Code: 1P2B36

R11

MCA III Semester Regular Examinations December, 2014

Operating Systems

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks (12 Marks each)

* * * * *

1.		Write the OS functions. Describe the essential properties of Parallel and Distributed and Real time OS.	12M
2.	a)	How thread is different from process?	6M
	b)	Explain any two algorithms in each preemptive and non-preemptive scheduling.	6M
3.	a)	What is critical section problem? Give two solutions for critical section problem?	6M
	b)	Give a solution for dining philosopher problem using monitor.	6M
4.		Explain in detail about paging scheme.	12M
5.	a)	Explain with example any two memory allocation methods.	7M
	b)	Write any two free space management methods?	5M
6.	a)	Consider the situation in which the disk read/write head is currently located at track 45 (of tracks 0-255) and moving in the positive direction. Assume that the following track requests have been made in this order: 40, 67, 11, 240, and 87. What is the order in which optimised C-SCAN would service these requests and what is the total seek distance?	6M
	b)	Write about various RAID levels?	6M
7.	a)	Define deadlock? Explain the necessary conditions for deadlock to occur.	5M
	b)	How to prevent deadlock and recovery from deadlock?	7M
8.		Write short note on the following. a) System Protection b) Program Threat c) Firewall	

***

Code : 1P2B32

R11

MCA III Semester Regular Examinations December, 2014

Computer Communications

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks (12 Marks each)

* * * * *

1.	a)	Define Broadcasting? Explain about Wireless Networks and Home Networks in Networking Hardware?	5M
	b)	Compare and Contrast OSI and TCP/IP Reference Models?	7M
2.	a)	What are Various Switching Techniques? Compare them?	6M
	b)	Write Short notes on X.25 and Frame relay?	6M
3.	a)	Explain CRC-16 with a Clear example?	7M
	b)	What is Piggy backing? Explain about one bit sliding window protocol?	5M
4.	a)	Differentiate Persistent and non- Persistent CSMA?	5M
	b)	What are various Collision-free protocols? Explain them?	7M
5.	a)	What are the Primary functionalities of Network Layer? Discuss them?	4M
	b)	Describe Distance Vector Routing with an example?	8M
6.	a)	Explain about ARP and RARP Protocols?	6M
	b)	Write Short notes on IP addresses?	6M
7.	a)	What are Various Applications of UDP? Explain about RTP protocol with RTP header format?	7M
	b)	Draw the Architecture of 802.11 and explain it?	5M
8.	a)	Write about (i)Symmetric Signatures (ii)Public Key Signatures	5M
	b)	Explain in detail about RSA Algorithm with an Example?	7M

***

Code : 1P2B31

R11

MCA III Semester Regular Examinations December, 2014

Database Management Systems

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks (12 Marks each)

* * * * *

1. a) Discuss about Data Storage and Querying. 6M

   b) What are the purposes of Data Base System, explain. 6M

2. a) Explain the following terms with suitable examples.

   i) Primary Key ii) Super Key iii) Strong Entity Set. 6M

   b) Write a E-R diagram for

   i) One-to-may relationship ii) Many-to-one relationship. 6M

3. a) Explain the following fundamental Relational Algebra operations with examples.

   i) Project ii) Rename iii) Select iv) Union 12M

4. Write a detail notes on

   a) Aggregate Functions 6M

   b) SELECT Clause with WHERE Clause 6M

5. a) Discuss 3NF with suitable example 6M

   b) Explain 4NF with suitable example 6M

6. a) What are the various levels of RAID ,explain 6M

   b) Explain the distinction between closed and open hashing .Discuss the relative merits of each technique in database applications. 6M

7. a) What is ACID? Explain the use of each ACID property. 6M

   b) How does a Two-Phase Locking Protocol work? explain with an example 6M

8. Write short notes on

   a) Recovery with concurrent Transactions 6M

   b) Buffer Management 6M

***

Code : 1P2B35

R11

MCA III Semester Regular Examinations December, 2014

Design & Analysis of Algorithms

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks (12 Marks each)

* * * * *

1. a) What is meant by algorithm? Explain about the characteristics of an algorithm. 6M
   b) Define time and space complexity? Write an algorithm for Armstrong number? 6M
2. a) Write an algorithm for merge sort by using divide and conquer approach? 6M
   b) Perform quick sort on the following list 50,40,20,60,80,100,42,72,102,36,95,76. 6M
3. a) Write an algorithm for Heap sort and find out the time complexity of Heap sort. 6M
   b) Explain the difference between DFS and BFS? What is the time complexity of BFS & DFS? 6M
4. a) Write Warshall's algorithm and explain it with an example? 6M
   b) Find an optimal solution to the 0/1 knapsack problem n=3,M=6,(w1,w2,w3)=(2,3,4) and (p1,p2,p3)=(1,2,5) by using dynamic programming technique. 6M
5. a) Write Kruskal's algorithm construct a minimal spanning tree for a graph. 6M
   b) Write Dijkstra's algorithm and explain it with an example? 6M
6. a) Explain the Hamiltonian Cycles with a suitable example? 6M
   b) With m=35 and w= {15, 7, 20, 5, 18, 10, 12} find all possible subsets of w that sum to m. Draw the portion of the state space tree? 6M
7. Solve the following instance of travelling salesperson problem using LCBB.

$$\begin{bmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{bmatrix}$$ 12M

8. a) Discuss about NP-hard with example 6M
   b) Explain about COOKS theorem? 6M

***

Code : 1P2B34 **R-11**

M.C.A. III Semester Regular Examinations December 2014

Java Programming

Max. Marks: 60 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (12 Marks each)

****

1.	a)	Explain garbage collection?	6M
	b)	Write a java program to convert decimal number in to binary number using recursion	6M
2.	a)	What are nested classes and inner classes? Demonstrate with an example	6M
	b)	What is method overloading? Explain with an example?	6M
3.	a)	Define an interface? Write a program which illustrates way to design and implement an interface?	6M
	b)	What is abstract class? Explain with an example?	6M
4.	a)	What are the differences between a runtime exception and plain exception? Explain in detail	6M
	b)	Why do used multithreading? Support your argument with suitable applications.	6M
5.	a)	Explain layout manager in detail	6M
	b)	What is event handling? How is it performed in java program	6M
6.	a)	Explain with example File Management using file class	6M
	b)	Explain with program Changing the case of characters within a string	6M
7.	a)	Develop a Java applet to display the greatest among three numbers	6M
	b)	Describe the steps involved in loading and running a remote applet	6M
8.	a)	Distinguish between connection – oriented and connectionless network services in detail	6M
	b)	What is a socket? What are the types of sockets? Explain	6M

***

Code : 1P2B33

R11

MCA III Semester Regular Examinations December, 2014

Network Programming

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks (12 Marks each)

* * * * *

1. a) What is an operating system? Explain the various components and architecture of UNIX with a neat diagram? 6M

   b) Explain the various file permissions? How can you change file permissions? 6M

2. a) What is a shell and what are the various responsibilities of a shell? 6M

   b) Write about the following

      i. pipes ii. IO redirection iii .tee 6M

3. a) What is a system call? Distinguish between a library function and system call with a neat diagram? 6M

   b) Write about stat structure and Write a C program to retrieve the status information of a file 6M

4. a) Explain about environment variables? 6M

   b) Write about UNIX kernel support for processes? 6M

5. a) Demonstrate that how parent and child processes shares open file descriptors with the help of a neat diagram? 6M

   b) What do you mean by zombie process? Give zombie process prevention mechanisms? 6M

6. a) Write about kernel support for signals? 6M

   b) Explain about kill and alarm functions? 6M

7. a) Briefly discuss about shmid_ds structure? 6M

   b) Write a C program to implement IPC using message queues? 6M

8 a) Briefly discuss about bind () system call? 6M

   b) What is socket system call and how can you create a socket using TCP protocol? 6M

***