

**ALCCS – OLD SCHEME**

Time: 3 Hours

**AUGUST 2012**

Max. Marks: 100

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

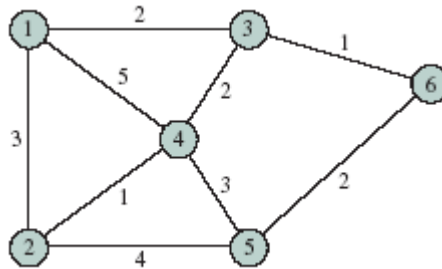
**NOTE:**

- 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. What are the main differences between OSI and TCP/IP reference models? Explain briefly.
- b. What is Pulse-Amplitude Modulation? What are its disadvantages?
- c. Distinguish between Persistent and Non-persistent CSMA.
- d. What is dotted decimal notation in IP addressing?
- e. Briefly describe Routing Information Protocol (RIP).
- f. Differentiate between Connectionless and Connection-Oriented services.
- g. What are the different threats that can arise in a network? (7x4)
- Q.2** a. Differentiate between Message switching, Packet switching and Circuit switching. (6)
- b. What are the different types of networking / internetworking devices? Discuss them. (6)
- c. An analog signal has a bit rate of 8000 bps and a baud rate of 1000 baud. How many data elements are carried by each signal element? How many signal elements do we need? (6)
- Q.3** a. Draw a basic block diagram of ARQ and explain Selective Repeat ARQ method. (10)
- b. A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces
- (i) 1000 frames per second
  - (ii) 500 frames per second
  - (iii) 250 frames per second
- In which case percentagewise maximum throughput would be achieved. (8)

- Q.4** a. Distinguish between the following:
- (i) Static and dynamic routing.
  - (ii) Centralized and distributed routing. (5x2)
- b. (i) A router outside the organization receives a packet with destination address 190.240.7.91. Show how it finds the network address to route the packet.
- (ii) A router inside the organization receives the same packet with destination address 190.240.33.91. Show how it finds the subnetwork address to route the packet. (4x2)

- Q.5** a. Apply Dijkstra's algorithm to find the shortest paths from the source node 1 to all the other nodes for the figure shown below. (9)



- b. Distinguish between Multicasting and Multiple unicasting. Also, give reason why we have a separate mechanism for multicasting, when it can be emulated with unicasting. (5+4)
- Q.6** a. Define TCP and discuss the different fields of TCP packet format with the help of a diagram. (2+8)
- b. What is traffic shaping? Briefly explain the two techniques of traffic shaping. (2+6)
- Q.7** Write short notes on the following:
- (i) Simple Network Management Protocol (SNMP).
  - (ii) Hyper Text Transfer Protocol (HTTP).
  - (iii) Data Encryption Standard (DES). (6x3)