

ALCCS – OLD SCHEME

Time: 3 Hours

FEBRUARY 2012

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:

- Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.
- Parts of a question should be answered at the same place.

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- Q.1** a. Modulate the following bit pattern, using 4-PSK technique. Given bit pattern is 10 01 10 10
- b. What is CRC error detection scheme? Explain how such a scheme is most efficient for the action of burst errors.
- c. Compare the advantages and disadvantages of bus and ring topologies. Can a ring topology be used for wide area network?
- d. Describe the FDDI frame format.
- e. How is Go Back n ARQ different from Selective Repeat ARQ?
- f. What are two-army problem and a three way handshake? State the elements of transport protocols?
- g. Explain in brief the topologies that are used for broadcast type of communication. (7 × 4)
- Q.2** a. Consider five messages given by the probabilities 1/2, 1/4, 1/8, 1/16, 1/16.
- (i) Calculate H.
- (ii) Use the Shannon-Fanno algorithm to develop an efficient code and for that code, calculate the average no. of bits / message. Compare with H. (9)
- b. Place following concepts into correct layers of ISO-OSI reference model and justify your answer:
- (i) Forming a modem connection
- (ii) Distributed document management
- (iii) Error detection
- (iv) Routing (9)
- Q.3** a. What is High Level Data Link Control Protocol? Discuss its importance in data communication. What are the different types of frames? Discuss briefly. (9)

Code: CS32**Subject: COMPUTER NETWORKS**

- b. Consider building a CSMA/CD network running at 1 Gbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000km/sec. What is the minimum frame size? (9)
- Q.4** a. Compare X.25 and TCP/IP. What are the principal strengths and weaknesses of each protocol? (9)
- b. A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to a capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps? (9)
- Q.5** a. What is Link Control Protocol? Give the format of LCP packet. Also how authentication is supported in PPP? Explain. (9)
- b. Compare virtual circuit and datagram subnet. State the principles of congestion control and congestion prevention policies. (9)
- Q.6** a. Using RSA algorithm encrypt and decrypt the message 'BE' with key pairs (3, 15) and (5, 15). (10)
- b. Television channels are 6 MHz wide. How many bits/sec can be sent if four levels digital signals are used? Assume a noiseless channel. (8)
- Q.7** a. Consider an error free 64-Kbps satellite channel used to send 512 byte data frames in one direction, with very short acknowledgement coming back the other way. What is the maximum throughput for window size of 01 and 07? (9)
- b. Explain the concept of Tunneling in internetworking. Write down the differences in IPv4 and IPv6. (9)