2011

M.Sc.

3rd Semester Examination

ELECTRONICS

PAPER—ELC-303

Full Marks : 50

Time : 2 hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

(Communication Engineering)

Answer *Q. No. 1* and any *three* questions from the rest.

1. (a) What is the importance of TDM in electronic communication ?

(b) Discuss the function of IMSI and IMEI in connection with mobile communication.

(c) What are the advantages of VSB modulation o other kind of amplitude modulation?

(d) Find the capacity of a transmission channel that a band width of 300 H_7 and $\frac{S}{N}$ ratio of 30dB.

(e) What is monophonic FM broad cast? 2

2. (a) Prove that the inverse Fourier transform of $\delta(\pi f$ $\frac{1}{2\pi}\delta(f)$.

(b) Using the time convolution property show tha $g(t) \leftrightarrow G(f)$.

then

$$\int_{-\infty}^{t} g(\tau)d\tau \leftrightarrow \frac{G(f)}{j2\pi f} + \frac{1}{2}G(o)\,\delta(f) \ .$$

5

3. (a) What is the advantage of digital communicatic Give a comparative graphical explanation of Ph Shift Keying (PSK) and Frequency Shift Keying (F signals for a given set of digital data stream a analog carrier.

(b) Explain with suitable diagram the schemes generating and detecting an Amplified Shift Key (ASK) signal. (2+3)

4. (a) With proper Diagram discuss Armstrong method of FM generation for wideband FM generation.

(b) How can you demodulate an FM signal using Phase Locked Loop ?

(c) An angle-modulated signal with carrier frequency $w_c = 2\pi \times 10^5$ is described by the equation.

$\phi_{EM}(t) = 10 \cos (w_c t + 5 \sin 3000t + 10 \sin 2000\pi t)$

Find frequency deviation and deviation ratio.

4+3+3

5. (a) Calculate the capacity of a standard telephone channel with a 32 DB signal to noise ratio. Telephone channel occupy the frequency range of 300 to 3400 Hz.

(b) How can you generate PPM signal from PWM signal ?

(c) What is the quantization noise in a PCM system ? Explain a mid thread quantizer.

(d) How a PCM signal can be re-constructed using an Integrating RC circuit ?

3+2+(1+2)+2

6. Write short notes in (any *two*) : 5+

(a) Super heterodyne receiver.

(b) Delta Modulation.

(c) Slope detector for FM demodulation.

[Internal Assessment — 10]