Hall Ticket Number :										

Code: 4G151

R-14

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2017

Computer Networks

(Common to CSE & IT)

Max. Marks: 70 Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Illustrate the functionality of various layers present in OSI model with a neat sketch 10M

   b) List any two reasons for layered protocols and what is one possible disadvantage for layered protocols? 4M

OR

2. a) Distinguish between Connection–oriented and Connectionless services. Give few examples to each category of service. 8M

   b) Briefly Explain the following
   i).Twisted pair cable. ii). Co-Axial cable iii). Fiber optic cable 6M

UNIT–II

3. How do you compute the number of redundant bits 'r' needed for a data unit of 'm-bits', in Hamming code. A 12-bit Hamming code whose hexadecimal value is 0XE4F arrives at a Receiver. What was the original value in hexadecimal? Assume that not more than 1 bit is in error. 14M

OR

4. a) Discuss about the Wireless LAN MAC protocols. 7M

   b) The Data Link Layer can control communication between a fast sender and slow receiver. Justify. 7M

UNIT–III

5. a) Elaborate on limitations of Shortest path and Hierarchical routing algorithms 7M

   b) Define Packet Scheduling and how it is implemented to achieve QoS. 7M

OR

6. a) What is the role of Choke packets in notifying the Congestion information? 7M

   b) Identify the role of Address Resolution Protocol(ARP) w. r. to IP addresses. List the advantages of ARP. 7M

UNIT–IV

7. a) Explain the three way handshake protocol to establish the transport level connection 7M

   b) Explain the role of UDP header and checksum in UDP protocol. 7M

OR

8. a) Explain the Delay-tolerant protocol stack with a neat sketch. 7M

   b) Compare and contrast UDP and TCP. 7M

UNIT–V

9. a) Why Name Servers are required and explain the process of Name Resolution. 7M

   b) What the role of a proxy cache that is used between Web browsers and Web servers 7M

OR

10. a) Explain the process of Video on Demand (VoD) in the context of streaming Video. 7M

    b) How Parity Packet can be used to repair loss of data packets. 7M

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Hall Ticket Number :										

SUBSTITUTE SUBJECT

R-15

Code: 4G451

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

Design and Analysis of Algorithms

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) What are the different mathematical notations used for algorithm analysis. 8M

   b) Give the algorithm for transpose of a matrix m x n and determine the time complexity of the algorithm by frequency – count method. 6M

OR

2. a) Explain the performance Analysis. 7M

   b) Compare with an example simple union and weighted union. 7M

UNIT–II

3. a) What is meant by Divide – and – Conquer approach? Write the General method of Divide – And – Conquer approach. 6M

   b) Write Divide – And – Conquer recursive Merge sort algorithm and derive the time complexity of this algorithm. 8M

OR

4. a) State the Job – Sequencing with deadlines problem. Find an optimal Sequence to the n=5 Jobs where profits (P1,P2,P3,P4,P5) = (20,15,10,5,1) and deadlines (d1,d2,d3,d4,d5) =(2,2,1,3,3). 7M

   b) What is a Spanning tree? Explain Prim's Minimum cost spanning tree algorithm with suitable example. 7M

UNIT–III

5. a) Explain Reliability Design Problem with suitable example. 7M

   b) Describe the Dynamic 0/1 Knapsack Problem. Find an optimal solution for the dynamic programming 0/1 knapsack instance for n=3, m=6, profits are (p1,p2,p3) = (1,2,5), weights are (w1,w2,w3)=(2,3,4). 7M

OR

6. a) Explain how the Hamiltonian circuit problem is solved by using the backtracking concept. 7M

   b) Device a backtracking algorithm for m-coloring graph problem 7M

UNIT–IV

7. a) Explain Breadth First Search in detail. 7M

   b) What are articulation points? Explain procedure in to determine articulation points. 7M

OR

8. a) Write Control Abstraction of Least – Cost (LC) Search. 6M

   b) Explain the FIFO BB 0/1 Knapsack problem procedure with the knapsack instance for n=4.m=15,(p1,p2,p3,p4)=(10,10,12,18) (w1,w2,w3,w4) =(2, 4, 6,9). Draw the portion of the state space tree and find optimal solution. 8M

UNIT–V

9. a) How are P and NP problems are related? 7M

   b) Explain the differences between decision and optimization problems. 7M

OR

10. a) Compare and contrasts between NP-HARD and NP-COMPLETE. 7M

    b) Briefly explain Cooks-theorem. 7M

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Hall Ticket Number :										

R-14

Code: 4G152

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2017

Operating Systems

(Common to CSE & IT)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Define Operating System? Describe its functions in detail. Identify the problems in design and implementation of OS. 7M

   b) What is System call? Illustrate the working of a system call. 7M

OR

2. a) What is scheduling criteria? 4M

   b) Discuss merits and demerits of following CPU scheduling algorithms i) FCFS ii) SJF iii) Round Robin iv) Priority. v) Multilevel Feed Back Queue 10M

UNIT–II

3. a) What is thread? Illustrate various thread models 7M

   b) Explore scheduling issues involving user-level and kernel-level threads? 7M

OR

4. a) Examine the producer-consumer problem using semaphore. 7M

   b) Implement a monitor using semaphore. 7M

UNIT–III

5. Write safety and resource request algorithms. Consider the following snapshot of a system:

	Allocation ABCD	Max ABCD	Available ABCD
***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:

   i. What is the content of the matrix *Need*?

   ii. Is the system in a safe state? 14M

OR

6. a) Differentiate between internal and external fragmentation 4M

   b) Illustrate FIFO, Optimal and LRU page replacement algorithms with example. 10M

UNIT–IV

7. a) Explain various file allocation methods. 7M

   b) Develop a technique for managing the free space. 7M

OR

8. a) Draw the Disk Structure and write about Performance parameters 7M

   b) Explain about various disk scheduling algorithms. 7M

UNIT–V

9. a) Mention the various services provided by kernel I/O subsystem. 7M

   b) Write short notes on application I/O interface 7M

OR

10. a) What are the main characteristics of capability lists and access lists? 7M

    b) Explain cryptography in access control techniques. 7M

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