Sardar Patel Institute of Technology

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

(Autonomous College Affiliated to University of Mumbai)

Re-Examination Synoptic/Breakup

June-July 2019

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.1 (a)	TDMA, FDMA and CDMA -(02 MarkS); For five channels, we need at least four guard bands. This means that the required bandwidth is at least 5 x 500 + 4 x 50 = 2700 kHz (04 Marks)
Q.1 (b)	Synchronous Transmission: With Synchronous Transmission all the letters or data in one group of data is transmitted at one time as a block of data called a frame or packet. The start and end of each packet sometimes is marked by adding synchronization characters (SYN) at the start/end of each packet.(02Marks) Problem of transparency. (03Marks) Two error detection mechanisms (03Marks) **OR**
Q.1 (b)	Error control and Flow control (02 Marks) Compare and contrast byte-stuffing and bit-stuffing. (04 Marks)
Q.2 (a)	IP addressing and Subnetting (02 Marks) IP addressing concept and various classes of IP address (04 Marks).
Q.2 (b)	1)C = B log2 (1 + SNR) = 3200 log2(3063) = 37058 Kbps This means that the highest bit rate for a telephone line is 37058 kbps. If we want to send data faster than this, we can either increase the bandwidth of the line or improve the SNR.(3 Marks) 2) C = B log2 (1 + SNR) = B 10g z (l + 0) = B log2 1 = B x 0 = 0. This means that the capacity of this channel is zero regardless of the bandwidth. In other words, we cannot receive any data through this channel (3 Marks).
Q.2 (b)	LEO, MEO and GEO comparison (03 Marks). Height of the orbit = 22,300 mile;That is 36,000km = $3.6 * 10^7 m$ $orbital\ radius = 3.6 * 10^7 m + 6.38 * 10^6 m = 4.2 * 10^7 m$ $Now\ T = 2\pi\sqrt{r^3/4 * 10^{14}}$ $T = 86,000 sec(rounded) = 86,000 sec = 1,433 min =$ $24 hours(rounded)(03 Marks)$

Q.3 (a)	Hidden Node Problem: In the case of wireless network it is possible that A is sending a message to B. But C is out of its range and hence while "listening" on the network it will find the network to be free and might try to send packets to B at the same time as A. So, there will be a collision at B. The problem can be looked upon as if A and C are hidden from each other. Hence it is called the "hidden node problem". Exposed Node Problem: If C is transmitting a message to D and B wants to transmit a message to A, B will find the network to be busy as B hears C transmitting. Even if B would have transmitted to A, it would not have been a problem at A or D. CSMA/CD would not allow it to transmit message to A, while the two transmissions could have gone in parallel. (03 Marks each)
Q.3 (b)	Factors that Cause Congestion:1) Packet arrival rate exceeds the outgoing link capacity. 2)Insufficient memory to store arriving packets 3) Bursty traffic 4) Slow processor (02 Marks) Congestion Control is concerned with efficiently using a network at high load. Several techniques can be employed. These include: Warning bit; Choke packets; Load shedding; Random early discard; Traffic shaping; The first 3 deal with congestion detection and recovery. The last 2 deal with congestion avoidance.(04 Marks for detail explanation of Warning bit, load shedding/choke packets)
	OR
Q.3 (b)	the flow characteristics for QoS—Reliability;delay;jitter; bandwidth (02 Marks). 2 scheduling techniques used for QoS improvements —FIFO; Weighted scheduling; priority queuing (04 Marks).
Q.4 (a)	Max-Min fairness algorithm with example. (04 Marks)
Q.4 (b)	Subnet Mask Works example (02 Marks) IP Address :192.168.2.1 Subnet Mask : 255.255.255.0 ANDING PROCESS : 192.168.2.1 = 11000000.10101000.00000001.00000001 255.255.255.0 = 11111111.11111111.11111111.00000000 ========== 192.168.2.0 = 11000000.10101000.00000001.00000000 Class C : N.N.N.H (06 Marks) 110xxxxx.xxxxxxxx.xxxxxxxx.xxxxxxxx Class C : 192.168.2.0 No. of Subnets: 2; No. of hosts: 62/subnets. if you convert 2 host bits to network bits, then customize subnet masks is 255.255.255.192 subnet range: 192.168.2.64 - 192.168.2.191
Q.5 (a)	Three major components explanation with diagram of relevant example: user agents (02 Marks) mail servers (02 Marks) simple mail transfer protocol: SMTP.(02 Marks)
Q.5 (b)	TFTP, DNS,etc. explanation of any one protocol(06 Marks)

——————-Best of Luck——————