PREDICTED PAPER 2025

Computer Network

Paper / Subject Code: 48891

Time: 3 hours **Max. Marks: 80**

N.B. (1) Question one is Compulsory.
(2) Attempt any 3 questions out of the remaining.
(3) Assume suitable data if required.

Q. 1

a) Explain LAN, MAN and WAN with their characteristics and applications. **[05 marks]**

b) 5-bit data bits with binary value 10110 is to be encoded using even parity Hamming code. What is the binary value after encoding? **[05 marks]**

c) Differentiate between TCP and UDP protocols with suitable examples. **[05 marks]**

d) Write short note on Simple Mail Transfer Protocol (SMTP). **[05 marks]**

Q. 2

a) Explain OSI/ISO reference model with a neat diagram and compare it with TCP/IP reference model. List the protocols at each layer. **[10 marks]**

b) Explain sliding window protocol. Describe GO Back-N and Selective Repeat protocols with suitable examples. **[10 marks]**

Q. 3

a) What is Channel Allocation problem? Explain CSMA/CD protocol in detail. A 2km long broadcast LAN uses CSMA/CD with 10^7 bps bandwidth. The signal travels along the wire at 2 x 10^8 m/s. What is the minimum packet size that can be used on this network? **[10 marks]**

b) Explain Classful and Classless IPv4 addressing. State the disadvantages of classful addressing and advantages of CIDR. **[10 marks]**

Q. 4

a) A bit stream 11010011 is transmitted using the standard CRC method. The generator polynomial is x^4+x+1. What is the actual bit transmitted? Suppose the fourth bit from left is inverted during transmission, how will the receiver detect this error? **[10 marks]**

b) What is Routing? What are desirable characteristics of routing algorithms? Explain Distance Vector Routing and Link State Routing with suitable examples. Compare both approaches. **[10 marks]**

Q. 5

a) What is SDN? Explain SDN architecture with Building Blocks. Describe the operations of control and data planes. Explain OpenFlow protocol and OpenFlow Controllers. **[10 marks]**

b) Elaborate the architectures of NOX and POX controllers of SDN with their comparison. Also explain the role of OpenFlow in SDN. **[10 marks]**

Q. 6

Write a short note on:

a) Cisco PPDIOO Network design Methodology **[05 marks]**

b) Cisco SONA Architecture **[05 marks]**

c) DNS and DHCP **[05 marks]**

d) NAT and its types **[05 marks]**
