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MANIPAL INSTITUTE OF TECHNOLOGY Manipal University FIFTH SEMESTER B.TECH (E & C) DEGREE END SEMESTER EXAMINATION - NOV/DEC 2016 SUBJECT: COMMUNICATION NETWORK (ECE - 3105)

ГІМЕ:	3	HO	URS	

MAX. MARKS: 50

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.
- 1A. Draw and explain the ATM Reference model. Also compare the functionalities of each layer with ISO: OSI Reference model.
- 1B. Explain the various switching techniques with neat sketches.
- 1C. The digital signal is to be designed to permit 160 kbps for a bandwidth of 20KHz. Determine (a) number of levels and (b) S/N ratio.

(5+3+2)

- 2A. Consider Fig. 2A.The frames are generated at node A and sent to node C through node B. The following specifies the two communication links: The data rate between node A and node B is 100 kb/s. The propagation delay is 5 µsec/km for both the links which are full-duplex. All data frames are 1000 bits long; ACK frames are separate frames of negligible length. Between A and B sliding window protocol with a window size of 3 is used. Between B and C, stop-and-wait is used. There are no errors (lost or damaged frames).
 - a) Calculate the utilization for link AB
 - b) What is the throughput for link AB in bits per second and frames per second?

c) Calculate the minimum rate required between nodes B and C so that the buffers of node B are not flooded. d) What is the efficiency of the communication on the link BC?

- 2B. Calculate the checksum for the packet whose header is 01 00 F2 03 F4 F5 F6 F7 00 00. (00 00 is the checksum to be calculated). Also verify the correctness of the packet at the Receiver.
- 2C. Consider a 10 KB/s link with 100ms latency and frame size of 1 KB. What is the channel utilization for the go-back-N protocol with window size of 7?

(5+3+2)

- 3A. Draw and explain the frame formats of IEEE 802.5 and FDDI.
- 3B. Distance vector routing algorithm is used in the subnet shown in Fig 3B. The delay vectors that have just come in to router C from its neighbour routers and the measured delays to the neighbours of C are shown in Table 3B. Find the new routing table of C. Give both the outgoing line to use and the expected delay.
- 3C. Differentiate between OSPF and RIP protocol.

(5+3+2)

- 4A. What are Open and Closed loop congestion control approaches? Explain the different methods used in closed loop control mechanism.
- 4B. An ISP is granted a block of addresses starting with 120.60.4.0/20. The ISP wants to distribute these block to 100 organizations with each organization receiving 8 addresses only. Design the sub-blocks and give the slash notation for each sub-block. Find out how many addresses are still available after these allocations.
- 4C. Imagine a flow specification that has a maximum packet size of 1000 bytes, a token bucket rate of 10 million bytes/sec, a token bucket size of 1 million bytes, and a maximum transmission rate of 50 million bytes/sec. How long can a burst at maximum speed last?

(5+3+2)

- 5A. Describe VOIP signalling protocols mentioning the functions of each.
- 5B. Write the significance of control fields in TCP header.
- 5C. What are the different built in HTTP request methods?

(5+3+2)

