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/Breakup

Nov/Jan 2018-19

Max.Marks: 60 **Duration: 3Hrs**

Class: B.E. **Semester: VII**

Course Code: EXC704 **Branch: ETRX**

Name of the Course: Computer Communication and Networks

Instruction:

(1) All questions are compulsory

(2) Draw neat diagrams wherever required

(3) Assume suitable data if necessary

(3) CO – Course Outcomes

Q No.		Max. Marks	CO
Q.1 (a)	Define 1) Multiple Access 2)Multiplexing (02marks). Compare TDM and FDM(03marks).	05	CO1
Q.1 (b)	Discuss the difference between Pure Aloha and Slotted Aloha (04 marks). What is CSMA-CD mechanism? Discuss in brief(06marks).	10	CO1
	OR		
Q.1 (b)	Compare 1) LEO, MEO and GEO orbiting satellites 2)TCP/IP model and OSI reference model(05marks each).	10	CO1
Q.2 (a)	discussion about Three major components: user agents,mail servers and simple mail transfer protocol: SMTP.	05	CO5
Q.2 (b)	1)Simple Automatic Repeat Request (ARQ):Sender: Rule 1) Send one data packet at a time. Rule 2) Send next packet only after receiving acknowledgement for previous. Receiver: Rule 1) Send acknowledgement after receiving and consuming of data packet. Rule 2) After consuming packet acknowledgement need to be sent (Flow Control) 2) Stop and Wait ARQ:One frame received and handled at a time If frame is damaged, receiver discards it and sends no acknowledgment Sender uses timer to determine whether or not to retransmit Sender must keep a copy of transmitted frame until acknowledgment is received If acknowledgment is damaged, sender will know it because of numbering.(05marks each)	10	CO2
Q.3 (a)	Quality of service (QoS) is an internetworking issue. We can informally define quality of service as something a flow seeks to attain(01mark). Various metrics that define QoS flow characteristics:Reliability, Delay, Jitter and Bandwidth(04 marks).	05	CO4
	OR		
Q.3 (a)	TCP and UDP comparison.	05	CO4

Q.3 (b)	The bottleneck link has a bandwidth of 10 Mbps There are 4 flows sharing the bottleneck link The demands of each flow is given in the figure. Iteration 1:compute the fair share of each unsaisfied flow:= 2.5 Mbps (per flow). Assignment: Flow 1: 2 Mbps (with 0.5 Mbps over-assignment) Flow 2: 2.5 Mbps Flow 3: 2.5 Mbps Flow 4: 2.5 Mbps Residual: Unused bandwidth = 0.5 Mpbs The flow with minimum demand (i.e., flow 1 with 2 Mbps demand) has been maximized Iteration 2: compute the fair share of each unsatisfied flow:= 0.16666 Mbps (per flow) Assignment: Flow 2: 2.5 + 0.1 Mbps = 2.6 Mbps (because demand = 2.6 Mbps) Flow 3: 2.5 + 0.16666 Mbps = 2.66666 Mbps Flow 4: 2.5 + 0.16666 Mbps = 2.66666 Mbps Residual: Unused bandwidth = 0.06666 Mpbs the minimum demand (i.e., flow 1 with 2 Mbps) has been maximized, the second lowest demand (i.e., flow 2 with 2.6 Mbps) is now maximized; Iteration 3: compute the fair share of each unsatisfied flow:= 0.03333 Mbps (per flow) Assignment: Flow 3: 2.66666 + 0.03333 Mbps = 2.7 Mbps Flow 4: 2.66666 + 0.03333 Mbps = 2.7 Mbps Residual: Unused bandwidth = 0.0 Mpbs Max-min fair assignment: Flow 1: 2 Mbps Flow 2: 2.6 Mbps Flow 3: 2.7 Mbps Flow 4: 2.7 Mbps Notice that: the lowest demand (= flow 1 with its 2 Mbps) is maximized; the second lowest demand (= flow 2 with its 2.6 Mbps) is maximized; the third lowest demand (= flow 3 with its 4 Mbps) is maximized; (Note that maximized is not the same as satisfied. We gave flow 3 the highest possible assignment that is fair) the fourth lowest demand (= flow 4 with its 5 Mbps) is maximized; (Note that maximized is not the same as satisfied. We gave flow 4 the highest possible assignment that is fair)	10	

Q.4 (a)	Routing is a process which is performed by layer 3 (or network layer) devices in order to deliver the packet by choosing an optimal path from one network to another. 1. Static routing – Static routing is a process in which we have to manually add routes in routing table. Advantages – No routing overhead for router CPU which means a cheaper router can be used to do routing. It adds security because only administrator can allow routing to particular networks only. No bandwidth usage between routers. Disadvantage – For a large network, it is a hectic task for administrator to manually add each route for the network in the routing table on each router. The administrator should have good knowledge of the topology. If a new administrator comes, then he has to manually add each route so he should have very good knowledge of the routes of the topology. 2. Default Routing – This is the method where the router is configured to send all packets towards a single router (next hop). It doesn't matter to which network the packet belongs, it is forwarded out to router which is configured for default routing. It is generally used with stub routers. A stub router is a router which has only one route to reach all other networks. Configuration –Using the same topology which we have used for the static routing before. 3. Dynamic Routing – A dynamic protocol have following features: The routers should have the same dynamic protocol running in order to exchange routes. When a router finds a change in the topology then router advertises it to all other routers. Advantages – Easy to configure. More effective at selecting the best route to a destination remote network and also for discovering remote network. Disadvantage – Consumes more bandwidth for communicating with other neighbors. Less secure than static routing..	05	CO3
	OR		
Q.4 (a)	Subnetting(01 mark). The role of Subnet Mask in finding the network-id using a relevant example(04marks).	05	CO3
Q.4 (b)	Define 1)cookies and 1)cache (01mark each). Web Cache (08marks).	10	CO5

————Best of Luck————