

This question paper contains 2 printed pages]

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S. No. of Question Paper : 87

Unique Paper Code : 222561

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Name of the Paper : Communication Electronics (ELPT-505)

Name of the Course : B.Sc. Physical Science/Applied Physical Science

Semester : V.

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any five questions.

All questions carry equal marks.

1. (a) Explain the block diagram of a communication system. 5
(b) The Fourier series for a given wave is : 10

$$v(t) = V + \frac{4v}{\pi} \left(\cos \omega t - \frac{1}{3} \cos 3 \omega t + \frac{1}{5} \cos 5 \omega t - \frac{1}{7} \cos 7 \omega t + \dots \right)$$

What is the value of the dc component and draw its frequency and phase spectrum, upto the 7th harmonic ?

2. (a) Define amplitude modulation and draw its frequency spectrum. 5
(b) Explain the generation of amplitude modulation using collector modulator. 10
3. What is Frequency modulation and modulation index ? Explain FM generation using Balanced slope detector. 15
4. (a) Draw the block diagram of a TRF receiver and explain its working. 5
(b) Describe the working of FM transmitter using suitable block diagram. 10

P.T.O.

5. (a) Explain the generation of a PCM signal. 5
- (b) Describe the generation of PWM signals with the help of a suitable block diagram. 10
6. (a) Discuss the block diagram for the generation of PSK signals. 10
- (b) What do you understand by ASK and FSK. 5
7. Discuss in detail :
- (a) Cellular/frequency reuse concept in mobile communication. 7½
- (b) What are the advantages of fiber optics communication system and the role of total internal reflection in it ? 7½
8. Write short notes on any *two* of the following : 15
- (a) Downlink station
- (b) Step index and graded index fibers
- (c) PPM.