MCA20112

MCA Degree Examinations - July-2015

(Regulation 2012-13)

(Examination at the end of II Semester)

Paper-I: Operating Systems

Time : Three hours Maximum Marks: 70

Answer all questions. All questions carry equal marks (5 x 14 marks)

1. What is Operating System? Explain Operating System functionalities

OR

2. Define a System Call. Explain different types of System Calls

3. Explain basic concepts related process scheduling and scheduling criteria

OR

4. What is a Process Scheduling? Explain different Process Scheduling algorithms

5. Define a Deadlock? Explain Deadlock Prevention methods

OR

6. What is Contiguous Memory Allocation? Explain in detail

7. Explain File System Mounting and File Sharing

OR

8. Explain File System implementation

9. Explain different Disk Scheduling algorithms

OR

10. Explain the following

    a) Polling

    b) Interrupts

MCA20212

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Paper-II: Data Communications

Time : Three hours | Maximum Marks: 70

1. a) Define protocol and explain its importance in networks.
   b) Write a short note on Data Communication Standards.

   OR
2. Explain in details about ISO OSI reference model architecture.

3. a) Explain procedure for conversion of Analog to digital encoding.
   b) Write a short note on Transmission media.

   OR
4. a) Write a short note on DTE-DCE interface standards.
   b) What are the basic differences between Guided and unguided media.

5. Explain various types of multiplexing system procedures.

   OR
6. Explain the procedure for error correction and error detection.

7. Discuss the various issues of Data Link layer.

   OR
8. Explain in details about the access methods and frame format used in Ethernet and token ring.

9. Explain in details about various switching techniques.

   OR
10. Explain various routing algorithms in details.

MCA20310

MCA Degree Examinations - July-2015

(Regulation 2010-11)

(Examination at the end of II Semester)

Paper-III: Data Structures using C++

Time : Three hours Maximum Marks: 70

Answer ALL questions

All questions carry equal marks (5x14 marks)

UNIT I

1. (a) Explain about constructors in c++ with example?
   (b) Write a c++ program to display largest in three variable using pointers.

Or

2. (a) Explain about access specifiers in c++?
   (b) Differentiate between structures and classes in c++?

UNIT II

3. (a)Write an algorithm to insert a node into a single linked list at a specified position?
   (b) Explain about ADT?

Or

4. (a) Explain about linked lists with header and trailers nodes?
   (b) Explain about circular linked lists?

UNIT III

5. (a) What is recursion? Explain about M queens' puzzle using back tracking?
   (b) Write an algorithm for binary search?

Or

6. (a) Define hashing? Explain about some hash functions with an example?
   (b) Explain how can you resolve collision in hashing?

UNIT IV

7. (a) Define stack? Write an algorithm for PUSH and POP operations on STACK?
   (b)Write an algorithm for selection sort?

Or

8. (a) Write a C++ program for to implement the operations queue using array?
   (b) Write a algorithm for Quick sort?

UNIT V

9. (a) What is binary tree? Explain about the tree traversal techniques?
   (b) Explain Graph traversal algorithm DFS with an example?

Or

10. (a) Explain briefly about AVL trees?
    (b) Construct BST from the following list of numbers:
    10, 5, 20, 15, 8, 12, 14, 30, 45

MCA20312

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Paper-III: Data Structures

Time : Three hours | Maximum Marks: 70

Answer ALL questions

All questions carry equal marks (5x14 marks)

UNIT I

1. (a) Explain about data structure operations?
   (b) Explain about asymptotic notations?

   Or

   (c) Define complexity'? Write short note on Time space trade-off?
   (d) Explain briefly about control structures?

UNIT II

2. (a) Explain about word processing?
   (b) Explain about binary search techniques?

   Or

   (c) Explain about parallel arrays?
   (d) Write an algorithm to insert an element into an array?

UNIT III

3. (a) Explain about header linked lists?
   (b) Write an algorithm for towers of Hanoi problem.

   Or

   (c) Explain how to implement stacks with arrays?
   (d) What are the applications of queues?

UNIT IV

4. (a) Explain about Huffman's algorithm?
   (b) Explain briefly about B-Trees?

   Or

   (c) Explain briefly about tree traversal algorithms?
   (d) Explain about heap sort?

UNIT V

5. (a) Explain about operations on graphs?
   (b) Explain about hashing?

   Or

   (c) Explain about radix sort?
   (d) Explain about DFS & BFS briefly?

MCA20412

MCA Degree Examinations - July-2015

(Regulation 2012-13)

(Examination at the end of II Semester)

Paper-IV: Management Information Systems

Time : Three hours | Maximum Marks: 70

PART-A

ANSWER ALL QUESTIONS

All questions carry equal marks. (5 x 14=70 Marks)

1. (a) MIS and DSS are very crucial for every organisation. Explain with suitable examples.

   OR

   (b) Explain the contemporary approaches to Information Systems and their impact on organisation performance.

2. (a) Briefly outline the steps involved in Conceptual System design.

   OR

   (b) Explain the different ways of organising data and information.

3. (a) List out the steps involved in detailed system design process.

   OR

   (b) Write short notes on: i) Aim of detailed design
   ii) Degree of automation of each operation
   iii) Revisit the manager-user

4. (a) Elucidate the steps involved in implementation, evaluation and maintenance of the MIS.

   OR

   (b) Write short notes on: i) Computer related acquisitions
   ii) Evaluation of the Management Information System
   iii) Control and maintain the system

5. (a) Explain the Security and Ethical issues of Information systems and remedies, if any to overcome these issues.

   OR

   (b) Write short notes on: i) Fundamental weaknesses in MIS Development
   ii) TAR PIT
   iii) Overview of ERP

MCA20512

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(Regulation 2012-13)

(Examination at the end of II Semester)

Paper-V: Probability and Statistics

Time : Three hours Maximum Marks: 70

1. a) State and prove multiplication theorem of probability.
   b) For any three events A,B,C then find
   $P(A \vee B/C) = P(A/C) + P(B/C) - P(A \wedge B/C)$

OR

2. a) If X ~ B(n,p), show that $E(\frac{x}{n} - p)^2 = pq/n$, $Cov(\frac{x}{n}, \frac{n-x}{n}) = -pq/n$.
   b) Define Poisson distribution and find its mean and variance.

3. a) Explain the importance of Normal Distribution.
   b) Define Weibull distribution, find its Mean and Variance

OR

4. a) What are the basic differences between Point estimation and interval estimation?
   b) State and prove Central limit Theorem.

5 a) Write a short note on i) Type I and Type II error ii) Critical region
   iii) One-tailed and two-tailed test
   iv) Procedure for testing of Hypothesis
   v) Standard Error
   b) A die is thorn9000 times and a throw of 3 or 4 is observed 3240 times. Show that the die cannot be regarded as an unbiased one and find the limits between which the Probability of a throw of 3 or 4 lies.

OR

6. a) 12 students are selected at random from a population and their marks are found to be 70,65,64,72, 66,69,78,71,74,80,84 and 71. Obtain 90%, 95% and 99% confidence limits for the mean.
   b) Unbiased estimation for population mean and variance.

7. a) Define t, F-distribution and find its relation between them.
   b) State and prove applications of F-distribution.

OR

8. Discuss in details about Randomized Block Design and its importance.

9. a) Define correlation and show that correlation coefficient lies between -1,+1.
   b) x and y are two random variables with variances σ^2_x and σ^2_y respectively and r is the Coefficient of correlation between them. If U = x+ky and V =(x+ $(\frac{\sigma x}{\sigma y})$y) find the value of k if U and V are uncorrelated.

OR

10. a) Fit two regression lines for the given data and also estimate of x for y = 70.

x	68	64	75	50	64	80	75	40	55	64
y	62	58	68	45	81	60	68	48	50	70

   b) Explain in details about least square procedure.