

**Bharati Vidyapeeth's**  
**Institute of Computer Applications and Management (BVICAM)**  
**A-4, Paschim Vihar, New Delhi-63**  
**FIRST SEMESTER [MCA] Model Question paper**

<b>Paper Code: MCA-103</b>	<b>Subject: Computer Network</b>
<b>Time: 3 Hours</b>	<b>Maximum Marks: 60</b>
<b>Note: Attempt FIVE questions in all. Question No. 1 is compulsory and attempt one question from each unit.</b>	

1. Answer all the following questions briefly: - 2 × 10 = 20
  - (a) Describe Topology. CO1
  - (b) Illustrate metrics are used to assess the performance of a network. CO2
  - (c) Determine the data send from sender side using checksum error detection CO2  
technique when the original data of 16 bits is: 1010100100111001
  - (d) What is meant by piggybacking? What are its advantages and disadvantages? CO3
  - (e) In TCP, if the value of HLEN is 0111, how many bytes of options are included in CO1  
the segment.
  - (f) Compare virtual circuits and datagrams.. CO3
  - (g) Compare Exterior gateway protocol with interior gateway protocol. CO4
  - (h) Can the value of the header length field in an IPV4 packet be less than 5? When is CO4  
it exactly 5?
  - (i) Define Bandwidth and Latency CO3
  - (j) Differentiate symmetric and asymmetric encryption? CO4

**UNIT - I**

2. (a) Describe how sampling and Digitization is performed in pulse code 5 CO1  
modulation technique.
- (b) Compare TCP and IP services. 5 CO1
3. (a) Explain the Analog-to-analog conversion technique by considering an 5 CO1  
appropriate example.
- (b) Write short notes on 5 CO1
  - a. Packet Switching
  - b. Message Switching
  - c. Circuit Switching.

**UNIT - II**

4. (a) A group of N stations share a 56-kbps pure ALOHA channel. Each station 5 CO2  
outputs a 1000-bit frame on average once every 100 sec, even if the previous  
one has not yet been sent (e.g., the stations can buffer outgoing frames).  
Determine the maximum number of stations 'N'?
- (b) Illustrate the working of Bluetooth technology in data communication. 5 CO2

5. (a) Sketch the NRZ-I, NRZ-L and RZ encoding for the bit stream: 1010110000110100 5 CO2
- (b) Explain the purpose and detail working of CSMA/CA protocol. 5 CO2

### UNIT - III

6. (a) A company is granted the site address 181.56.0.0 (class B). The company needs 1000 subnets. Design the subnets. 5 CO3
- (b) Find the class of the following addresses 5 CO3  
227.13.14.88  
227.13.14.88
7. (a) Discuss in detail an interior gateway routing protocol that uses Bellman-Ford Algorithm to find the optimal route. 5 CO3
- (b) A company is granted a site address 201.70.64.0. The company needs six subnets. Design the subnets (Subnet masks for each subnet, starting and ending address of each subnet). 5 CO3

### UNIT - IV

8. (a) Compare the TCP header and the UDP header. List the fields in the TCP header that are not part of the UDP header. Give the reason for each missing field. 5 CO4
- (b) Describe the structure and functions of E-mail protocol. 5 CO4
9. (a) Explain active and passive attack with example. 5 CO4
- (b) When web pages are sent out, they are prefixed by MIME headers. Explain the reason for it. 5 CO4