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

April-May 2018

Max. Marks: 100 | **Duration: 180 Min**

Class: M. Tech. | **Semester: II**

Course Code: CE921 | **Branch: Computer**

Name of the Course: Network Analysis and Design

Instruction:

(1) All questions are compulsory

(2) Draw neat labelled diagrams wherever necessary

(3) Assume suitable data if necessary

Q No.		Max. Marks	CO
Q.1(a)	Suppose a router implements RED for congestion avoidance, with maxP=0.02. The router is currently processing two flows, A and B. Suppose the average queue length is 12 packets, while the minimum and maximum thresholds are 8 and 16 packets, respectively. For the purposes of this problem, assume the average queue length has stabilized, meaning perturbations in the queue length do not affect its value. a) Compute the drop probability for an incoming packet if the number of packets queued since the average length crossed the minimum threshold is 10. b) Suppose flow A and flow B are about to send 8 packets each, with flow A's packets arriving at the router before flow B's do. Prior to the arrival of flow A's first packet, the number of packets queued since the average length crossed the minimum threshold is 6. All 8 of flow A's packets are enqueued at the router. What is the probability that none of flow B's packets are dropped?	10	CO4
(b)	With an example explain Fast re-transmission and Fast Recovery technique under TCP congestion control.	10	CO1
Q.2(a)	Compare and contrast: i) RIPv1 and RIPv2 ii) EIGRP and OSPF	10	CO2
(b)	Discuss the characteristics and operation of IGRP protocol in detail.	10	CO2
	OR		
(b)	With an example explain slow start technique under TCP congestion control.	10	CO1
Q.3(a)	How does IPV6 addressing work? Explain IPV6 addressing scheme in detail.	10	CO2
	OR		
(a)	With a neat labelled diagram explain neighbour discovery mechanism in IPV6.	10	CO2

(b)	Illustrate with Diagram the working of MACA-BI (By Invitation) Protocol? What are the Advantages of MACA-BI.	10	C
	OR		
(b)	Illustrate with Example the working of Ad Hoc On-Demand Distance Vector Routing (AODV) Protocol?	10	CO3
Q.4(a)	What are the main phases of network design as per the PPDIOO approach? What are the functions of the distribution layer?	10	CO2
	OR		
(a)	Mr. Smith of CareTaker publications is responsible for updating the network. Though he has a broad understanding of the options available to him, he needs your help to plan a good network design. CareTaker is a publisher of citation reference material. Though it operates as an independent business, CareTaker is owned by Holdings International (HI). It has two locations across town from each other: a main office facility and a warehouse/distribution facility. The decision has been made to build a new CareTaker headquarters office several miles away from the current main office facility. Administration, production, and support of the company's products and services are accomplished with LAN-based applications. Publication media consist of both books and CD-ROM products. CareTaker's publication data is collected and maintained on an IBM ES9000 system. The IBM system, TN3270 terminals, and PCs are connected to a single Token Ring network. CareTaker has standardized on Microsoft Office applications and Microsoft Exchange for internal e-mail and, therefore, will use the SMTP Connector for SMTP mail to HI and the Internet. A custom SQL Server application has been developed in-house for both order processing, and shipping and receiving functions. Each of five departments (Sales and Marketing, Production, Finance, Distribution, and Human Resources) will have its own Windows NT file and print server, which means adding three servers because Sales and Marketing, and Distribution share one server and the remaining departments share a second server. Draw a network topology that will meet CareTaker's requirement	10	CO2
(b)	What are the different types of Backbone Network Design? Design the Backbone Network for IPTV Services.	10	CO2
Q.5(a)	Illustrate with state transition diagram the working of Ad-Hoc TCP (ATCP) Protocol.	10	CO2
(b)	How does the software defined network (SDN) work.	10	CO5