Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

End Semester Examination - Synoptic

Nov 2017

Max. Marks: 100

Class: T.E.

Course Code: CPC504

Name of the Course: Computer Networks

Duration: 180 Min

Semester: V

Branch: Computers

Instruction:
1. All questions are compulsory
2. Draw neat diagrams
3. Assume suitable data if necessary

Q No.	Question	Max. Marks	CO
Q.1(a)	Differentiate between Star Topology and Mesh Topology (any five points). **Answer:** (1 mark for each difference) * 5 - 5 marks	05	CO1
Q.1(b)	What is Piggybacking and it's disadvantages ? **Answer:** Explanation of Piggybacking - 2 marks (1 mark for each disadvantage) * 3 - 3 marks	05	CO1
Q.1(c)	Justify the need for Virtual LAN with example. **Answer:** Justify need of virtual LAN - 2 marks Example showing need of virtual LAN - 3 marks	05	CO1
Q.1(d)	Compare Coaxial Cable with Twisted Pair Cable (any five points). **Answer:** (1 mark for each point) * 5 - 5 marks	05	CO1
Q.2 (a)	An ISP has block of address starting by 192.16.128.0/24. There are companies who needs IP address from this ISP and their Requirements are as follows: (i) Company A needs 10 IP Addresses. (ii) Company B needs 14 IP Addresses. (iii) Company C needs 24 IP Addresses. (iv) Company D needs 58 IP Addresses. (v) Company E needs 110 IP Addresses By considering the IP address to be the expensive resource of ISP design the network to fulfill the requirement of each company. Calculate the Starting and Ending IP address for each company along with its Subnet Mask. **Answer:** (1 mark for correct starting address) * 5 - 5 marks (1 mark for correct ending address) * 5 - 5 marks	10	CO2

Q.2 (b)	If a message is represented as $M(x) = x^9 + x^8 + x^6 + x^4 + x^3 + x^2 + x + 1$ and generator is represented as $G(x) = x^4 + x + 1$ then calculate the codeword using Cyclic Redundancy Check. **Answer:** (1 mark for each conversion from polynomial to binary) * 2 - 2 marks Appending four zeros to dataword before calculation of CRC - 1 mark (0.5 marks for each step of calculation) * 10 - 5 marks Correct remainder after calculation - 1 mark Correct codeword generated - 1 mark	10	C
Q.3 (a)	Show the transmission of TCP segments between client and server using three-way handshaking. Use following information for the same. (i)The initial sequence number generated by Client is 1000. (ii)The initial sequence number generated by Server is 3000. (iii)The data transfer is of 2000 bytes from Client to Server with each segment being 1000 bytes. (iv)The data transfer is of 1000 bytes from Server to Client with each segment being 500 bytes. (v)TCP transmission strictly uses Piggybacking. (vi) Cumulative acknowledgements are not allowed. (vii) Half closed connections are not allowed. Connection is closed only when both parties have no data left to sent. **Answer:** (1 mark for each correct connection establishment message) * 3 - 3 marks (1 marks each for correct data transfer message) * 4 - 4 marks (1 mark for each correct connection termination message) * 3 - 3 marks	10	CO2
Q.3 (b)	In a sliding window protocol where propagation delay is 99 msec and transmission delay is 2 msec the answer following: (Ignore Queuing and Processing Time) *(Mention formula used for calculation)* (i) Calculate sender's window size? (ii) Calculate Round Trip Time? (iii) If velocity of the signal in the medium is $2.1 * 10^8$ m/s then calculate the distance between sender and receiver? (iv) If length of packet is 20000 bits calculate the bandwidth of channel? (v) Calculate the number of bits needed for representing sequence number? **Answer:** (1 mark for each correct formula) * 5 - 5 marks (1 marks each for correct value) * 5 - 5 marks	10	CO2
Q.4 (a)	Illustrate working of Recursive resolution and Iterative resolution in DNS with suitable diagrams. **Answer:** (1 mark for diagram + 4 marks for working mechanism) * 2 - 10 marks **OR**	10	CO3

	Justify need for MIME and describe MIME header with suitable diagram. **Answer:** Explanation of MIME - 4 marks Header Format - 1 mark (1 mark for each field in the MIME header) * 5 - 5 marks	10	CO3
Q.4 (b)	Illustrate working of Polling access control mechanism along with *select* and *poll* function using suitable diagrams. **Answer:** (1 mark for each diagram) * 2 - 2marks Select Function - 4 marks Poll Function - 4 marks	10	CO2
	OR		
	Illustrate the working of I-persistent method and p-persistent methods in CSMA with suitable diagrams. **Answer:** (1 mark for diagram + 4 marks for working) * 2 - 10 marks	10	CO2
Q.5 (a)	List functions of Network Management System and illustrate how SNMP makes use of well known UDP ports for communication with suitable diagram . **Answer:** (0.5 mark for each function of Network Management System) * 5 - 2.5 marks Diagram for communication over well-known UDP ports - 1.5 marks Explanation of communication taking place over UDP ports - 5 marks	10	CO4
	OR		
	List roles of SNMP and describe the eight types of packets used by SNMP. **Answer:** (1 mark for each role) * 2 - 2 marks (1 mark for each type of packet) * 8 - 8 marks	10	CO4
Q.5 (b)	List Berkley's Service Primitives with their functionalities? Describe TCP connection management using Berkley's service primitives. **Answer:** (0.5 mark for listing each service primitive) * 8 - 4 marks Connection management using Berkley's service primitives - 6 marks	10	CO2
	OR		
	Discuss IP header with suitable diagram. **Answer:** The IP Header diagram - 2 marks Th IP header fields description - 8 marks	10	CO2