1 Answer in brief:  
(a) Give the full form of following abbreviations:
   (1) FDM  
   (2) ARPA  
   (3) ISP  
   (4) TDM  
(b) What is a protocol?  
(c) What is the need for Checksum?  
(d) What is bandwidth?

2 (a) Explain the various types of networks.  
(b) With the help of diagrams show the simplified view of a portion of the Internet.  

OR

2 (a) Explain the simplified communications model.  
(b) With reference to the Internet explain the following terminologies: CO, CPE, ISP, NAP, NSP, POP.
3  (a) Discuss briefly the TCP/IP protocol architecture.  8
    (b) Diagrammatically enlist the various TCP/IP protocol interfaces.  6

    OR

3  (a) Explain why digital transmission is the preferred method of transmission of signals.  8
    (b) Differentiate between guided media and unguided media.  6

4  Write short notes on: (any two)  14
   (1) TCP/IP Applications (SMTP, FTP and Telnet)
   (2) Noise
   (3) TIME DIVISION and FREQUENCY DIVISION MULTIPLEXING
   (4) OSI layers.