

**Program: Diploma in Information Technology/
Computer Engineering**

Full Marks: 80

Year/Part: III/I (2022)

Pass Marks: 32

Subject: Data Communication and Computer Network

Time: 3 hrs.

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt any TEN questions.

1. Define data communication. Explain digital data communication system with proper block diagram. (8)
2. Explain OSI reference model with functions of each layer. (8)
3. Define internet, intranet and extranet. Differentiate between client-server and peer-to-peer model. (3+5)
4. Define propagation time. Explain different types of transmission media in brief. (2+6)
5. Explain briefly how errors are detected and corrected in data link layer. (8)
6. Differentiate between IEEE 802.3 and IEEE 802.4. (4+4)
7. Explain IPv4 with class and structure. (8)
8. What is routing? Point out difference between static routing and dynamic routing. (2+6)
9. Define DHCP. Write in brief about connection oriented and connection less service. (2+6)
10. What is firewall? Explain passive attacks and active attacks. (2+6)
11. Write short notes: (any TWO) (4+4)
 - a. Framing
 - b. IPv6
 - c. SMTP & POP 3
 - d. FTP

Good Luck!

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back/Scholarship Exam – 2081/2082 Chaitra/Baishakh

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Attempt any EIGHT questions.

1. Explain Transmission impairment. Describe the block diagram of communication system. **[4+6]**
2. Differentiate between MAN and WAN. Explain OSI reference model. **[4+6]**
3. What is a public switched telephone network? Explain fiber optic cable with its applications. **[3+7]**
4. What is framing? Explain the issues of data link layer. **[2+8]**
5. What is Ethernet? Explain ALOHA and VLAN. **[3+7]**
6. Calculate network address, usable host address number of subnets and broadcast address for a network of 192.168.1.20/26 **[10]**
7. Explain quality of service. Differentiate between TCP and UDP. **[4+6]**
8. What is PoP3? Differentiate between HTTP and HTTPs. **[4+6]**
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 - a. What is a Router? Describe the Client-Server Model with figure. **[2+4]**
 - b. What is IP Address? List the types of IP Address. **[4]**
10. Write short notes on : (any TWO) **[2x5]**
 - a. DNS
 - b. HDLC
 - c. Guided media
 - d. Analog Data Transmission
 - e. Properties of Secure Communication

Good Luck !

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Attempt any EIGHT questions.

1. What is transmission impairment? Draw the block diagram of digital communication system and explain. **[2+8]**
2. What are the function of network device? Explain any two of them. Explain OSI reference model. **[1+3+6]**
3. What is transmission media? Write short notes on optical fiber and satellite communication. **[2+4+4]**
4. Discuss the error correction and error detection method in detail. **[10]**
5. Explain the architecture of LAN network with their advantages and disadvantages. Define ALOHA and token ring. **[6+4]**
6. Explain circuit switching and differentiate with packet switching. **[5+5]**
7. Explain the necessity of IPV₆. Differentiate between static routing and dynamic routing. **[5+5]**
8. What is flow control? Explain the different types of IP address classes. **[2+8]**
9. What is firewall? Explain active and passive attack in network. **[4+3+3]**
10. Write short notes on: (any TWO) **[2×5]**
 - a. DHCP
 - b. Cryptography
 - c. Network topology
 - d. Subnet mask and sub-netting
 - e. Framing

Good Luck !