K. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH

MCA –Semester I (Batch -2019-2022)

Subject: Computer Networks
(SEM-I End-Term Examination)

Date : 04/12/2019   Maximum Marks: 50   Duration: 3 hours

Notes:

1. Q.1 is compulsory

2. Attempt any <u>four</u> from Q.2 to Q.7

3. Mixing up of sub questions is not allowed.

4. Draw the suitable diagrams wherever necessary.

Q.1

a) What are the two reasons for using layered architecture? Explain the functions of

   data link layer and transport layer in layered architecture.   (04 Marks)

b) Explain pure-ALOHA and slotted-ALOHA w.r.t throughput. Differentiate

   1-persistent, p-persistent and non-persistent CSMA methods.   (06 Marks)

Q.2

a) Compare and contrast TCP header and UDP header in detail.   (05 Marks)

b) Obtain the 4 bit CRC code for the data bit sequence 10011011100 using the

   polynomial x^4+x^2+1.   (05 Marks)

Q.3

a) Explain the different types of multicasting routing protocols in detail.   (05 Marks)

b) A receiver receives the code 01101100111 when it uses the hamming encoding algorithm. Which bit is in error? What is the correct code? (05 Marks)

Q.4

a) Explain the different protocols used in Email communications. (05 Marks)

b) Differentiate between DVMRP and CBT protocols. (05 Marks)

Q.5

a) Explain in detail OSPF routing algorithm. (05 Marks)

b) Explain IPV6 header with a neat diagram. (05 Marks)

Q.6

a) Consider the network shown in Fig 1. Compute the shortest path from C to all other nodes using link-state algorithm. Also update the forwarding table of node C.
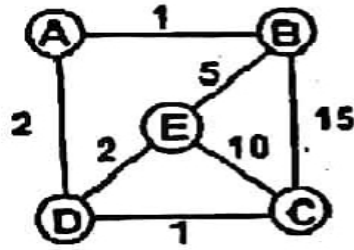
(05 Marks)

Fig. 1

b) With reference to transport layer outline the operation of 3-way handshaking. How does the 3-way handshake prevent old duplicate connection request and duplicate connection request and acknowledgement? (05 Marks)

Q.7 Write short note on any **two** (10 Marks)

(a) MANET
(b) DNS
(c) Bit stuffing
(d) SDN
(e) ARP

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