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

Synoptic Report

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. **Answer:** 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. 05 Marks 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 en queued at the router. What is the probability that none of flow B's packets are dropped? 05 Marks	10	CO4
(b)	With an example explain Fast Re transmission and Fast Recovery technique under TCP congestion control. **Answer:**Fast re-transmission with example 05 Marks Fast recovery with example 05 Marks	10	CO1
Q.2(a)	Compare and contrast: i) RIPv1 and RIPv2 ii) EIGRP and OSPF **Answer:**Comparison between RIPv1 and RIPv2 05 Marks Comparison between EIGRP and OSPF 05 Marks	10	CO2
(b)	Discuss the characteristics and operation of IGRP protocol in detail. **Answer:** Characteristics of IGRP 05 Marks Operation of IGRP 05 Marks **OR**	10	CO2
(b)	With an example explain slow start technique under TCP congestion control. **Answer:** Slow start techniques explanation with five points each carries 02 Marks 10 Marks	10	CO1

Q.3(a)	How does IPV6 addressing work? Explain IPV6 addressing scheme in detail. **Answer:** Working of IPV6 05 Marks IPV6 addressing scheme 05 Marks	10	CO2
	OR		
(a)	With labelled diagram explain network work discovery mechanism in IPV6. **Answer:**Diagram 02 Marks Network discovery mechanism 08 Marks	10	CO2
(b)	Illustrate with Diagram the working of MACA-BI (By Invitation) Protocol? What are the Advantages of MACA-BI. **Answer:** Working of Protocol –7M Advantages: Reduce transmit/receive turn-around time, Uses only a single control channel, MACA functionality is preserved, less likely to suffer from collision –3M	10	CO3
	OR		
(b)	Illustrate with Example the working of Ad Hoc On-Demand Distance Vector Routing (AODV) Protocol? **Answer:**Working of AODV Protocol–6M Example illustrating the AODV Protocol –4M	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? **Answer:**Different phases with explaination : Prepare , Plan, Design, Implement, Operate and Optimize – 6 M Distribution layer functions: Policy, Security, Address, Workgroup access, Broadcast domain definition, Routing between VLANs, Media Translation, Redistribution between routing domain, Demarcation between static and dynamic routing protocols – 4M	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 **Answer:**Diagram showing the network topology of CareTaker's network –10M	10	CO2
(b)	What are the different types of Backbone Network Design? Design the Backbone Network for IPTV Services. **Answer:** Types of Backbone Layer and its explanation –4M Survive architecture of IPTV, Designing The Backbone Network –6M	10	CO2
Q.5(a)	Illustrate with state transition diagram the working of Ad-Hoc TCP (ATCP) Protocol. **Answer:**ATCP Introduction, Modes of operation, Functioning of ATCP layer –3M State transition diagram with explanation –7M	10	CO2
(b)	How does the software defined network (SDN) works. **Answer:** Understanding SDN , Application Layer, The Control Layer, The Infrastructure Layer, A Programmable Network. Working of SDN with Diagram – 10M	10	CO5