

## **‘I’ Scheme**

### **Sample Question Paper**

**Program Name** : Diploma in Computer Engineering  
**Program Code** : CO/CM/CW  
**Semester** : Fourth  
**Course Title** : Data Communication and Computer Network  
**Marks** : 70

<b>22414</b>
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**Time: 3 Hrs.**

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#### **Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

#### **Q.1) Attempt any FIVE of the following.**

**10 Marks**

- a) List modes of Communication.
- b) Classify Computer networks based of Transmission Technology.
- c) Define Guided & Unguided Transmission Medium.
- d) State Types of Errors.
- e) Compare LRC & VRC.
- f) Draw OSI Reference Model.
- g) List any four Networking Connecting Devices.

#### **Q.2) Attempt any THREE of the following.**

**12 Marks**

- a) Define computer network & state need of computer.
- b) Draw a neat diagram of Fiber optic cable & state its types.
- c) Describe various IEEE standards for network topologies.
- d) Draw & explain TCP/IP protocol suite.

#### **Q.3) Attempt any THREE of the following.**

**12 Marks**

- a) Compare different techniques of switching on the basis of Orientation, Flexibility, Technology, and Layer.
- b) Describe the role of transmission medium in the process of data communication.
- c) Differentiate between Hub & switch on the basis of layer, ports, device type, speed.

- d) List all layers of OSI model & state its function.

**Q.4) Attempt any THREE of the following.**

**12 Marks**

- a) Draw & describe the connecting devices required for LAN for an organization using Tree topology.
- b) Describe any 4 classes of IPv4 addresses with its range.
- c) Describe Multiplexing techniques.
- d) Give the names of network layer. Where following protocols are relate/belong to:
  - i) SMTP ii) TCP-UDP iii) IP iv) PPP
- e) For a trading firm an organization with 10users, draw network architecture design of wireless LAN.

**Q.5) Attempt any TWO of the following.**

**12 Marks**

- a) Draw and describe the process of data communication in:
  - i) Simplex mode ii) Half Duplex iii) Full Duplex
- b) Describe the working principle of Packet switching and Circuit switching techniques with neat diagram.
- c) Describe the process DHCP server configuration.

**Q.6) Attempt any TWO of the following.**

**12 Marks**

- a) Describe Bluetooth architecture technologies.
- b) Describe procedure to configure TCP/IP network layer services.
- c) Identify appropriate network topology and network connecting devices for following requirement. Draw network design for proposed network.

An organization having its office in a building of 5 floor. Each floor it needs 20 machines. There is one File server. Each floor has 2 print servers to facilitate printer capacity.

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**Sample Test Paper - I**

**Program Name** : Diploma in Computer Engineering  
**Program Code** : CO/CM/CW  
**Semester** : Fourth  
**Course Title** : Data Communication and Computer Network  
**Marks** : 20

**22414**

**Time: 1 Hour.**

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**Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

**Q.1 Attempt any FOUR.**

**08 Marks**

- a) Describe following Modes of Communication.
  - a. Simplex
  - b. Half Duplex.
- b) List any four benefits of network.
- c) Define Multiplexing. State its types.
- d) Define Error. State its types.
- e) Compare guided transmission and unguided transmission media.
- f) Write applications of guided transmission media and unguided transmission media.

**Q.2 Attempt any THREE.**

**12 Marks**

- a) Compare LAN vs WAN vs MAN on basis of Speed, Congestion, Maintenance, Area Coverage.
- b) Draw Network architecture for client server network with one file server, one print server and 5 clients connected to it via network device.
- c) Compare UTP with STP on basis of Noise, Ease of Handling, Cost, and Speed.
- d) Describe working of CRC with suitable example.

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**Sample Test Paper - II**

**Program Name** : Diploma in Computer Engineering  
**Program Code** : CO/CM/CW  
**Semester** : Fourth  
**Course Title** : Data Communication and Computer Network  
**Marks** : 20

22414

**Time: 1 Hour.**

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**Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

**Q.1 Attempt any FOUR.**

**08 Marks**

- a) List Mobile Generations with their application.
- b) Write any 2 advantages of subnetting.
- c) Define Topology. List any 2 types of topologies
- d) Write following specification of smart hub.
  - i. Protocol
  - ii. Radio Bands
- e) State use of following protocols.
  - i. Data Link Layer
  - ii. Physical Layer
- f) Define Subnet and Supernet.

**Q.2 Attempt any THREE.**

**12 Marks**

- a) Describe process of DHCP for assigning IP address.
- b) Compare IPv4 with IPv6. (Any 4 Points)
- c) Describe Piconet and Scatternet architecture with neat diagram.
- d) Write any 2 specification of following.
  - a. Gateway
  - b. Bridge