

Q.P. Code : 588101

(3 Hours)

[Total Marks : 80

- N.B. :** (1) Question No.1 is compulsory.
 (2) Attempt **any three** questions out of remaining five.
 (3) **Figures** to the right indicate full marks.
 (4) Assume suitable data if required and mention the same in answer sheet.

1. Solve any four :- 20
 - (a) Classify and explain the various types of noise affecting communication.
 - (b) AM is a wastage of power and bandwidth, justify the statement.
 - (c) Compare between FM and PM.
 - (d) Explain Pre-emphasis and De-emphasis.
 - (e) What is companding.
2. (a) A modulating signal $20 \sin(2\pi \times 1000 t)$ is used to modulate a carrier signal $80 \sin(2\pi \times 10000 t)$. Find the percentage modulation, frequencies of the sideband components and their amplitudes. What is the BW of the modulated signal? Also draw the spectrum of the AM wave. 10
 - (b) Explain with neat block diagram any one method for suppression of unwanted sideband. 10
3. (a) What are different methods of FM generation? Sketch the circuit and explain the principle of reactance modulator? 10
 - (b) State and prove sampling theorem for band limited signal. What is aliasing effect? 10
4. (a) Explain with neat block diagram working of Adaptive delta modulator. What are the drawbacks of delta modulator? 10
 - (b) What is signal multiplexing? Explain FDM in detail. 10
5. (a) Explain with neat block diagram and waveform of AM Super-heterodyne radio receiver. 10
 - (b) Explain operation of Foster Seeley discriminator with the help of circuit and phasor diagram. 10

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Q.P. Code : 588101

2

6. Write short notes on **any four** :-

- (a) Vestigial Side Band (VSB) transmission.
- (b) Practical diode detector with delayed AGC.
- (c) Generation and detection of PPM.
- (d) Amplitude limiting and thresholding in FM.
- (e) Quadrature amplitude modulation.

20