

Roll No.

Total Pages : 3

238403

May, 2019
M.Sc. IV SEMESTER
ELECTRONIC COMMUNICATION SYSTEM
(PHL 402-A)

Time : 3 Hours]

[Max. Marks:75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Define mixer circuit and intermediate frequency. (1.5)
- (b) What is over modulation and under modulation? (1.5)
- (c) Define Narrowband wideband FM. (1.5)
- (d) Why we need of modulation? (1.5)
- (e) What will be the bandwidth required for a FM signal if the modulating frequency 1 kHz and the maximum deviation is 10 kHz? (1.5)
- (f) What is sampling and quantization? (1.5)

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- (g) Explain the difference between PAM and PWM. (1.5)
- (h) Define duty cycle and pulse energy. (1.5)
- (i) What is uplink and downlink? (1.5)
- (j) Define coaxial cables and fiber optics. (1.5)

PART-B

- 2. (a) Define Amplitude modulation and derive the equation for Amplitude modulated wave. (10)
- (b) The antenna current of an AM transmitter is 8A when only carrier is sent but it increases to 8.93A when the carrier is sinusoidally modulated. Find the % of modulation. (5)
- 3. (a) Explain the operation of the balanced slope detector, using a circuit diagram and response characteristics. (10)
- (b) Write short notes on CW Doppler radar. (5)
- 4. Explain Time division multiplexing and frequency division multiplexing. What are the important advantages of TDM over FDM. (15)
- 5. (a) Explain how PPM and PWM signals are generated from PAM signals. (10)
- (b) Explain the methods of demodulation of PAM signals. (5)

- 6. (a) Briefly describe the principle of operation behind the use of radar for measuring target range, velocity and location. (10)
- (b) An angle modulated signal is expressed by $x(t) = \cos(2 \times 10^8 t + 75 \sin 2 \times 10^3 t)$. Calculate the peak frequency deviation of the carrier. (5)
- 7. Write short notes on : (15)
 - (a) Superhetrodyne receiver.
 - (b) Pulse radar system.
 - (c) Pulse code modulation.