UG/Integrated Even Semester Examination, 2025

COMPUTER SCIENCE

(2nd Semester)

Course No.: MCA-554

(Computer Networks)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the right margin indicate full marks for the question.
Answer any five questions selecting one from each unit.

UNIT-I

1. (a) What are the responsibilities of network layer in OSI model? 5

   (b) What is network protocol? Why it is needed? 3

   (c) What are the difference between OSI model and TCP/IP model? 5

   (d) What is jitter? 1

2. (a) What are the fundamental characteristics of data communication? 4

   (b) What are the difference between half duplex and duplex transmission mode. 3

   (c) What is Shannon-Hartley theorem? Discuss its applications. A telephone line normally has bandwidth of 3000 Hz (300 to 3300 Hz) assigned for data

communication. The SNR is usually 3162. What will be the capacity for this channel? 7

UNIT-II

3. (a) Write short note on bus and mesh topology. 4

   (b) Encode the binary word 1011 into even parity hamming code. 6

   (c) Write difference between circuit switching and packet switching. 4

4. (a) A bit stream 1010101010 is transmitted using the standard CRC method. The generator polynomial is x^4+x^3+1. What is the actual bit string transmitted? Suppose the third bit from the left is inverted during transmission. How will received detect the error? 4+4

   (b) What is the polynomial representation of 101100? 3

   (c) Write the difference between Asynchronoous and Synchronous transmission. 3

5. (a) Define framing and the reason for its need. 4

   (b) Compare and contrast the Go-Back-N ARQ protocol with selective repeat ARW. 8

   (c) What is the efficiency of stop and wait protocol? 2

6. (a) Define piggy backing and its usefulness. 5

   (b) Write the difference between flow control and error control. 4

   (c) Briefly describe the services provide by data link layer. 5

UNIT-IV

7. (a) Write short notes on : 9

   (i) Hub

   (ii) Switch

   (iii) Router

   (b) What are the advantage and disadvantages of supernetting? 5

8. (a) Explain the distance vector routing algorithm with one example. 10

   (b) Given a DBA 200.1.15.255. Find out network ID and subnet mask. 4

UNIT-V

9. Write short notes on : 14

   (i) HTTP

   (ii) FTP

   (iii) SMTP

10. (a) What is TCP? Write advantages and disadvantages of TCP. 11

    (b) What are the differences between TCP and UDP? 3

*****