Hall Ticket Number :											**R14**

Code: 4P2B32

M.C.A. III Semester Regular Examinations January/February 2016

Computer Communications

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)

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UNIT–I

1. Compare OSI and TCP/IP reference models. 12M

OR

2. a) What is statistical time division multiplexing? 6M
   b) What is the difference between telephone network and Internet in switching? 6M

UNIT–II

3. a) What is the use of framing? What are the different framing techniques? 8M
   b) How Manchester encoding works. Give an example. 4M

OR

4. a) What is collision? What are the problems with collisions? How collisions are detected. 7M
   b) What is flow control? 5M

UNIT–III

5. How Distance vector routing algorithm works. 12M

OR

6. a) What is flooding? How it works. What are the problems with flooding? 6M
   b) How back off algorithm of Ethernet works. 6M

UNIT–IV

7. How connections are established and released by TCP. 12M

OR

8. a) What is sub netting? 8M
   b) How Bluetooth is different from Wi-Fi. 4M

UNIT–V

9. How public key cryptography works. 12M

OR

10. How AES works. 12M

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Hall Ticket Number :										

R14

Code: 4P2B35

M.C.A. III Semester Regular Examinations January/February 2016

Design & Analysis of Algorithms

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)

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UNIT–I

1. a) Explain briefly about the methods of specifying an algorithm. 6M
   b) How the recurrence equations are solved? Discuss briefly. 6M

OR

2. a) How to prove the Algorithm's Correctness? Explain in detail. 6M
   b) Discuss in detail about the di□erent asymptotic notations with suitable examples. 6M

UNIT–II

3. a) Give a brief note on the General method of Divide and Conquer. 6M
   b) With a suitable example explain Merge sort algorithm to sort set of elements. 6M

OR

4. a) Prove that the average case time complexity of quick sort is 0(n log n). 6M
   b) With a suitable example explain Preorder and Post order traversals of a Binary tree. 6M

UNIT–III

5. a) Write a detailed note on the general method of dynamic programming. 6M
   b) Explain in detail about the Dijkstra's algorithm. 6M

OR

6. With a suitable example explain briefly about the Traveling Salesperson Problem. 12M

UNIT–IV

7. a) Describe in detail about one solution to the 8-Queens problem. 6M
   b) Explain briefly about the LC Brach-and-Bound Solution. 6M

OR

8. a) Give a brief note on general method of Backtracking. 6M
   b) Explain in detail about the Hamiltonian Cycles. 6M

UNIT–V

9. a) Write a short note on Biconnected Components. 6M
   b) Explain how are P and NP problems related? 6M

OR

10. a) Obtain a spanning tree for an undirected graph using BFS. 6M
    b) Give brief description about the classes of NP hard and NP complete 6M

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Hall Ticket Number :										

R14

Code: 4P2B31

M.C.A. III Semester Supplementary Examinations June 2016

Database Management Systems

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)

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UNIT–I

1. a) List five ways in which the type declaration system of a language such as Java or C++ differs from the data definition language used in databases. 8M

   b) What is data independence? How DBMS does support it? 4M

OR

2. a) Define data model. Explain the entity relationship model with a neat diagram. 8M

   b) Discuss the usage of ISA feature in ER diagrams. 4M

UNIT–II

3. a) What is the difference between tuple relational calculus and domain relational calculus? 4M

   b) Define the terms arity and degree of a relation. What are domain constraints? 8M

OR

4. Describe the set operations of relational algebra, including union (U), set difference (-), and cross product (X).For each, what can you say about the cardinality of their input and output tables. 12M

UNIT–III

5. a) Why is a table whose primary key consists of a single attribute automatically in 2NF when it is in 1NF? 6M

   b) Show that in SQL, <>**all** is identical to **not in**. 6M

OR

6. Give an example that illustrates how a collection of relations in BCNF could have redundancy even though each relation, by itself, is free from redundancy. 12M

UNIT–IV

7. a) List the ACID properties. Explain the usefulness of each. 8M

   b) Explain the distinction between the terms serial schedule and serializable schedule. 4M

OR

8. a) What is a recoverable schedule? Why is recoverability of schedules desirable? 6M

   b) Define transaction. Explain the state diagram of a transaction in detail. 6M

UNIT–V

9. a) Explain the difference between the hash indexes and B+ tree indexes. In particular, discuss how quality and range searches work, using an example. 8M

   b) Make a comparison between the primary index and a secondary index. 4M

OR

10. Write a short notes on the following:
    a) Magnetic Disks
    b) RAID
    c) Bitmap indices
    d) Multiple-key access 12M

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Hall Ticket Number :											**R14**

Code: 4P2B34

M.C.A. III Semester Supplementary Examinations June/July 2016

Java programming

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)

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UNIT–I

1. a) Differentiate String & StringBuffer class with few operations. 6M
   b) Define generic class with syntax. 6M

OR

2. a) Write a program for a generic class with two type parameters 8M
   b) Define the process of character extraction & string comparison 4M

UNIT–II

3. a) Write a program to implement Method Overriding 6M
   b) Define Abstract class & method with syntax 6M

OR

4. a) What is the significance of Super keyword and how it is used to access Super constructor, variable & method with example 6M
   b) Write a program to overload three methods with example 6M

UNIT–III

5. Write a program to implement and extend an interface 12M

OR

6. Write a program to create a package and import it 12M

UNIT–IV

7. a) Explain the process of handling an exception with syntax 8M
   b) List the various java exceptions 4M

OR

8. a) Write a program to demonstrate Multi Threading using Thread class 8M
   b) List the advantages of Multi Threading 4M

UNIT–V

9. a) Write a program to copy a text file using I/O streams 6M
   b) List the various Readers & Writers of I/O streams 6M

OR

10. a) Write a program for the simple client & server 8M
    b) What is the significance of Socket and how the data would be transferred using Socket. 4M

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Hall Ticket Number :										

R14

Code: 4P2B33

M.C.A. III Semester Regular Examinations January/February 2016

Network programming

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)

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UNIT–I

1. a) Explain Filter commands in Text Processing utilities 6M
   b) write a short notes on **grep** with all options 6M

OR

2. a) List the file handling utilities with example? 6M
   b) Write the differences between **grep, egrep and fgrep** with example 6M

UNIT–II

3. a) Explain control structures in shell programming. 6M
   b) Explain command substitution in shell programming 6M

OR

4. a) Explain Different file types in linux with i/o funcions 6M
   b) Explain the file handling system calls. Write a c program to implement the cp command 6M

UNIT–III

5. a) Explain setjmp and longjmp, getrlimit, setrlimit Functions 6M
   b) Explain fork and vfork for child process creation with suitable program 6M

OR

6. a) Explain exec family with example 6M
   b) Explain different types of wait functions 6M

UNIT–IV

7. a) Explain different signals 6M
   b) Explain kill and signal action functions with example 6M

OR

8. a) Explain sigsetjmp and siglongjmp Functions 6M
   b) Explain signal function and signal mask 6M

UNIT–V

9. a) Explain the differences between named pipe and unnamed pipe 6M
   b) Explain Message queue unix API with suitable program 6M

OR

10. a) Write a short notes on socket addressing and connection establishment 6M
    b) Explain Implementation TCP/IP and UDP 6M

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Hall Ticket Number :										

R14

Code: 4P2B36

M.C.A. III Semester Supplementary Examinations June/July 2016

Operating Systems

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)

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UNIT–I

1. a) Define operating system? What are the main advantages of multiprogramming? 6M
   b) What are the advantages and disadvantages of multi processor systems? 6M

OR

2. a) Describe objectives and functions of operating systems? 5M
   b) List the different services provided by the operating system and how system calls are related to this? 7M

UNIT–II

3. a) Discuss the difference between long term, medium term and short term scheduling. 6M
   b) What is scheduling criteria? Explain round-robin scheduling with an example. 6M

OR

4. a) What is critical section problem? 5M
   b) What is semaphore? Explain semaphore types and their applications. 7M

UNIT–III

5. a) Explain the concept of deadlock. What are the necessary conditions for it? 6M
   b) Explain some methods for handling deadlocks. 6M

OR

6. Consider the following snapshot of a system:

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Answer the following questions using the Banker's algorithm:

a. What is the content of the matrix NEED?
b. Is the system in a SAFE state?
c. If a request from process P_1 arrives for (0, 4, 2, 0) can the request be granted immediately? 12M

UNIT–IV

7. What is fragmentation? How paging is solution for fragmentation? Explain 12M

OR

8. a) Discuss with an example all disk scheduling algorithms? 8M
   b) How many page faults occur for FIFO algorithm for the following reference string, for 4 page frames?

   1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 4M

UNIT–V

9. a) Differentiate Protection and Security? How access rights are revoked? 6M
   b) What are the goals of protection? How access matrix can be used achieve protection. 6M

OR

10. a) Explain in detail about user authentication methods. 6M
    b) How firewalls can be used to protect the network? 6M

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