



Data Communication
(174111 / 224111)

P. Pages : 3

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** question from each unit.
5. Figures to the right indicate full marks.
6. Draw diagram wherever necessary.
7. Assume suitable data, if required.

UNIT - I

1. a) i) A signal of 100 w power, going into the channel with noise of 10w. In order to send 10,000 bits/sec. How much Bandwidth needed ? 4
- ii) A network with Bandwidth of 10 mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 10,000 bits ? What is the through put of this network in mbps ? 4
- b) Define the Following term. 8
 - i) Wavelength & Speed.
 - ii) Analog signal & digital signal.
 - iii) Periodic & non periodic signal.
 - iv) Attenuation & Distortion.
- c) Explain with diagram OSI reference model ? 8

UNIT – II

2. a) i) An analog signal has bit rate of 8000 bps and baud rate of 1000 bauds. How many data elements one carried by each signal element ? How many signal elements do we need ? 4
- ii) Explain different types of polar line coding scheme ? 4
- b) Explain with neat diagram ASK, FSK and PSK ? Also explain what is QAM ? 8
- c) Explain pulse code Modulation & Nyquist theorem ? 8

UNIT - III

3. a) i) What are the propagation modes of optical channel ? 4
- ii) What is multiplexing ? What are the factor on which the choice of multiplexing depends ? What are the type of multiplexing ? Explain FDM ? 4
- b) Explain the terms : 8
- Time Slot & frames.
 - Interleaving
 - Pulse staffing
 - Frame Synchronizing.
- c) What is transmission media ? What are the types of transmission media ? Explain radio wave, microwave & infrared ? 8

UNIT - IV

4. a) i) What is switching ? Why it is essential ? What are its type ? 4
- ii) Write short note on TDMA ? 4
- b) Compare circuit switching, packet switching & message switching ? 8
- c) Explain CSMA / CD with neat diagram ? 8

UNIT - V

5. a) i) Compare 'Stop-and-wait' with 'Go-back-n' protocol ? **4**
- ii) Compare Flow control and error control ? **4**
- b) Calculate the CRC checksum for the message polynomial ? **8**
 $G(x) = x^5 + x^2$ with generator polynomial
 $P(x) = x^3 + x^2 + 1$
- c) What are the types of error ? Explain any one error detection method ? **8**
