



Digital Communication Systems (New) (1280)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

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. Assume suitable data if necessary, giving reasons.
5. Figure to the right indicate full marks.

UNIT - I

1. Attempt **any two**. 10
 - a) Explain :
 - i) Random process
 - ii) Stationary and ergodic random process.
 - b) State and prove following properties of Fourier transform. 10
 - i) Multiplication in time domain.
 - ii) Convolution in time domain.
 - c) Explain mean / average of random variable, movement and variance. 10

UNIT - II

2. Attempt **any two**.
 - a) State and prove sampling theorem in frequency domain. 10
 - b) What is the necessity of nonuniform quantization and explain companding. 10
 - c) What is slope overload distortion and granular noise in delta modulation and how it is removed in ADM ? 10

UNIT - III**3. Attempt any two.**

- a) What are desirable properties of line codes ? Explain various line codes. **10**
- b) Explain with block diagram operation of Early - late Gate synchronizer. **10**
- c) Why is need of scrambler and unscramblers ? Explain their operation with lock diagram. **10**

UNIT - IV**4. Attempt any two.**

- a) Explain differential phase shift keying ? State it's merits and demerits. **10**
- b) Explain frequency shift keying in details. **10**
- c) Explain FDMA, CDMA technique in details. **10**

UNIT - V**5. Attempt any two.**

- a) Explain Shannon's fundamental theorem for information transmission on a noisy channel. **10**
- b) Explain Linear Block codes in details. **10**
- c) Explain ARQ system. **10**
