

**M.M.Polytechnic,Thergaon**

**Preliminary Exam**

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

**22414**

**Time: 2 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) Define computer network. State features of computer network.
- b) Classify Computer networks based of role.
- c) Define Guided & Unguided Transmission Medium.
- d) State Types of Errors.
- e) Compare LRC & VRC.
- f) Draw OSI Reference Model.
- g) List any four protocols of TCP/IP model.

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

**12 Marks**

- a) Compare OSI Vs TCP/IP Model.
- b) Draw a neat diagram of Fiber optic cable & explain it in detail.
- c) Compare 1G,2G,3G,4G,5G technologies.
- 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 in detail radio wave 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) Compare star topology with ring topology.
- b) Describe any 4 classes of IPv4 addresses with its range.
- c) Describe Multiplexing techniques.
- d) Where following protocols are relate/belong to:
  - i) SMTP ii) TCP-UDP iii) IP iv) PPP
- e) For a trading firm an organization with 10 users, 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) Compare 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) Elaborate in detail satellite communication.
- 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.