Code No.: (R22CY504PC) | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–I–Semester End Examinations (Regular) - December- 2024
PRINCIPLES OF COMPUTER NETWORKS
(CSC)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks.

PART-A (10 Marks)

1. a) Define a computer Network. [1M]
   b) What is the need of framing? [1M]
   c) What are sending window and receiving window in sliding window protocol? [1M]
   d) What is channel allocation problem? [1M]
   e) Define Congestion. [1M]
   f) What is Tunneling? [1M]
   g) List the primitives for a simple transport service. [1M]
   h) What is error control in transport layer? [1M]
   i) State the purpose of SNMP. [1M]
   j) What is POP in an email system? [1M]

PART-B (50 Marks)

2. Illustrate OSI reference model with a neat diagram and explain the functionality of each layer. [10M]

OR

3.a) Compare and contrast copper cables versus fiber-optic networks. [5M]
   b) Given the generator polynomial $x^3 + 1$ and bit polynomial $x^7 + x^5 + 1$, compute the checksum using the CRC method. [5M]

4. Explain Go-Back-N Automatic Repeat Request protocol and analyze the pros and cons of Go-Back-N ARQ protocol? [10M]

5.a) Discuss about five key assumptions in Dynamic Channel Allocation in LANs and MANs? [5M]
   b) Explain how Bit Map Protocol is used as a Collision Free Protocol. [5M]

6. Explain each field in the IPv4 Header format with a neat diagram. [10M]

OR

7.a) Explain the design issues of Network Layer. [5M]
   b) Describe briefly about Broadcast routing. [5M]

8.a) Describe in detail about the TCP Congestion Control. [5M]
   b) Explain the header format for a user datagram protocol. [5M]

OR

9. Analyze the process of three protocol scenarios for establishing a connection using a three-way handshake with a neat diagram. [10M]

10. Explain the functions of user agent, message transfer agent and message access agent in e-mail system. [10M]

OR

11.a) Explain in detail about Name Servers in DNS. [5M]
   b) Describe built in HTTP request methods in detail. [5M]

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