Total No. of Questions—**12**] [Total No. of Printed Pages—**4**

[3662]-277

S.E. (IT) (II Sem.) EXAMINATION, 2009

PRINCIPLES OF COMMUNICATION ENGG.

(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.

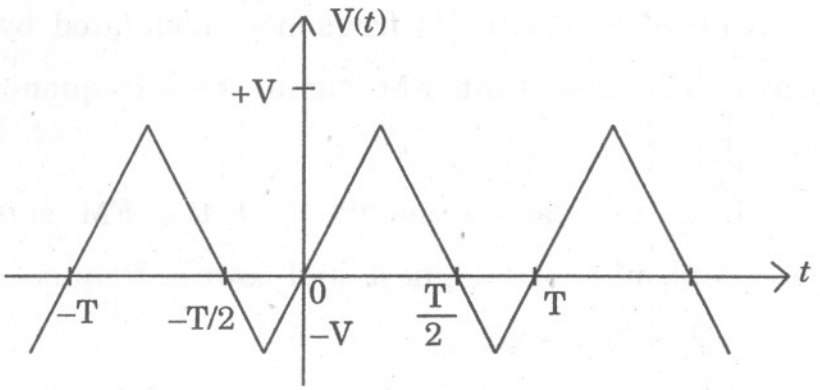
(*v*) Assume suitable data, if necessary.

SECTION I

1. (*a*) What is the importance of communication system ? Explain in detail. [6]

(*b*) Explain deterministic and random signals with examples. [4]

(*c*) Find the trigonometric Fourier series of the triangular waveform shown below : [6]



P.T.O.

Or

2. (*a*) Define Fourier transform. Enlist properties of F.T. How F.T. is important in power spectral calculations ? [8]

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

$$V(t) = V_0 e^{-t} \quad t \geq 0$$
$$= 0 \quad t \leq 0$$

Also sketch approximately its amplitude and phase spectrum.

3. (*a*) Explain the importance of modulation in : [8]

(*i*) Avoid mixing of signal

(*ii*) Multiplexing of signal.

(*b*) Define deviation Ratio. Explain the significance of deviation ratio in F.M. [8]

Or

4. (*a*) Write short notes on : [6]

(*i*) Pre-emphasis and

(*ii*) De-emphasis.

(*b*) A 107.6 MHz carrier is frequency modulated by a 7 kHz sine wave. The resultant FM signal has frequency deviation of 50 kHz : [10]

(*i*) Find the carrier swinging of the FM signal.

(*ii*) Determine the highest and lowest frequencies attained by modulated signal.

(*iii*) What is modulation Index of FM wave ?

(*iv*) Sketch the result.

5. (*a*) Draw and explain block diagram of AM Superheterodyne Receiver and explain importance of Intermediate frequency (IF). [10]

(*b*) Explain the role of AFC and AGC in detail. [8]

Or

6. (*a*) What is double spotting and negative peak clipping ? How is it removed in practical diode detector ? [8]

(*b*) Draw and explain with block schematic SSB receiver. [10]

SECTION II

7. (*a*) Compare TDM and FDM. [8]

(*b*) Explain block diagram of PCM. [8]

Or

8. (*a*) Explain cellular telephone system in detail. [8]

(*b*) What is the significance of Tone in telephone system ? Explain dial tone and call in progress tone in detail. [8]

9. (*a*) Explain line of sight propagation and ground wave propagation. [8]

(*b*) Draw and explain block diagram of TV receiver. [8]

Or

10. (*a*) Explain the following characteristics of Antenna : [8]

(*i*) Beam width

(*ii*) Directive gain

(*iii*) Directivity

(*iv*) Antenna efficiency.

(*b*) Explain SWR phenomenon of transmission line. Explain relation between SWR and reflection coefficient. [8]

11. (*a*) Write a short note on Fibre optic communication. [8]

(*b*) What is spread spectrum technique ? Explain DSSS in detail. [10]

Or

12. (*a*) Explain in brief Layers of OSI model. [8]

(*b*) What is digital communication ? Explain its block in detail. State its applications. [10]