



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

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).	05	CO1
Q.1(b)	What is Piggybacking and its disadvantages?	05	CO1
Q.1(c)	Justify the need for Virtual LAN with example.	05	CO1
Q.1(d)	Compare Coaxial Cable with Twisted Pair Cable (any five points).	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.	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.	10	CO2
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.	10	CO2

Q.3 (b)	<p>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) <i>(Mention formula used for calculation)</i> (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?</p>	10	CO2
Q.4 (a)	<p>Illustrate working of Recursive resolution and Iterative resolution in DNS with suitable diagrams.</p> <p style="text-align: center;">OR</p> <p>Justify need for MIME and describe MIME header with suitable diagram.</p>	10	CO3
Q.4 (b)	<p>Illustrate working of Polling access control mechanism along with select and poll function using suitable diagrams.</p> <p style="text-align: center;">OR</p> <p>Illustrate the working of I-persistent method and p-persistent methods in CSMA with suitable diagrams.</p>	10	CO2
Q.5 (a)	<p>List the functions of Network Management System and illustrate how SNMP makes use of well-known UDP ports for communication with suitable diagram .</p> <p style="text-align: center;">OR</p> <p>List roles of SNMP and describe the eight types of packets used by SNMP.</p>	10	CO4
Q.5 (b)	<p>List Berkley's Service Primitives with their functionalities? Describe TCP connection management using Berkley's service primitives.</p> <p style="text-align: center;">OR</p> <p>Discuss IP header with suitable diagram.</p>	10	CO2