer
15. A global system of interconnected computer networks is known as
    a) Ethernet b) Intranet c) Internet d) Ultra-net
16. In grid computing model, servers or personal computers run
    a) Dependently b) Independently c) Concurrently d) Horizontally
17. HTC stands for
    a) High-turning computing b) High-tabulation computing
    c) High-technology computing d) High-throughput computing
18. An architecture that move client's query to a middle tier so that stateless clients can be used is called
    a) Peer-to-Peer architecture b) Master/slave architecture
    c) Client/Server architecture d) Three-tier architecture
19. One of first uses of grid computing was breaking of a
    a) Critical computed code b) Tabulated code
    c) Cryptographic code d) Decryptographic code
20. Speed of HPC systems has enhanced from Gflops to
    a) Tflops b) Pflops c) Eflops d) Mflops

**Section B ( Either or) 5 X 5 = 25**

21. (a) Discuss about Distributed multimedia system (or)

    (b) List the characteristics of inter process communication.

22. (a) Draw request reply message structure (or)

    (b) Explain Operating system layer.

23. (a) Draw and explain File service architecture (or)

    (b) Describe Synchronizing physical clocks.

24. (a) Write short note on Failure assumptions and failure detectors (or)

    (b) Explain recoverability from aborts

25. (a) Describe about concurrency control in distributed transactions. (or)

    (b) Write on the logging in transaction recovery.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. Explain about Architectural models & Fundamental Models
27. Explain Operating system architecture
28. Describe the Name services
29. Explain about Nested transaction.
30. Write in detail Atomic commits protocols.

## YEAR II – SEMESTER IV
### Artificial Intelligence & Expert System

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CAE06** | External | : 75 |

**Aim:**

To understand the basic knowledge representation, problem solving, and learning methods of Artificial Intelligence and role of expert systems.

**Objective:**

The students gain the knowledge of problems and search methods, Heuristic Search Techniques, Knowledge Representation Issues, Predicate Logic, Filler Structures, Expert systems.

CO1 After completion of the course the student will get the knowledge about Problem and searching techniques and space management.

CO2 Able to realize the Heuristic Search Techniques.

CO3 Able to understand Knowledge Representation Issues

CO4 Able to understand Using Predicate Logic, Resolution Knowledge Representation using Rules and Filler Structures.

CO5 Able to understand Expert systems.

.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | S | S |
| **CO3** | S | S | S | S |
| **CO4** | S | S | M | M |
| **CO5** | M | M | M | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Artificial Intelligence:** The AI problems – The underlying Assumption – AI Technique - The level of the Model – Criteria for Success. **Problems, Problem Space, and Search**: Defining the problem as a state space search – Production systems – problem characteristics – Production system characteristics – Issues in the design of Search Programmes.

**Unit II – (12 Hrs.): Heuristic Search Techniques:** Generate and Test – Hill Climbing – Best First Search – Problem Reduction – constraint Satisfaction – Means ends Analysis.

**Unit III – (12 Hrs.): Knowledge Representation Issues:** Representations and Mappings – Approaches to Knowledge Representation – Issues in Knowledge Representation – The Frame

problem. **Using Predicate Logic:** Representing Simple Facts in Logic – Representing Instance and ISA Relationships - Computable Functions and Predicates- Resolution.

**Unit IV – (12 Hrs.): Representing Knowledge using Rules:** Procedural versus Declarative Knowledge –Logic programming – Forward versus Backward Reasoning. **Weak slot and Filler Structures:** Semantic Nets – Frames. **Strong Slot and Filler Structures** : Conceptual Dependency – Scripts – CYC.

**Unit V – (12 Hrs.): Basic concepts of Expert Systems**: Introduction to Expert systems –AI-State space search- Using rules to represent knowledge- inference- Tools for building expert systems- The user Interface- Architecture of Expert systems- Summary comparison of expert systems with conventional programs.

**TEXT BOOKS:**

6. Elaine Rich and Kevin Knight (2009). Artificial Intelligence, 3/e; New Delhi: Tata McGraw-Hill.
7. Keith Darlington,(2011)The Essence of Expert Systems, First Edition, Pearson Education Limited.

**REFERENCE BOOKS:**

1. Charnaik, E., C.K. Reiesbeck, and D.V. McDermett (2000). Artificial Intelligence Programming; New Jersey: Lawrence Erlbaum Associates.
2. Nils J. Nilsson (2001). Principles of Artificial Intelligence; New Delhi: Narosa Publishing .

**WEB SOURCES**

1. *https://en.wikipedia.org*
2. *www.sanfoundry.com*
3. *www.webopedia.com*
4. *www.cs.grinnell.edu*
5. *www.sciencedirect.com*

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**YEAR II – SEMESTER IV**
**Artificial Intelligence & Expert System**

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P4CAE06** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20 X 1 = 20**

1. In LISP, the function returns t if <integer> is even and nil otherwise:
   a) (evenp <integer>) b) (even <integer>)
   c) (numeven <integer>) d) (numnevenp <integer>)
2. Which of the following is an advantage of using an expert system development tool?
   a) imposed structure b) knowledge engineering assistance
   c) rapid prototyping d) all of the mentioned
3. An AI system developed by Daniel Bobrow to read and solve algebra word problems
   a) SHRDLU b) SIMD c) BACON d) STUDENT
4. The "Turing Machine" showed that you could use a/an _____ system to program any algorithmic task.
   a) binary b) electro-chemical c) recursive d) semantic
5. MCC is investigating the improvement of the relationship between people and computers through a technology called:
   a) computer-aided design b) human factors
   c) parallel processing d) all of the mentioned
6. The first widely-used commercial form of Artificial Intelligence (Al) is being used in many popular products like microwave ovens, automobiles and plug in circuit boards for desktop PCs. It allows machines to handle vague information with a deftness that mimics human intuition. What is the name of this Artificial Intelligence?
   a) Boolean logic b) Human logic c) Fuzzy logic d) Functional logic
7. In his landmark book Cybernetics, Norbert Wiener suggested a way of modeling scientific phenomena using not energy, but:
   a) mathematics b) intelligence c) information d) history
8. Input segments of AI programming contain(s)
   a) sound b) smell c) touch d) None of the mentioned
9. The applications in the Strategic Computing Program include:
   a) battle management b) autonomous systems
   c) pilot's associate d) all of the mentioned
10. In LISP, the function evaluates <object> and assigns this value to the unevaluated <sconst>.
   a) (constant <sconst> <object>) b) (defconstant <sconst> <object>)
   c) (eva <sconst> <object>) d) (eva <object> <sconst>)
11. What will take place as the agent observes its interactions with the world?
   a) Learning b) Hearing c) Perceiving d) Speech
12. Which modifies the performance element so that it makes better decision?
   a) Performance element b) Changing element
   c) Learning element d) None of the mentioned
13. How many things are concerned in design of a learning element?
   a) 1 b) 2 c) 3 d) 4
14. How many things are concerned in design of a learning element?

a) 1 b) 2 c) 3 d) 4

15. How many types are available in machine learning?
a) 1 b) 2 c) 3 d) 4

16. Which is used for utility functions in game playing algorithm?
a) Linear polynomial b) Weighted polynomial
c) Polynomial d) Linear weighted polynomial

17. Which is used to choose among multiple consistent hypotheses?
a) Razor b) Ockham razor
c) Learning element d) None of the mentioned

18. What will happen if the hypothesis space contains the true function?
a) Realizable b) Unrealizable
c) Both Realizable & Unrealizable d) None of the mentioned

19. What takes input as an object described by a set of attributes?
a) Tree b) Graph c) Decision graph d) Decision tree

20. How the decision tree reaches its decision?
a) Single test b) Two test c) Sequence of test d) No test

**Section B ( Either or)** **5 X 5 = 25**

21. (a) Explain the AI Level of model (or)

(b) How defining the problem as a state space search?

22. (a) Define generate and test strategy (or)

(b) Explain Best First Search.

23. (a) Describe the Representations and Mappings (or)

(b) Write about Computable Functions and Predicates.

24. (a) Explain Logic programming (or)

(b) Explain about Semantic Nets

25. (a) Describe about State space search (or)

(b) Write on Architecture of Expert systems

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. Explain Production system characteristics and Issues in the design of Search Programmes

27. Describe the Hill Climbing

28. Explain about the Frame problem.

29. Write in detail Forward versus Backward Reasoning.

30. List and explain the tools for building expert systems.

## YEAR II – SEMESTER IV
## Mobile Application Development

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CAE07** | External | : 75 |

**Aim:**

To understand and brings the view of mobile app development

.

**Objective:**

To know system requirements for mobile applications, design, frameworks, Generate mobile application design

| | |
|---|---|
| CO1 | After completion of the course the students to know about Embedded systems, drivers, Requirements gathering & validation for mobile applications |
| CO2 | Able to understand the basic design of mobile application development |
| CO3 | Able to understand the advanced design in mobile application development |
| CO4 | Able to understand the adroid in mobile application. |
| CO5 | Able to understand UI implementation, Uses Wifi, iPhone marketplace. |

.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | M | M |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | M | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Introduction:** Introduction to mobile applications – Embedded systems - Market and business drivers for mobile applications – Publishing and delivery of mobile applications – Requirements gathering and validation for mobile applications.

**Unit II – (12 Hrs.): Basic Design:** Introduction – Basics of embedded systems design – Embedded OS - Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – user interfaces for mobile applications –performance, usability, security, availability and modifiability.

**Unit III – (12 Hrs.): Advanced Design:** Designing applications with multimedia and web access capabilities – Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications

**Unit IV – (12 Hrs.): Android:** Introduction – Establishing the development environment – Android architecture – Activities and views – Interacting with UI – Persisting data using SQLite – Packaging and deployment – GPS and Wifi– Integration with social media applications.

**Unit V – (12 Hrs.): IOS :** Introduction to Objective C – iOS features – UI implementation – Touch frameworks – Data persistence using Core Data and SQLite – Location aware applications using Core Location and Map Kit – Integrating calendar and address book with social media application – Using Wifi - iPhone marketplace.

**TEXT BOOKS:**

1. Jeff McWherter and Scott Gowell, "Professional Mobile Application development", Wrox,2012
2. Charlie Collins, Michael Galpin and Matthias Kappler, “Android in Practice”, DreamTech,2012.
3. James Dovey and Ash Furrow, “Beginning Objective C”, Apress, 2012

**REFERENCE BOOKS:**

1. David Mark, Jack Nutting, Jeff LaMarche and Frederic Olsson, “Beginning iOS 6
2. Development: Exploring the iOS SDK”, Apress, 2013.

**WEB SOURCES**

**8.** http://developer.android.com/develop/index.html

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER IV**
**Mobile Application Development**

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P4CAE07** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**
**20 X 1 = 20**

1. When should you start considering mobile app development for your business?
   a) When your customers or employees ask for apps
   b) When your mobile Web experience lacks features or offers a poor user experience
   c) When competitors release their own mobile apps
   d) Any of the above
2. If you're planning to build a mobile app, which of these issues is most important?
   a) Platform
   b) Security
   c) Usability
   d) All three
3. What is the most effective way for a development team to manage the constant updates necessary for business-critical mobile apps?
   a) Assign a team to push out updates on a regular basis
   b) Draw straws to determine which team has to publish the next update
   c) Automate deployment so finished updates go out on a schedule
   d) Farm out update duties to a third party
4. Aside from deployment, what other parts of the application lifecycle can be automated?
   a) Delivering failed test reports to the developer's inbox
   b) Moving code to test environments
   c) Coding the app
   d) A and C
5. A deviation from the specified or expected behavior that is visible to end-users is called:
   a) an error
   b) a fault
   c) a failure
   d) a defect
6. A configuration management system would NOT normally provide:
   a) Linkage of customer requirements to version numbers.
   b) The precise differences in versions of software component source code.
   c) Facilities to compare test results with expected results.
   d) Restricted access to the source code librar
7. Test cases are designed during:
   a) Test recording.
   b) Test configuration.
   c) Test planning.
   d) Test specification
8. Which of the following statements about reviews is true?

a) Reviews should be performed on specifications, code, and test plans
b) Reviews are the least effective way of testing code.
c) Reviews are unlikely to find faults in test plans.
d) Reviews cannot be performed on user requirements specifications.

9. In case of Large Systems
a) Only few tests should be run
b) Test Cases written by good test engineers should be executed
c) Only Good Test Cases should be executed
d) Testing should be on the basis of Risk

10. Which of the following will be the best definition for Testing :
a) Testing is executing Software for the purpose of finding defects
b) The purpose of testing is to demonstrate that the program is defect free c) The purpose of testing is to demonstrate that the program does what it is supposed to do
d) The goal / purpose of testing is to demonstrate that the program works.

11. Which of the following is not a type of incremental testing approach?
a) Big-bang
b) Top down
c) Bottom up
d) Functional incrimination

12. Test Conditions are derived from
a) Test Design
b) Test Cases
c) Test Data
d) Specifications

13. Pick the best definition of quality
a) Quality is job one
b) Zero defects
c) Work as designed
d) Conformance to requirements

14. Fault Masking is
a) Creating a test case which does not reveal a fault
b) Error condition hiding another error condition
c) Masking a fault by developer
d) Masking a fault by a tester

15. Boundary value testing
a) Is the same as equivalence partitioning tests
b) Tests combinations of input circumstances
c) Test boundary conditions on, below and above the edges of input and output equivalence classes
d) Is used in white box testing strategy

16. One Key reason why developers have difficulty testing their own work is:
a) Lack of technical documentation
b) Lack of test tools on the market for developer's
c) Lack of Objectivity
d) Lack of training

17. In a review meeting a moderator is a person who:
a) Takes minutes of the meeting
b) Takes telephone calls
c) Mediates between people
d) writes the documents to be reviewed

18. Acceptance test cases are based on what?

a) Decision table
b) Design
c) Code
d) Requirements

19. How much testing is enough?
a) This question is easy to answer
b) This question is impossible to answer
c) The answer depends on the risk for your industry, contract and special requirements
d) This answer depends on the maturity of your developers

20. which of the following is the component test standard?
a) IEEE 610
b) IEEE 829
c) BS7925-1
d) BS7925-2

**Section B ( Either or) 5 X 5 = 25**

21. (a) Explain history of screen design (or)

(b) Discuss the principles of user interface.

22. (a) What are the characteristics that direct manipulation should posses (or)

(b) Explain differences between GUI and Web Interface design

23. (a) Discuss human interaction speeds in designing of interface (or)

(b) Explain the importance of statistical graphics in designing interface

24. (a) Explain organization of window system function in detail (or)

(b) Explain how do we select the proper devices based on controls.

25. (a) Explain the different components of an window. (or)

(b) Explain windows presentation styles.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. List and explain the 10 common visibility problems in graphical interface

27. Explain Reference types with suitable example

28. What is testing? Explain the purpose and importance of usability testing

29. Discuss about design patterns of mobile application

30. Analyze the role of mobile networks in social media.

## YEAR II – SEMESTER IV
### Graphics and Multimedia

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P4CAE08** | External | : 75 |

**Aim:**

To understand the concepts of Two Dimensional Geometric Transformations, Introduction to Multimedia, elements and the procedure of managing multimedia projects.

**Objective:**

To learn about graphics and multimedia by practicing with drawing algorithms, animation and compression techniques.

CO1 After completion of the course the student will get the knowledge about the basics concepts of computer graphics.

CO2 Able to understand the concepts of two dimensional geometric transformations.

CO3 Able to understand the Introduction of Multimedia

CO4 Able to understand Multimedia elements.

CO5 Able to understand the procedure of managing multimedia projects.

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**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | M | M | S | S |
| **CO2** | S | S | S | S |
| **CO3** | S | S | S | S |
| **CO4** | S | S | S | S |
| **CO5** | M | M | M | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Basic Concepts:** Introduction-Origins of Computer Graphics-Working of Interactive Graphics display-Video display devices- Raster Scan System-Random Scan System-Input Devices- Hard Copy devices – Graphics Software. Output Primitives: Points and Lines-Line-Drawing Algorithms: Circle Generating Algorithm-Ellipse Generating Algorithms-Filled Area Primitives.

**Unit II – (12 Hrs.): Two Dimensional Geometric Transformations**: Basic Transformation-Matrix Representation-Composite Transformation-Other transformation. Two-Dimensional Clipping and Viewing. Three-Dimensional Concepts - Three-Dimensional Object Representations – Three- Dimensional Geometric and Modeling Transformations – Three-Dimensional Viewing –

Color models – Animation.

**Unit III – (12 Hrs.): Introduction to Multimedia - Multimedia tools:** Hardware components of multimedia system-multimedia PC, The playback system, the development system. **Multimedia Elements:** Working with text, text intensive titles-software for creating and editing text. **Working with graphics:** Software for creating and editing graphics-Features of graphics programs-Sources of graphics images.

**Unit IV – (12 Hrs.): Multimedia elements:** Sound, animation and video. Sound: Sampling, MIDI, Animation, Virtual Reality, Video. Multimedia authoring programs: MM Presentation-Applications-How authorizing system works in programming languages. Developing Multimedia: The steps in developing interactive multimedia - the planning phase, the creating phase testing phase. Design for multimedia: Basic design principles, Designing for interactivity - Guidelines for interactive design

**Unit V – (12 Hrs.): Managing Multimedia projects:** Management issues of multimedia developments, the management process and multimedia projects producing multimedia titles: Compact disk production process, distributing multimedia titles on CD ROM at online, Kisok based multimedia. Multimedia issues and the future of multimedia: The internet and WWW-Design consideration for multimedia on internet – issues and trends in multimedia – Copyright issues, censorship issues and trends in multimedia industry.

**TEXT BOOKS:**

1. Donald Hearn and M.Pauline Baker, "*Computer Graphics C Version*", Pearson Education, . (UNIT I & UNIT 2).
2. James E. Shuman "Multimedia in Action".Indian Edition 1998. (UNIT 3 to 5)(Unit 3: Chapter 1,2 & 3, Unit 4: Chapter 4,5 & 6, Unit 5: Chapter 8,9,10,11 & 12).

**REFERENCE BOOKS:**

1. Judith Jeffcoate, "*Multimedia in practice technology and Applications*", PHI .
2. Foley, Vandam, Feiner, Huges, "*Computer Graphics: Principles & Practice*", Pearson Education.

**WEB SOURCES**

1. https://www.graphics.rwth-aachen.de
2. *multimedia.eserver.org*
3. https://books.google.co
4. https://msdn.microsoft.com

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR II – SEMESTER IV**
**Graphics and Multimedia**

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P4CAE08** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**
**20 X 1 = 20**

1. Which devices provides positional information to the graphics system ?
   a) Input devices b) Output devices c) Pointing devices d) Both a and c
2. The number of pixels stored in the frame buffer of a graphics system is known as
   a) Resolution b) Depth c) Resalution d) Only a
3. In graphical system, the array of pixels in the picture are stored in
   a) Memory b) Frame buffer c) Processor d) All of the mentioned
4. Heat supplied to the cathode by directing a current through a coil of wire is called
   a) Electron gun b) Electron beam c) Filament d) Anode and cathode
5. The maximum number of points that can be displayed without overlap on a CRT is referred as
   a) Picture b) Resolution c) Persistence d) Neither b nor c
6. _____ stores the picture information as a charge distribution behind the phosphor-coated screen.
   a) Cathode ray tube b) Direct-view storage tube
   c) Flat panel displays d) 3D viewing device
7. The devices which converts the electrical energy into light is called
   a) Liquid-crystal displays b) Non-emitters
   c) Plasma panels d) Emitters
8. In which system, the Shadow mask methods are commonly used
   a) Raster-scan system b) Random-scan system
   c) Only b d) Both a and b
9. The process of digitizing a given picture definition into a set of pixel-intensity for storage in the frame buffer is called
   a) Rasterization b) Encoding c) Scan conversion d) True color system
10. Which display devices allows us to walk around an object and view it from different sides.
   a) Direct view storage tubes b) Three-dimensional devices
   c) Flat panel display devices d) Plasma panel display devices
11. In LCD, the refresh rate of the screen is
   a) 60 frames/sec b) 80 frames/sec c) 30 frames/sec d) 100 frames/sec
12. Random-scan system mainly designed for
   a) Realistic shaded screen b) Fog effect
   c) Line-drawing applications d) Only b
13. The primary output device in a graphics system is_____
   a) Scanner b) Video monitor c) Neither a nor b d) Printer
14. On a black and white system with one bit per pixel, the frame buffer is commonly called as
   a) Pix map b) Multi map c) Bitmap d) All of the mentioned
15. Aspect ratio means
   a) Number of pixels b) Ratio of vertical points to horizontal points
   c) Ratio of horizontal points to vertical points d) Both b and c
16. The most commonly used input device is

a) Mouse b) Keyboard c) Scanner d) Printer

17. Which keys allows user to enter frequently used operations in a single key stroke?
a) Function keys b) Cursor control keysc) Trackball d) Control keys

18. _____ are used to measure dial rotations.
a) Potentiometers b) Volta meter c) Parameter d) Only a

19. Trackball is
a) Two-dimensional positioning device b) Three- dimensional positioning device
c) Pointing device d) None of the mentioned

20. A common device for drawing, painting, or interactively selecting coordinate positions on an object is a
a) Image scanner b) Digitizers c) Data glove d) Touch panels

**Section B ( Either or) 5 X 5 = 25**

21. (a) Write short notes on Raster scan systems. (or)
(b) Explain in detail about video display devices.

22. (a) Explain in detail about 2D Composite Transformation (or)
(b) Write short note on 3D Viewing.

23. (a) List Hardware components of multimedia system. Explain any two (or)
(b) Describe the procedure of working with text.

24. (a) Explain MIDI. (or)
(b) Explain planning phase in multimedia.

25. (a) Explain the management issues of multimedia developments. (or)
(b) Write on the distributing multimedia.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. Write down and explain the midpoint circle drawing algorithm

27. Explain Three- Dimensional Geometric and Modeling Transformations.

28. List Software for creating and editing graphics. Explain each

29. Explain in detail about Kisok based multimedia

30. Explain the issues and trends in multimedia.

## YEAR III – SEMESTER V
## ELECTIVE III XML AND WEB SERVICES

| | | | |
|---|---|---|---|
| Paper | : Elective | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE09** | External | : 75 |

**Aim:**

To learn about markup languages and web service architecture.

**Objective:**

- To introduce the various markup languages and web services
- To learn different architecture of web services
- To understand the web service building blocks

**OUTCOME:**

| | |
|---|---|
| CO1 | Able to Understand Web Services and its Infrastructure |
| CO2 | Acquire the knowledge in business, technical motivations and service oriented architecture |
| CO3 | Understanding the architecture of web services and Building a Web Services using SOAP |
| CO4 | Learn about implementations of web services through objects like WSDL and UDDI |
| CO5 | Understand the use of web services in B2C and B2B applications |

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | M | M | S |
| **CO2** | S | S | M | S |
| **CO3** | S | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Essentials of XML: The Beginning of XML-Benefits of XML – Advantages of XML over HTML – EDI – Databases – XML based standards. The Fundamentals of XML: Introduction to XML Syntax-XML Document Structure-Rules of XML Structure - DTD – Creating XML Schemas – X – Files – XML processing — presentation technologies – XSL – XFORMS – XHTML – Transformation – XSLT – XLINK – XPATH – XQ.

**Unit II – (12 Hrs.):** XML Based Applications: DOM – SAX. Architecting Web Services: Business motivations for web services – B2B – B2C – Technical motivations – limitations of CORBA and DCOM – Service – oriented Architecture (SOA).

**Unit III – (12 Hrs.):** Architecting web service: Implementation view – web services technology stack – logical view – composition of web services – deployment view – from application server to peer to peer – process view – life in the runtime. Web Services Building Blocks: SOAP.

**Unit IV – (12 Hrs.):** Web Services Building Blocks: WSDL and UDDI: Introduction to WSDL– Anatomy of WSDL –WSDL implementations – Introduction to UDDI – UDDI API – Vendor Implementations-The future of UDDI.

**Unit V – (12 Hrs.):** Implementing Xml In E – Business: B2B – B2C Applications – Different types of B2B interaction – Components of e – business XML systems – ebXML – Rosetta Net Applied XML in vertical industry.

**TEXT BOOKS:**

1. Ron Schmelzer et al, "XML and Web Services", Pearson Education, 2002.
   Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

**REFERENCE BOOKS:**

1. Frank P.Coyle, "XML, Web Services and the Data Revolution", Pearson Education, 2002.
2. Keith Ballinger, ".NET Web Services Architecture and Implementation", Pearson Education,2003.Henry Bequet and Meeraj Kunnumpurath, "Beginning Java Web Services", Apress, 2004.
3. Russ Basiura and Mike Batongbacal, "Professional ASP .NET Web Services", Apress, 2003.

**WEB SOURCES**

1. https://www.tutorialspoint.com/xml/
2. https://www.geeksforgeeks.org/xml-tutorials/
3. https://www.javatpoint.com/xml-tutorial
4. https://www.guru99.com/xml-tutorial.html

**PEDOGOGY: CHALK and Talk, ICT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN**
**(AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**

**XML AND WEB SERVICES**

| | | | |
|---|---|---|---|
| Paper | : Core | Section - A (20X1) | : 20 |
| Examination | : External | Section - B (3X5) | : 15 |
| Time | : Three Hours | Section - C (4X10) | : 40 |
| Paper Code | : **18P5CAE09** | Maximum Marks | : 75 |

**Section A (Answer all the questions)** **20 X 1 = 20**

1. Which is correct syntax of the declaration in XML VERSION?
a) < xml version =”a)0”/> b) <? xml version =”a)0”?>
c) <? xml version =”a)0”/> d)None of the above
2. Abbreviation of SAX ---------?
a) Simple API for XML b)Structure of an XML
c) Simple API Exchange d)Structure of an XML Definition
3. From the following which is presentation technology?
a) XHTML b)XPATH c)XLINK d)NONE OF THE ABOVE
4. XQUERY is built on----------expressions?
a) XFORMS b)XPATH c)XQUERY d)XLINK
5. Which one of the following is used to provide a centralized point for transformation of multiple data sources through interoperability standards such as XML, EDI?
a) B2B Gateway b) B2C Gateway
c) CORBA d)SOA
6. CORBA stands for--------?
a) Common Object Request Broker Architecture
b) Common Object Request Broker Adapter
c) Common Data Object model Request Broker Architecture
d) Concerned Off Road Bicyclists Association
7. Which of the following is uses the incompatible network data representation format?
a) CORBA b) DCOM
c) SOA d) JIT
8. IIOP stands for -----?
a) Internet Inter ORB Protocol b) Internet Inter ORB Procedure
c) Internet Inter Operable Protocol d) Internet Inter Opera and poetry
9. Which of the following is used to form the portion of the service description and that is reusable from one implementation to another.

a) Service Interface Definition b) End point Description
c) Service conversation d) Service Composition

10. The -------- is concerned with the functionality that the system provides to end user.
a) Development view b)Logical view c)Physical view d)Process view

11. --------method sends its parameters in the URL and is typically used to request WebPages from a web server.
a) GET b)POST c) All of the above d) None of the above

12. ---------- is an xml based messaging protocol for exchanging information among computers.
a) SOA b)SOAP c) WSDL d) UDD1

13. Which of the following content that supports the set of operations by one or more end points?
a) Definition b) Binding c) Port type d) Message

14. Which is used to break up the WSDL document into multiple documents?
a) Import element b) Export element
b) Static element d) Dynamic element

15. The syntax of WS-Inspection is------
a) Abstract b) Link c) Service d) Simple

16. The registry which is used to locate the business entity information
a) SOAP b) UDDI c) WSDL d) ASC

17. Acronym for VAN in EDI
a) Video Audio Navigation b) Value-Added Note
c) Value Added Network d) Virtual Area Network

18. E-Procurement has also been a target for aggregations of buyers and sellers—
Known as a ---
a) Market place b) Collaboration c) Commerce d) Suppliers

19. Who uses e-procurement system?
a) Agents b) Suppliers c) Service providers d) Buyers

20. Which of the following is not the component of e-business xml system?
a) Data dictionaries b) Point-of-sale systems
c) Business vocabularies d) Process and workflow

**Section B (Answer all the questions)** **5 X 5 = 25**

21. Write short notes on XML schemas with an example. (or)
(b). Explain about DOM.

22. (a) Summarize the B2B and B2C web services.(or)
(b) Write about the business motivations of web services.

23. (a) Elucidate the deployment view of web services.(or)
(b) Write about the composition of services.

24. (a) Summarize the WSDL implementations. (or)
(b) Summarize UDDI implementations.

25. (a) Describe B2B & B2C Applications.(or)
(b) Discuss about different types of B2B interaction.

**Section – C (Answer any Three questions)**

**3 X 10=30 Marks**

26. Summarize the various XML transformation technologies.
27. Describe the service oriented architecture (SOA).
28. Summarize the SOAP protocol.
29. Narrate the anatomy of XML.
30. Discuss about the components of ebXML

## YEAR III – SEMESTER V
### Soft Computing

| | | | |
|---|---|---|---|
| Paper | : Elective - III | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE10** | External | : 75 |

**Aim:**

To understand and brings the view of fundamentals of Neural Networks, back propagation networks, adaptive resonance theory, fuzzy logic and genetic algorithms.

**Objective:**

To deal with the design of hybrid intelligent systems which, in contrast to classical hard computing techniques, are tolerant to imprecision, uncertainty, partial truth, and approximation.

CO1 After completion of the course the student will get the knowledge about the fundamentals of Neural Networks.

CO2 Able to realize the back propagation networks.

CO3 Able to understand adaptive resonance theory

CO4 Able to understand fuzzy logic concepts.

CO5 Able to understand genetic algorithms concepts.

.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | S | S |
| **CO3** | M | M | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Fundamentals of Neural Networks:** Basic Concepts of Neural Network-Model of an Artificial Neuron-Neural Network Architectures-Characteristics of Neural Networks-Learning Methods-Taxonomy of Neural Network Architectures-History of Neural Network Research-Early Neural Network Architectures-some applications domain.

**Unit II – (12 Hrs.): Backpropagation Networks:** Architecture of Backpropagation Network-Backpropagation Learning –illustrations-applications-Effect of Tuning Parameters of the Backpropagation Neural Network-Selection of various parameters in Backpropagation rk-Variations of Standard Backpropagation algorithms.

**Unit III – (12 Hrs.): Adaptive Resonance Theory (ART) :** Introduction-classical ART networks-simplified ART architecture- ART1- Architecture of ART1-special features of ART1-ART1 algorithm.ART2- Architecture of ART2- ART2 algorithm -.Applications.

**Unit IV – (12 Hrs.): Fuzzy logic:** Fuzzy Set Theory- Fuzzy Sets-Fuzzy Relations. Fuzzy Systems: Fuzzy Logic-Fuzzy Rule based system - Defuzzification Methods-Applications. Fuzzy Backpropagation Networks: LR-Type Fuzzy Numbers-Fuzzy Neuron-Fuzzy Backpropagation Architecture**.**

**Unit V – (12 Hrs.): Genetic algorithms:-**Fundaments of Genetic algorithms-Basic concepts-creation of Offsprings-encoding-reproduction. Genetic modeling: Cross Over-Inversion and Deletion-Mutation Operator-Bit Wise Operators – PSO: Particle Swam Optimization.

**TEXT BOOKS:**

1. Rajasekaran. S and Vijayalakshmi Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms, PHI, New Delhi-2005.

**REFERENCE BOOKS:**

1. Fakhreddine O. Karray, Clarence De Silva, Soft Computing and Intelligent Systems Design, Pearson, 2009.
2. Sivanandam. S. N and Deepa S. N, Principles of Soft Computing, Wiley India, 2008.

**WEB SOURCES**

1. *www.myreaders.info*
2. *www.springer.com*
3. *www.sciencedirect.com*
4. *www.elsevier.com*
5. *www.cs.berkeley.edu*

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**Soft Computing**

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE10** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**
**20 X 1 = 20**

1. A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization, the output will be zero when and only when the input is:
   a) 000 or 110 or 011 or 101
   b) 010 or 100 or 110 or 101
   c) 000 or 010 or 110 or 100
   d) 100 or 111 or 101 or 001
2. A perceptron is:
   a) a single layer feed-forward neural network with pre-processing
   b) an auto-associative neural network
   c) a double layer auto-associative neural network
   d) a neural network that contains feedback
3. An auto-associative network is:
   a) a neural network that contains no loops
   b) a neural network that contains feedback
   c) a neural network that has only one loop
   d) a single layer feed-forward neural network with pre-processing
4. A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be:
   a) 238
   b) 76
   c) 119
   d) 123
5. Which of the following is true?
   (i) On average, neural networks have higher computational rates than conventional computers.
   (ii) Neural networks learn by example.
   (iii) Neural networks mimic the way the human brain works.
   a) All of the mentioned are true
   b) (ii) and (iii) are true
   c) (i), (ii) and (iii) are true
   d) None of the mentioned
6. Which of the following is true for neural networks?
   (i) The training time depends on the size of the network.
   (ii) Neural networks can be simulated on a conventional computer.
   (iii) Artificial neurons are identical in operation to biological ones.
   a) All of the mentioned
   b) (ii) is true
   c) (i) and (ii) are true
   d) None of the mentioned

7. What are the advantages of neural networks over conventional computers?
   (i) They have the ability to learn by example
   (ii) They are more fault tolerant
   (iii)They are more suited for real time operation due to their high 'computational' rates
   a) (i) and (ii) are true
   b) (i) and (iii) are true
   c) Only (i)
   d) All of the mentioned
8. Which of the following is true?
   Single layer associative neural networks do not have the ability to:
   (i) perform pattern recognition
   (ii) find the parity of a picture
   (iii)determine whether two or more shapes in a picture are connected or not
   a) (ii) and (iii) are true
   b) (ii) is true
   c) All of the mentioned
   d) None of the mentioned
9. Which is true for neural networks?
   a) It has set of nodes and connections
   b) Each node computes it's weighted input
   c) Node could be in excited state or non-excited state
   d) All of the mentioned
10. Neuro software is:
   a) A software used to analyze neurons
   b) It is powerful and easy neural network
   c) Designed to aid experts in real world
   d) It is software used by Neurosurgeon
11. Core of soft Computing is
   a) Fuzzy Computing, Neural Computing, Genetic Algorithms
   b) Fuzzy Networks and Artificial Intelligence
   c) Artificial Intelligence and Neural Science
   d) Neural Science and Genetic Science
12. Who initiated the idea of Soft Computing
   a) Charles Darwin
   b) Lofti A Zadeh
   c) Rechenberg
   d) Mc_Culloch
13. Fuzzy Computing
   a) mimics human behaviour
   b) doesnt deal with 2 valued logic
   c) deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic
   d) All of the above
14. Neural Computing
   a) mimics human brain
   b) information processing paradigm
   c) Both (a) and (b)
   d) None of the above
15. Genetic Algorithm are a part of
   a) Evolutionary Computing
   b) inspired by Darwin's theory about evolution - "survival of the fittest"

c) are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics
d) All of the above

16. What are the 2 types of learning
a) Improvised and unimprovised
b) supervised and unsupervised
c) Layered and unlayered
d) None of the above

17. Supervised Learning is
a) learning with the help of examples
b) learning without teacher
c) learning with the help of teacher
d) learning with computers as supervisor

18. Unsupervised learning is
a) learning without computers
b) problem based learning
c) learning from environment
d) learning from teachers

19. Conventional Artificial Intelligence is different from soft computing in the sense
a) Conventional Artificial Intelligence deal with prdicate logic where as soft computing deal with fuzzy logic
b) Conventional Artificial Intelligence methods are limited by symbols where as soft computing is based on empirical data
c) Both (a) and (b)
d) None of the above

20. In supervised learning
a) classes are not predefined
b) classes are predefined
c) classes are not required
d) classification is not done

**Section B ( Either or) 5 X 5 = 25**

21. (a) Explain Neural Network architecture. (or)
(b) Learning Methods.

22. (a) Architecture of Back propagation Network (or)
(b) Selection of various parameters in Backpropagation.

23. (a) classical ART networks (or)
(b) Write about ART2 algorithm.

24. (a) Fuzzy Set Theory. (or)
(b) Explain about Fuzzy Neuron.

25. (a) Describe about Fundaments of Genetic algorithms. (or)
(b) Write on the Mutation Operator.

**Section – C**

**(Answer any THREE questions) 3 X 10=30**

26. Explain Taxonomy of Neural Network Architectures
27. Explain Variations of Standard Back propagation algorithms
28. Describe the special features of ART1 algorithm and ART2
29. Explain about Fuzzy Rule based system.
30. Write in detail Inversion and Deletion in Genetic modeling.

## YEAR III – SEMESTER V
### Middleware Technologies

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE11** | External | : 75 |

**Aim:**

To understand and brings the view of client server computing, CORBA with Java, C# and the .NET Platform.

**Objective:**

The students gain the knowledge about the advanced features of middleware.

CO1 After completion of the course the student will get the knowledge about client server computing.

CO2 Able to realize the CORBA with Java.

CO3 Able to understand C# and the .NET Platform

CO4 Able to understand c# applications.

CO5 Able to understand Core CORBA and Java.

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**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | S | S |
| **CO3** | S | S | S | S |
| **CO4** | M | M | M | M |
| **CO5** | M | M | M | M |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.): Introduction to client server computing:** Evolution of corporate computing models from centralized to distribute computing, client server models. Benefits of client server computing, pitfalls of client server programming.

**Unit II – (12 Hrs.): CORBA with Java:** Review of Java concept like RMI, RMI API, JDBC. Client/Server CORBA-style, The object web: CORBA with Java.

**Unit III – (12 Hrs.): Introducing C# and the .NET Platform:** Understanding .NET Assemblies; Object –Oriented Programming with C#; Callback Interfaces, Delegates, and Events.

**Unit IV – (12 Hrs.): Building c# applications:** Type Reflection, Late Binding, and Attribute-

Based Programming; Object Serialization and the .NET Remoting Layer; Data Access with ADO.NET; XML Web Services.

**Unit V – (12 Hrs.): Core CORBA/ Java:** Two types of Client/ Server invocations-static, dynamic. The static CORBA, first CORBA program, ORBlets with Applets, Dynamic CORBA-The portable count, the dynamic count multi count.

**TEXT BOOKS:**

1. Client/Server programming with Java and CORBA Robert Orfali and Dan Harkey, John Wiley & Sons ,SPD 2nd Edition , 2010.
2. Java programming with CORBA 3rd Edition, G.Brose, A Vogel and K.Duddy, Wiley-dreamtech, India John wiley and sons, 2003.

**REFERENCE BOOKS:**

1. Qusay H. Mahmoud, "Middleware for Communications", John Wiley and Sons, 2004.
2. Gerald Brose, Andreas Vogel, Keith Duddy, "JavaTM Programming with CORBATM: Advanced Techniques for Building Distributed Applications", Wiley, 3rd edition,January, 2004.

**WEB SOURCES**

1. www.webopedia.com
2. middlewaretech.com
3. www.microsoft.com

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**Middleware Technologies**

| | | | |
|---|---|---|---|
| Paper | : Elective - II | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE11** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**
**20 X 1 = 20**

1. The software substituted for hardware and stored in ROM.
a) Synchronous Software b) Package Software c) Firmware d) Middleware
2. Middleware has enabled production of various types of smart machines having microprocessor chips with embedded software.
a) True b) False
3. A "glue" between client and server parts of application.
a) Middleware b) Firmware c) Package d) System Software
4. MOM stands for?
a) Message oriented middleware b) Mails oriented middleware
c) Middleware of messages d) Main object middleware
5. Storage of firmware is _____
a) Cache Memory b) RAM c) External d) ROM
6. DNS stands for?
a) Domain Name System b) Direct Name System
c) Direct Network System d) Domain Network System
7. A software that lies between the OS and the applications running on it.
a) Firmware b) Middleware c) Utility Software d) Application Software
8. A type of middleware that allows for between the built-in applications and the real-time OS?
a) Firmware b) Database middleware c) Portals d) Embedded Middleware
9. What is the other name for object middleware?
a) Object request interface b) Object enabled interface
c) Object Request broker d) Object enabled broker

10. The _____ calls certain procedures on remote systems and is used to perform synchronous or asynchronous interactions between systems.
a) Procedure b) RPC c) Message Oriented d) DB
11. A software that can be freely accessed and modified.
a) Synchronous Software b) Package Software c) OSS d) Middleware
12. Open Source Software can be used for commercial purpose.
a) True b) False
13. PNG is a _____
a) image format b) file format c) internet format d) html format
14. OSI stands for?
a) Open Source Index b) Open Source Image
c) Open Source Initiative d) Open Source Instant
15. Which of the following is not an open source software?
a) LibreOffice b) Microsoft Office c) GNU image manipulation d) MySQL
16. The users must agree to the _____ terms and agreements when they use an open source software.

a) System b) License c) Community d) Programmer

17. Which of the following is not a downside of OSS?

a) Lack of personalized support b) Restricted choice

c) No warranty d) Multiple choices

18. An example of a web design OSS.

a) Nvu b) Koffice c) AbiWorld d) Open Office

19. An image editor similar to Adobe Photoshop.

a) Nvu b) Open Office c) Bluefish d) GIMPshop

20. An OSS for communication purpose.

a) Virtue Mart b) Drupal c) Pidgin d) ZenCart

**Section B ( Either or) 5 X 5 = 25**

21. (a) client server models (or)

(b) Benefits of client server computing.

22. (a) Explain RMI API with an example (or)

(b) With suitable example illustrate CORBA constants and primitive types.

23. (a) What are the different types of .Net assemblies? (or)

(b) What are Delegates? How they are Different From Normal C# Methods?

24. (a) Explain Data access with ADO.NET. (or)

(b) Illustrate the concept of late binding with a suitable example.

25. (a) Explain briefly Enterprise Java Beans/Container protocol. (or)

(b) Contrast between static and dynamic method invocations in CORBA.

**Section – C**

**(Answer any THREE questions)**

**3 X 10=30**

26. What is mean pitfalls of client server programming

27. Explain Client/Server CORBA-style

28. Describe the Callback Interfaces

29. Explain about Data Access with ADO.NET.

30. Write in detail Dynamic CORBA.

## YEAR III – SEMESTER V

### Cloud Compuging

| | | | |
|---|---|---|---|
| Paper | : Elective III | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE12** | External | : 75 |

**Aim:**

The student will learn about the cloud environment, cloud concepts, various cloud service models including Iaas,Paas,Saas.

**Objective:**

To understanding cloud computing and a systematic knowledge of the fundamental technologies, architecture, and security and to learn how to use Cloud Services.

| | |
|---|---|
| CO1 | Introduce the broad perceptive of cloud architecture and model |
| CO2 | Cloud computing fundamental issues, technologies, applications and implementations |
| CO3 | Understanding the key dimensions of the challenge of Cloud Computing |
| CO4 | Explore some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications |
| CO5 | Provide sufficient knowledge foundation to enable further study and research |

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | M | S |
| **CO3** | M | S | S | S |
| **CO4** | S | S | S | S |
| **CO5** | S | M | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Introduction: Defining cloud computing-Characteristics cloud model – cloud services – examples- cloud based services and applications – cloud concepts and technologies – Benefits - Limitations .

**Unit II – (12 Hrs)** Cloud services and platforms – Compute services – storage services – data base services – application services – content delivery services – analytic services- cloud application design.

**Unit III – (12 Hrs.):** Cloud storage – overview- Cloud storage provider – standards- applications – client- infrastructures – services – challenges before native file system – storage types – popular cloud storage for developers – popular general purpose cloud storages..

**Unit IV – (12 Hrs.):** Software as a service – overview- driving forces – company offering – industries software plus services – overview – mobile device integration – providers – Microsoft online.

**Unit V – (12 Hrs.):** Security issues - cloud security – threats to cloud security – infrastructure security – information security - cloud security design –principles – cloud security management frameworks – security as a service – privacy and compliance issues – popular cloud services – google cloud – mobile cloud computing – The Internet of Things.**TEXT BOOKS:**

1. Arshdeep Bahga, Vijay Madisetti "Cloud Computing A Hands-on Approach", university press, 2014.
2. Anthony T.Velte Toby J.Velte, Robert Elsenpeter, "Cloud Computing A Practical Approach", Mc Graw Hill Education, reprint 2016
3. Sandeep Bhowmik,"Cloud Computing", Cambridge University press, 2017

**REFERENCE BOOKS:**

1. Barrie Sosinsky "Cloud Computing Bible ", Wiley Publications, 2015 Reprint .
2. Ricardo Puttini, Thomas Erl, and Zaigham Mahmood, "Cloud Computing: Concepts, Technology & Architecture", Prentice-Hall, 2013..

**WEB SOURCES:**

1. www.sciencedirect.com
2. www.springer.com
3. www.webopedia.in
4. www.tutorialspoint.com
5. www.w3schools.com

**PEDOGOGY: ICT, CHALK and Talk, Seminar, Models.**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**Cloud Compuging**

| | | | |
|---|---|---|---|
| Paper | : Elective III | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE12** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20X 1 = 20**

1. _____ computing refers to applications and services that run on a distributed network using virtualized resources.
   a) Distributed
   **b)** Cloud
   c) Soft
   d) Parallel
2. Point out the wrong statement :
   a) The massive scale of cloud computing systems was enabled by the popularization of the Internet
   **b**) Soft computing represents a real paradigm shift in the way in which systems are deployed
   c) Cloud computing makes the long-held dream of utility computing possible with a pay-as-you-go, infinitely scalable, universally available system
   d) All of the mentioned
3. _____ as a utility is a dream that dates from the beginning of the computing industry itself.
   a) Model
   b) Computing
   c) Software
   d) All of the mentioned
4. Which of the following is essential concept related to Cloud ?
   a) Reliability
   b) Productivity
   c) Abstraction
   d) All of the mentioned
5. Point out the wrong statement :
   a) All applications benefit from deployment in the cloud
   b) With cloud computing, you can start very small and become big very fast
   c) Cloud computing is revolutionary, even if the technology it is built on is evolutionary
   d) None of the mentioned
6. Which of the following cloud concept is related to pooling and sharing of resources ?
   a) Polymorphism
   b) Abstraction
   c) Virtualization
   d) None of the mentioned
7. _____ has many of the characteristics of what is now being called cloud computing.
   a) Internet
   b) Softwares

c) Web Service
d) All of the mentioned

8. Which of the following can be identified as cloud ?
   a) Web Applications
   b) Intranet
   c) Hadoop
   d) All of the mentioned
9. Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.
   a) real
   b) virtual
   c) cloud
   d) none of the mentioned
10. Which of the following is Cloud Platform by Amazon ?
   a) Azure
   b) AWS
   c) Cloudera
   d) All of the mentioned
11. All cloud computing applications suffer from the inherent _____ that is intrinsic in their WAN connectivity.
   a) propagation
   **b**) latency
   c) noise
   d) all of the mentioned
12. Which of the following is most important area of concern in cloud computing ?
   **a)** Security
   b) Storage
   c) Scalability
   d) All of the mentioned
13. Which of the following architectural standards is working with cloud computing industry ?
   **a**) Service-oriented architecture
   b) Standardized Web services
   c) Web-application frameworks
   d) All of the mentioned
14. In which of the following computing, mobile device serves as the presentation platform or the display ?
   a) Soft
   **b)** Mobile
   c) JVS
   d) All of the mentioned
15. Which of the following applications are processed locally on the phone ?
   a) Google Earth
   b) Google Maps
   c) Google Voice
   **d)** None of the mentioned
16. Mobile Lite is an extension of the _____ cloud service.
   **a)** Salesforce.com
   b) Google.com
   c) aol.com
   d) None of the mentioned
17. _____ offering provides the tools and development environment to deploy applications on

another vendor's application.
a) PaaS
**b**) IaaS
c) CaaS
d) All of the mentioned

18. _____ serves as a PaaS vendor within Google App Engine system.
**a)** Google
b) Amazon
c) Microsoft
d) All of the mentioned

19. Amazon Web Services offers a classic Service Oriented Architecture (SOA) approach to :
a) IaaS
b) SaaS
**c**) PaaS
d) All of the mentioned

20. Which of the following is most complete cloud computing service model ?
a) PaaS
b) IaaS
c) CaaS
**d**) SaaS

**Section B ( Either or)**

**5 X 5 = 25**

21 a) Define Cloud Computing. Explain Deployment Models **(OR)**
b) Explain any five Characteristics of Cloud Computing?

22. a) Discuss compute services and storage services **(OR)**
b) Write about content delivery services

23. a) Explain the challenges before cloud native file systems **(OR)**
b) Discuss popular cloud storages for developers

24. a) What is software as service? Explain software plus services **(OR)**
b) Explain software as service in Microsoft online

25. a) What is security as service ? Discuss privacy and compliance issues **(OR)**
b) List the threats of Cloud security.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. What are the various stages in the deployment lifecycle? Distinguish the difference between array-based and host-based replication
27. Discuss various cloud compute services in detail .
28. Explain infrastructure- as – a service in detail. Mention benefits and drawbacks of Iaas.
29. Elaborate Mobile device integration and its providers .
30. Are cloud secured? List and discuss the security and privacy implications of cloud computing.

## YEAR III – SEMESTER V
### Digital Image Processing

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| **Credit** | **: 4** | **Internal** | **: 25** |
| Paper Code | : **18P5CAE13** | External | : 75 |

**Aim:**

To impart the best concepts of image processing and also their qualities and methods.

**Objective:**

To provide the overview of computer system and the operating system, the concepts of process management, memory management, storage management, protection and security issues, and distributed systems. To gain knowledge on Distributed operating system.

CO1 After completion of the course the student will be able to understand the digital images and its components.

CO2 Able to recognize transformation techniques in images.

CO3 Able to understand building blocks digital image processing.

CO4 Able to understand segmentation techniques.

CO5 Able to utilize the compression techniques using images.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | M | S | S |
| **CO3** | M | M | S | S |
| **CO4** | S | S | S | S |
| **CO5** | S | S | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Introduction: What is Digital Image Processing? – Examples of Fields that Use Digital Image Processing – Fundamental Steps in Digital Image Processing – Components of an Image processing System – Digital Image Fundamentals: Elements of Visual Perception – Light and Electro Magnetic Spectrum – Image sensing and Acquisition – Image Sampling and Quantization – Some Basic Relationships between Pixels.

**Unit II – (12 Hrs)** The Image, its Mathematical Background: Overview – Linear Integral Transforms. Data Structures for Image Analysis: Level of Image Data Representation – Traditional Image Data Structures – Hierarchical Data structures. Image Pre-processing: Pixel Brightness

Transformations - Geometric transformations – Local pre-processing: Image smoothing, Edge Detectors – Image Restoration.

**Unit III – (12 Hrs.):** Segmentation : Thresholding – Edge Based Segmentation : Edge Image Thresholding, Border tracing - Region Based Segmentation – Matching – Shape Representation and Description: Region Identification – Contour Based Shape Representation and Description-Chain codes, Simple Geometric Border Representation - Region Based Shape Representation and Description, Simple Scalar Region Descriptors.

**Unit IV – (12 Hrs.):** Object recognition: Knowledge Representation – Statistical Pattern Recognition – Neural Nets – Fuzzy Systems- Mathematical Morphology – Basic Morphological concepts – Binary Dilation and Erosion.

**Unit V – (12 Hrs.):** Image Data Compression: Image Data Properties – Discrete Image Transforms in Image Data Compression – Predictive Compression Methods – Vector Quantization – Hierarchal and Progressive Compression Methods – Comparison of Compression Methods – Coding –JPEG Image Compression.

**TEXT BOOKS:**

1. Rafael C. Gonzalez, Richard E.Woods, Digital Image Processing, Prentice Hall, Third Edition, 2008. (Unit-1: Chapter 1-1.1, 1.3, 1.4, 1.5, Chapter 2 -2.1, 2.2, 2.3, 2.4, 2.5).
2. Sonka, Hlavac, Boyle, Digital Image Processing and Computer Vision, Cengage Learning, 2009 (Unit -II: Chapter 3 – 3.1, 3.2 ,Chapter-4, Chapter-5,5.1, 5.2,5.3, 5.3.1, 5.3.2, 5.4 Unit-III: Chapter 6 -6.1, 6.2, 6.2.1, 6.2.3., 6.3, 6.4, Chapter 8 – 8.1, 8.2,8.2.1,8.2.2, 8.3, 8.3.1 Unit-IV- 4 – Chapter 9,9.1,9.2, 9.3,9.7, Chapter 13-13.1, 13.3 Unit-5: Chapter 14- 14.1, 14.2, 14.3, 14.4, 14.5,14.6, 14.8, 14.9,14.9.1)

**REFERENCE BOOKS:**

1. Anil.K.Jain, Fundamentals of Digital Image Processing, Prentice-Hall, 1989.
2. Chanda & Majumdar, Digital Image Processing and Analysis, Prentice Hall ,3rd Edition.
3. Richard Fairly, “Software Engineering Concepts”, TMGH, 2004.
4. Rajib Mall, “Fundamentals of Software Engineering”, PHI, Second Edition, 2000.
5. Carlo Ghezzi, Mehdi Jazayeri, Dino Mndrioli, “Fundamentals of Software Engineering “, Second Edition, PHI/Pearson Education Asia, 2000.

**WEB SOURCES**

1. www.imageprocessing place.com
2. www.mathworks.com
3. www.neurotechnology .com
4. www.refdesk.com

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**Digital Image Processing**

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE13** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**21 X 1 = 20**

1. A continuous image is digitised at _____ points.
a) random b) vertex
c) contour d) sampling
2. The transition between continuous values of the image function and its digital equivalent is called _____
a) Quantisation b) Sampling
c) Rasterisation d) None of the Mentioned
3. Images quantised with insufficient brightness levels will lead to the occurrence of _____
a) Pixillation b) Blurring
c) False Contours d) None of the Mentioned
4. The smallest discernible change in intensity level is called _____
a) Intensity Resolution b) Contour
c) Saturation d) Contrast
5. What is the tool used in tasks such as zooming, shrinking, rotating, etc.?
a) Sampling b) Interpolation
c) Filters d) None of the Mentioned
6. The type of Interpolation where for each new location the intensity of the immediate pixel is assigned is _____
a) bicubic interpolation b) cubic interpolation
c) bilinear interpolation d) nearest neighbour interpolation
7. The type of Interpolation where the intensity of the FOUR neighbouring pixels is used to obtain intensity a new location is called _____
a) cubic interpolation b) nearest neighbour interpolation
c) bilinear interpolation d) bicubic interpolation
8. Dynamic range of imaging system is a ratio where the upper limit is determined by
a) Saturation b) Noise
c) Brightness d) Contrast
9. For Dynamic range ratio the lower limit is determined by
a) Saturation b) Brightness
c) Noise d) Contrast
10. Quantitatively, spatial resolution cannot be represented in which of the following ways
a) line pairs b) pixels
c) dots d) none of the Mentioned
11. The most familiar single sensor used for Image Acquisition is
a) Microdensitometer b) Photodiode
c) CMOS d) None of the Mentioned
12. A geometry consisting of in-line arrangement of sensors for image acquisition
a) A photodiode b) Sensor strips

c) Sensor arrays d) CMOS

13. CAT in imaging stands for

a) Computer Aided Telegraphy b) Computer Aided Tomography

c) Computerised Axial Telegraphy d) Computerised Axial Tomography

14. The section of the real plane spanned by the coordinates of an image is called the_____

a) Spacial Domain b) Coordinate Axes

c) Plane of Symmetry d) None of the Mentioned

15. The difference is intensity between the highest and the lowest intensity levels in an image is

a) Noise b) Saturation

c) Contrast d) Brightness

16. _____ is the effect caused by the use of an insufficient number of intensity levels in smooth areas of a digital image.

a) Gaussian smooth b) Contouring

c) False Contouring d) Interpolation

17. The process of using known data to estimate values at unknown locations is called

a) Acquisition b) Interpolation

c) Pixelation d) None of the Mentioned

18. Which of the following is NOT an application of Image Multiplication?

a) Shading Correction b) Masking

c) Pixelation d) Region of Interest operations

19. The procedure done on a digital image to alter the values of its individual pixels is

a) Neighbourhood Operations b) Image Registration

c) Geometric Spacial Transformation d) Single Pixel Operation

20. In Geometric Spacial Transformation, points whose locations are known precisely in input and reference images.

a) Tie points b) Réseau points

c) Known points d) Key-points

**Section B ( Either or)**

**5 X 5 = 25**

21. (a) Briefly explain about Fundamental Steps in Digital Image Processing. (or)
    (b) Describe Image sensing and Acquisition.
22. (a) Discuss about Traditional Image Data Structures . (or)
    (b) Explain about Image Restoration.
23. (a) Explain about Edge Based Segmentation. (or)
    (b) Write about Region Based Shape Representation and Description.
24. (a) Explain Binary Dilation and Erosion. (or)
    (b) Explaint about Statistical Pattern Recognition.
25. (a) Describe Discrete Image Transforms in Image Data Compression. (or)
    (b) Write about JPEG Image Compression.

**Section – C**

**(Answer any THREE questions)**

**3 X 10=30**

26. What is meant Image Sampling and Quantization.
27. Explain the concepts of Data Structures for Image Analysis.
28. Describe Shape Representation and Description.
29. Explain about Object recognition.
30. Write in detail Image Data Compression.

## .YEAR III – SEMESTER V
### Cryptography and Network Security

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE14** | External | : 75 |

**Aim:**

To know about the addressing and protocol function in network, security techniques for preventing data in a network environment.

**Objective:**

To provide the overview of computer system and the various network topologies and security measures for secured access of our data.

CO1 After completion of the course the student will be able to understand the Physical Medium of network with topologies.

CO2 Abletorecognizetransformation techniques in images.

CO3 AbletounderstandbuildingblocksInternet Protocols and its usage.

CO4 Able to understand various encryption and decryption techniques.

CO5 Able to know about firewall and intrusion concepts.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | S | M | S |
| **CO3** | M | S | S | S |
| **CO4** | S | S | S | S |
| **CO5** | S | M | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Types of Physical Medium – Topologies – Wireless Networking: Wireless Protocols. Data Link Layer: Layered Data Link Protocols – SLIP and PPP-MAC and ARP. Network Layer: Routing Risks-Addressing-Fragmentation-Security.

**Unit II – (12 Hrs)** Internet Protocol: IP Addressing-ICMP-Security options. Transport Layer: Common Protocols-Transport Layer Functions-Gateways. TCP: Connection Oriented Protocols-TCP Connections-UDP. Session Layer: Session State Machine-Session and Stacks. SSL: SSL Functionality-Certificates. SSH: SSH and Security-SSH Protocols. STMP: Email Goals- Common Servers. HTTP: HTTP Goals-URL.

**Unit III – (12 Hrs.):** Security: Importance-Threat Models-Concepts-Common Mitigation Methods. Network theory: Standards Bodies-Network Stacks-Multiple Stacks-Layers and Protocols-Common Tools. Cryptography: Securing Information-Necessary Elements-Authentication and Keys-Cryptography and Randomness-Hashes-Ciphers-Encryption-Steganography.

**Unit IV – (12 Hrs.):**Classical Encryption Techniques-Block Ciphers and the Data Encryption Standards- Symmetric Ciphers. Principles of Public Key Cryptosystems and RSA Algorithm-Key Management.

**Unit V – (12 Hrs.):** Message Authentication and Hash Function-Digital Signatures and Authentication Protocols-Email Security—Web Security-Intrusion-Firewall.

**TEXT BOOKS:**

1. Neal Krawetz, Introduction Network Security, India Edition, Thomson Delmar Learning.2007(Unit-I:5.1,5.4,7.2,8.3,9,10,11.2,11.3,11.5,11.9, unit-II:12.1,12.2,12.4,14.1,14.2,14.3,15.1,15.2,15.7,16.2,16.3, 19.2,19.3,20.1, 20.2,22.2, 23.1,23.2,
   UnitIII:1.1,1.2,1.3,1.4,3.1,3.2,3.3,3.4,3.5,4.1,4.2,4.3,4.4,4.5,4.6,4.7,4.8).

2. William Stallings, Cryptography and Network Security, Prentice-Hall of India,4th edition,2007, (Unit-IV: 2,3,6,9,10, Unit-V: 11,13,15,17,18,20).

**REFERENCE BOOKS:**

3. K.Pachghare, Cryptography and Information Security, PHI Learning Private Limited 2009.
4. Andrew S. Tanenbaum, Computer Networks, PHI 4th edition . 2009.

**WEB SOURCES:**

1. williamstallings.com
2. www.sanfoundry.com
3. www.amazon.in
4. www.uptu.ac.in
5. www.ibm.com
6. www.cs.iit.edu

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**Cryptography and Network Security**

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE14** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20X 1 = 20**

1. DES follows
a) Hash Algorithm
b) Caesars Cipher
c) Feistel Cipher Structure
d) SP Networks
2. The DES Algorithm Cipher System consists of _____rounds (iterations) each with a round key
a) 12
b) 18
c) 9
d) 16
3. The DES algorithm has a key length of
a) 128 Bits
b) 32 Bits
c) 64 Bits
d) 16 Bits
4. In the DES algorithm, although the key size is 64 bits only 48bits are used for the encryption procedure, the rest are parity bits.
a) True
b) False
5. In the DES algorithm the round key is _____ bit and the Round Input is _____bits.
a) 48, 32
b) 64,32
c) 56, 24
d) 32, 32
6. In the DES algorithm the Round Input is 32 bits, which is expanded to 48 bits via _____
a) Scaling of the existing bits
b) Duplication of the existing bits
c) Addition of zeros
d) Addition of ones
7. The Initial Permutation table/matrix is of size
a) 16×8
b) 12×8
c) 8×8
d) 4×8
8. Which one of the following is not a cryptographic algorithm- JUPITER, Blowfish, RC6, Rijndael and Serpent?

a) JUPITER
b) Blowfish
c) Serpent
d) Rijndael
9. Which algorithm among- MARS, Blowfish, RC6, Rijndael and Serpent -was chosen as the AES algorithm?
a) MARS
b) Blowfish
c) RC6
d) Rijndael
10. Large multifunctional systems are more prone to
a) problems
b) errors
c) confusion
d) threats
11. Login passwords are an example of
a) security-by-obscurity.
b) authentication
c) authorisation
d) personalisation
12. _____ certifications are designed to measure general concepts, rather than vendor-specific products
a) Vendor-neutral
b) neutral
c) attack
d) hack
13. _____ encodes data so that only the intended recipients can decode the message
a) Cryptography
b) network security
c) security
5d) authentication
14. An attacker may not know the contents of a data transfer but can see that a data transfer occurred
a) Steganography
b) cryptography
c) image hiding
d) covert
15. An original message is known as the plaintext, while the coded message is called the
a) ciphertext
b) text
c) encode
d) decode
16. Most symmetric block encryption algorithms in current use are based on a structure referred to as a
a) Feistel block cipher
b) cipher text
c) cryptography
d) steganography
17. A _____ is one that encrypts a digital data stream one bit or one byte at a time
a) stream cipher
b) cipher text

c) block cipher
d) stream block
18. A function that maps a message of any length into a fixed-length hash value, which serves as the authenticator
a) Hash function
b) authenticator
c) user
d) customer
19. _____ include eavesdropping on network traffic between browser and server and gaining access to information on a Web site
a) Passive attacks
b) attacks
c) intrusion
d) detection.
20. A _____ is a system designed to prevent unauthorized access to or from a private network
a) firewall
b) password
c) modem
d) antivirus

**Section B ( Either or)**

**5 X 5 = 25**

21. (a) What are the five foundation concepts for security(or)

    (b) What are the three ways to protect intellectual property.

22. (a). Name two network stacks and discuss in detail (or)

    (b) Explain SSL Functionality in detail

23. (a) Discuss multiple stack layers and protocols.(or)

    (b) Describe cryptography and randomness.

24. (a) Explain Classical encryption techniques. (or)

    (b) Elucidate RSA Algorithm.

25. (a) Write about Digital Signatures and authentications.(or)

    (b) Write short note on Firewall.

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. Explain the types of of physical medium and wireless networking protocols.

27. Describe Internet protocol addressing and security options.

28. Discuss mitigation methods and network theory.

29. Explain the principles of public key cryptosystems.

30. Describe Email security and web sercurity in detail.

## YEAR III – SEMESTER V
### Enterprise Resource Planning

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Total Hours | : 60 |
| Hours/Week | : 4 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE15** | External | : 75 |

**Aim:**

To study and understand the ERP life cycle

**Objective:**

CO1 To comprehend the technical aspects of ERP systems

CO2 To relate ERP system implementations

CO3 To understand the steps and activities in the ERP life cycle

CO4 To be able to identify and describe typical functionality in an ERP system

CO5 To relate to ERP system implementations

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | S | S |
| **CO2** | S | L | M | S |
| **CO3** | M | M | S | L |
| **CO4** | M | S | S | S |
| **CO5** | S | M | S | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Introduction to ERP: Enterprise An Overview-Introduction to ERP-Basic ERP concepts-Risks of ERP- Benefits of ERP.ERP and Technology: ERP and Related Technologies-Business Intelligence, Business Process Reengineering (BPR)-Data Warehousing,-Data Mining-O LAP- SCM.

**Unit II – (12 Hrs)** ERP Implementation: Implementation challenges-ERP implementation strategies- ERP implementation lifecycle- Implementation Methodology-Vendors and Consultants-Contracts with Vendors-Consultants and Employees-Training and education-Project Management and Monitoring-Success and failure factors of an ERP implementation

**Unit III – (12 Hrs.):** The Business modules: Business modules of an ERP Package-Finance-Manufacturing-Human Resources-Plant Maintenance-Materials Management-Quality

Management-Sales and Distribution and service..

**Unit IV – (12 Hrs.):** The ERP Market: ERP market Place and market place dynamics- SAP AG- Oracle corporation-People soft-JD Edwards- QAD Inc.-SSA global.

**Unit V – (12 Hrs.):** ERP present and future: Turbo Charge the ERP System- EAI- ERP and E-business- ERP and Internet and WWW- Future Directions and trends in ERP.

**TEXT BOOKS:**

1. Alexis Leon, "ERP Demystified", Second Edition, Tata McGraw Hill, New Delhi, 2008

**REFERENCE BOOKS:**

1. Alexis Leon, "ERP Demystified", Tata McGraw Hill, New Delhi, 2000.
2. Ashim Raj Singla,"Enterprise Resource Planning ",2008 , Cengage Learning India Pvt.Limited ,NewDelhi..

**WEB SOURCES:**

1. www.imc.com
2. www.webopeda.com
3. www.umsl.edu
4. www.oracle .com
5. www.informit.com

**PEDOGOGY: CHALK and Talk , PPT, Seminar, Models**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**Enterprise Resource Planning**

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE15** | Maximum Marks | : 75 |

**Section A**
**(Answer all the questions)**

**20X 1 = 20**

1. Which of the following describes an ERP system?
A) ERP systems provide a foundation for collaboration between departments
B) ERP systems enable people in different business areas to communicate
C) ERP systems have been widely adopted in large organisations to store critical knowledge used to make the decisions that drive the organisation's performance
D) All of the above
2. What is at the heart of any ERP system?
A) Information
B) Employees
C) Customers
D) Database
3. What must a system do to qualify as a true ERP solution?
A) Be flexible
B) Be modular and closed
C) Extend within the company
D) All of the above
4. Which of the following is a reason for ERPs explosive growth?
A) ERP is a logical solution to the mess of incompatible applications
B) ERP addresses the need for global information sharing and reporting
C) ERP is used to avoid the pain and expense of fixing legacy systems
D) All of the above
5. Which of the following occurs when everyone involved in sourcing, producing, and delivering the company's product works with the same information?
A) Eliminates redundancies
B) Cuts down wasted time
C) Removes misinformation
D) All of the above
6. What are several different types of software, which sit in the middle of and provide connectivity between two or more software applications?
A) Middleware
B) Enterprise application integration middleware
C) Automated business process
D) e-business infrastructure
7. What represents a new approach to middleware by packaging together commonly used functionality, such as providing prebuilt links to popular enterprise applications, which reduces the time necessary to develop solutions that integrate applications from multiple vendors?
A) Middleware
B) Enterprise application integration middleware

C) Automated business process
D) e-business infrastructure
8. Who are the primary users of SCM systems?
A) Sales, marketing, customer service
B) Accounting, finance, logistics, and production
C) Customers, resellers, partners, suppliers, and distributors
D) All of the above
9. What are the primary business benefits of an ERP system?
A) Sales forecasts, sales strategies, and marketing campaigns
B) Market demand, resource and capacity constraints, and real-time scheduling
C) Forecasting, planning, purchasing, material management, warehousing, inventory, and distribution
D) All of the above
10. Who are the primary users of ERP systems?
A) Sales, marketing, customer service
B) Accounting, finance, logistics, and production
C) Customers, resellers, partners, suppliers, and distributors
D) All of the above
11. EIS stands for:
A) Executive Interaction System
B) Executive Interconnecting Systems
C) Executive Information Systems
D) Executive Instrumental Systems
12. DSS is quite _____ and is available on request.
A) Structured
B) Non-structured
C) Semi-structured
D) Unstructured
13. ERP system is built on a _____ utilising a common computing platform
A) Centralised database
B) Individual databases
C) Modular databases
D) Centralised layout
14. Which of the following is an example for commercial ERP
A) ERP5
B) Microsoft Dynamics AX
C) Compiere
D) Fisterra
15. NPV is the abbreviation of
A) Net Present Variation method
B) Net Present Value method
C) Neutral Present Value method
D) Net Preventive Value method
16. ERP vendors usually design their systems around standard business processes, based upon _____
A) Business standards
B) Global standards
C) Best business practices.
D) Best profitable standards
17. The _____ module's internal functions do not directly interact with the data or processes of other modules.

A) Finance
B) Quality Management
C) Sales and Distribution
D) Plant Maintenance

18. Which among the following systems can be assigned to a cost centre directly which illustrates the interface to the cost accounting system?
A) FAPA
B) Purchasing
C) Sales and Distribution
D) CASO

19. Which system provides the foundation for creating concurrent business processes across the supply chain and achieving Return on Assets (ROA) improvement?
A) Finance
B) Inventory
C) Manufacturing
D) Sales

20. The processes described in the quality manual can be implemented and automated in the EDP system. Here what does EDP stand for?
A) Electronic Data Processing
B) Electronic Dictionary Project
C) Electrical Data Processing
D) Employee Development Plan

**Section B ( Either or)**

**5 X 5 = 25**

21. (a) Describe the role of the enterprise while implementing ERP. (or)
(b) Discuss about operation and maintenance issues of ERP.

22. (a)Write short notes on BPR (or)
(b)What do you mean by OLAP? Explain it with an example.

23. (a)What are all the challenges in implementing ERP? (or)
(b) Why do many ERP implementations fail? Explain.

24. (a) Write short notes on ERP market place. (or)
(b) Describe the Oracle Corporation's ERP software.

25. (a)Discuss about EAI.(or)
(b)Summarize ERP and E-Business

**Section – C**
**(Answer any THREE questions)**

**3 X 10=30**

26. (a) Narrate the implementations of ERP. (or)
(b) Summarize the benefits and risks of ERP.

27. (a) Write in detail about CRM and its components. (or)
(b) Elucidate supply chain management in ERP.

28. (a) Explain in detail about various strategies of ERP implementations. (or )
(b)Describe any two ERP implementation methodologies.

29. (a) Summarize the various ERP market. (or)
(b) Discuss in detail about SAP.

30. (a) Narrate ERP and internet. (or)
(b) Summarize the Future Directions and trends in ERP

## YEAR III – SEMESTER V
## INTERNET OF THINGS

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Total Hours | : 60 |
| Hours/Week | : 5 | Exam Hours | : 03 |
| Credit | : 4 | Internal | : 25 |
| Paper Code | : **18P5CAE16** | External | : 75 |

**Aim:**

To understand the structure, functions and behavioral properties of Internet of Things.

**Objective:**

Students will be explored to the interconnection and integration of the physical world and the cyberspace. They are also able to design & develop IOT Devices.

**OUTCOME:**

CO1 Able to understand the application areas of IOT

CO2 Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks

CO3 Able to understand building blocks of Internet of Things and characteristics

CO4 Able to understand data analytics for IoT.

CO5 Able to learn IoT by case studies.

**Mapping with Programme Outcomes**

| COs | PO1 | PO2 | PO3 | PO4 |
|---|---|---|---|---|
| **CO1** | S | S | M | S |
| **CO2** | S | M | M | S |
| **CO3** | M | S | M | M |
| **CO4** | S | S | S | S |
| **CO5** | S | S | M | S |

S- Strong; M-Medium; L-Low

**CONTENT:**

**Unit I – (12 Hrs.):** Introduction to Internet of Things, Physical design of IoT, Logical Design of IoT, IoT enabling Technologies. - Domain Specifics of IoT, home automation, cities, Environment, Energy, Retails, Logistics, Agriculture, Industry,Health and Life style.

**Unit II – (12 Hrs.):** IoT and M2M - Difference between IoT and M2M,SDN and NFV for IOT. IOT System management with NETCONF-YANG-Need for IOT system management, SNMP, Network operator environment, NETCONF, YANG.

**Unit III – (12 Hrs.):** Developing Internet of Things: IOT Platforms design methodology, Introduction, IOT Design methodology, Case study on IoT System on weather monitoring. IoT

Systems logical design using Python, Introduction, Installing python, Python data types and data structures, Control flow. Functions, Modules.

**Unit IV – (12 Hrs.):** Packages, File handling, Date time operations, classes, Python packages of interest for IoT. IoT physical devices and end points, what is an IoT Device, Exemplary device: Raspberry PI, about the board, Linux on Raspberry PI, Raspberry PI interfaces, Other IoT devices.

**Unit V – (15 Hrs.):** Data analytics for IoT-Introduction, Apache Hadoop, Using Hadoop map reduce for batch data analysis. Case studies- Illustrating IoT design-Introduction, Home automation, cities, environment, agriculture.

**TEXT BOOKS:**

3. Internet of Things - A Hands on Approach, Arsdeep Bahga & Vijay Mandisetti, 2014.
4. Building the Internet of Things: Implement New Business Models, Disrupt, Maciej Kranz, Willey Publications, 2016
5. Designing the Internet of Things By Adrian McEwen, Hakim Cassimally, Willey Publications 2015.

**REFERENCE BOOKS:**

3. Internet of Things: Principles and Paradigmsby Rajkumar Buyya, Amir Vahid Dastjerdi morgan Kaufmann 2014.

**WEB SOURCES**

4. http://internetofthingsagenda.techtarget.com
5. http://www.businessinsider.com/what-is-the-internet-of-things

**PEDOGOGY: CHALK and Talk, Seminar, Models, ICT**

**VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)**
**MODEL QUESTION PAPER - MCA**
**YEAR III – SEMESTER V**
**INTERNET OF THINGS**

| | | | |
|---|---|---|---|
| Paper | : Elective IV | Section-A (20X1) | : 20 |
| Examination | : External | Section-B (5X5) | : 25 |
| Time | : Three Hours | Section-C (10X3) | : 30 |
| Paper Code | : **18P5CAE16** | Maximum Marks | : 75 |

**PART- A**

1.IOT comprises of thigs that have …….. and are connected to the internet.
a. Unique identities b. Unique identifier c. Uniform id d. Unique ID
2. How many steps need to inferring information from knowledge.
a. 1 b.2 c.3 d.4
3. Expand LED
a. Light emit diode b. Light emitting diode
c. Liquid eight diode d. Light enter disc
4. Give protocol ID for Ethernet.
a. 802.3 b.802.4 c.802.5d.802.6
5. Data rates for WiMax is …….
a. 1.5 MB to 1 GB b. 1.5 MB to 1 GB
c. 1.5 MB to 1 GB d. 1.5 MB to 1 GB
6. What is SDN?
a. Software defined networking b. a. Software data networking
c. a. Software describe networking d. Software distributed networking
7.Define NFV.
a. Network function visualization b. Network fun virtualization
c. Network function virtualization d. a. Network function virtual
8. Expand ONF.
a. Open networking fundamental b. Open networking foundation
c. Open network foundation d. Open net foundation
9.Expand VNF.
a. Virtualized network function b. Virtualized network foundation
c. Visual network function d. Virtualized network fundamental
10. Expand DHCP
a. Dynamic Host Configuration program b. Dynamic Host Configuration Protocol
c. Dynamic Hop Configuration Protocol d. Dynamic Host Config Protocol
11. What is NAT.
a.Network Address Translation b.Network address Transform
c.Network Adoption transfer d.Net Adopted tool
12. Machine to machine short form..
a. M2M b. MtoM c. MtwoM d.Machine –Machine
13.What is BEEP.
a. Block Extensible Exchange Protocol b. Block Extend Exchange Protocol
c. Board Extensible Exchange Protocol d. Book Extensible Exchange Protocol
14. Expand MIB.
a. Management Information Base b.Management Inform Base
c.Managed Information Base d.Management Information board

15.What is NETCONF.
a. Network configuration protocol b.Network configure protocol
c.Network configuration program d.Net configuration protocol
16. Which operation is used to forcefully terminate Netconf session.
a. Kill-session b. End session c. Exit session d. Quit session
17. Expand IAB.
a.Internet Architecture Board b.Internet Architect Board
c.Internet Architecture Branch d.Interact Architecture Board
18…….. is a widely used parallel data processing model for processing and analysis of massive scale data.
a. MapReduce b. Mapclose c.Mapreturn d.Maptask
19. Expand FIFO.
a. First in First out b. First in File out
c. Four in First out d. First in Five out
20. Phases of map Reduce..
a. 2 b.3 c.4 d.5

**PART-B**

**Answer all questions** **(5 X 5 = 25)**

21. a). Define IoT and its characteristics. **(OR)**
    b). Explain Link Layer in IoT protocols.
22. a) Explain the difference between IoT and M2M. **(OR)**
    b) Describe the need for IoT Systems management.
23. a) Explain phthon data types amd data structures. **(OR)**
    b) Explain domain model specification in IoT design methodology.
24. a) Explain packages and file handling. **(OR)**
    b) Explain raspberry pi Interfaces.
25. a) Explain case studies of home automation. **(OR)**
    b) Explain apache hadoop.

**PART- C**

**Answer any 3 questions.** **(3X 10 = 30)**

26. Define IoT and its characteristics.
27. Explain SDN and NFV for IoT.
28. Explain Installing phthon and Functions.
29. Explain Raspberry Pi and linex on raspberry Pi.
30. Explain hadoop mapreduce for batch data analysis.