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**[3762]-807**

**S.E. (IT) (II Sem.) EXAMINATION, 2010**

**PRINCIPLES OF COMMUNICATION ENGINEERING**

**(2003 COURSE)**

**Time : Three Hours**

**Maximum Marks : 100**

**N.B. :—** (i) Answer *three* questions from Section I and *three* questions from Section II.

(ii) Answers to the two Sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Figures to the right indicate full marks.

(v) Your answers will be valued as a whole.

(vi) Assume suitable data, if necessary.

### **SECTION I**

1. (a) Explain in detail block diagram of communication system. What is its importance ? [8]

(b) Find the F.T. of the existing voltage : [8]

$$\begin{aligned} V(t) &= V_0 e^{-2t} & t &\geq 0 \\ &= 0 & t &\leq 0 \end{aligned}$$

Also sketch its amplitude and phase spectrums.

*Or*

2. (a) Define Fourier transform. Explain its properties. [8]

(b) Explain deterministic and random signals in detail with examples. [8]

P.T.O.

3. (a) What is Amplitude modulation ? Explain in detail its transmitter block diagram. [8]
- (b) A 1000 kHz carrier is simultaneously modulated with 300 Hz, 800 Hz and 2 kHz audio sine waves. What will be the frequencies present in the O/P ? [8]

*Or*

4. (a) Compare AM with FM. Also explain which modulation is useful for long distance communication ? [8]
- (b) Explain Armstrong frequency system with detailed block diagram. [8]
5. (a) Explain sensitivity, selectivity and fidelity in detail. How are these parameters measured ? Explain the set up used for measurement. [10]
- (b) What is intermediate frequency (IF) ? What are the major factors influencing the choice of IF ? How is IF selected for AM and FM ? Explain. [8]

*Or*

6. (a) What are the problems with basic diode detector ? How are these overcome in practical diode detector ? [8]
- (b) What is AGC ? Explain delayed AGC. Also enlist role of AFC in receiver. [10]

## SECTION II

7. (a) What is quantization and compounding related to PCM ? [8]
- (b) Explain Cellular telephone system in detail. [8]

*Or*

8. (a) Draw and explain TDM and FDM technique principles. [8]
- (b) Explain different tones in telephone system with their significance. [8]
9. (a) Explain sky wave and space wave propagations. [8]
- (b) Explain Yagi-antenna and its various components with their functions. [8]

*Or*

10. (a) Draw and explain block diagram of color TV receiver. [8]
- (b) Explain the fundamentals of transmission lines. Also explain characteristic impedance and standing wave ratio. [8]
11. (a) What is spread spectrum technique ? Explain FHSS in detail. [10]
- (b) What is digital communication ? Compare Analog and Digital communication. [8]

*Or*

12. (a) Explain block diagram of Fibre optic communication. [8]
- (b) Explain layers of OSI model. [6]
- (c) Enlist advantages of digital communication. [4]