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| Question  No | WRT | **1 Mark Questions** | 7 | 5 |  |
| 1 |  | What is the function of a demodulator in a communication receiver? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 2 |  | In a DSB-SC receiver, what component is most affected by noise? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 3 |  | What does SNR stand for? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 4 |  | What is the bandwidth of a DSB-SC signal? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 5 |  | How does SSB compare to DSB-SC in terms of noise performance? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 6 |  | What type of filter is used in SSB to remove one of the sidebands? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 7 |  | How does modulation depth affect the noise performance of AM? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 8 |  | In AM, does noise affect the carrier or sidebands more? |  | 1 | CO-2 |
|  |  |  |  |  |  |
| 9 |  | What happens to SNR in FM as the modulation index increases? |  | 1 | CO-2 |
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| Question  No | WRT | **2 Mark Questions** | 4 | 2 |  |
| 1 |  | Explain the purpose of a band-pass filter in a receiver. |  | 2 | CO-2 |
|  |  |  |  |  |  |
| 2 |  | How does noise affect the demodulation of a DSB-SC signal? What is the output signal-to-noise ratio (SNR) for a DSB-SC receiver? |  | 2 | CO-2 |
|  |  |  |  |  |  |
| 3 |  | Define the signal-to-noise ratio at the output of an SSB receiver. |  | 2 | CO-2 |
|  |  |  |  |  |  |
| 4 |  | What is the SNR at the output of an AM receiver with envelope detection? |  | 2 | CO-2 |
|  |  |  |  |  |  |
| 5 |  | What is the effect of noise on the phase of an FM signal? |  | 2 | CO-2 |
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| Question  No | WRT | **5 Mark Questions** | 4 | 2 |  |
| 1 |  | A 10V sinusoidal audio signal is transmitted with a frequency sensitivity factor of 0.5, and it is bandlimited to 15 15KHz. Calculate the Figure of merit if the modulation scheme used is FM. |  | 5 | CO-2 |
|  |  |  |  |  |  |
| 2 |  | An amplitude-modulated signal is given by s(t) = 10 cos (2π 106 t) (1 + 0.5 sin (1,000 π t)). The figure of merit of the AM receiver to demodulate the above AM wave is. |  | 5 | CO-2 |
|  |  |  |  |  |  |
| 3 |  | A frequency modulator has frequency sensitivity Kf = 10 kHz/volt. If the modulator is used to modulate a single-tone signal of m(t) = 20 cos (6,000πt) and the modulated signal is demodulated at the receiver by using a frequency discriminator (FM), the figure of merit of the receiver is |  | 5 | CO-2 |
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| Question  No | WRT | **12 Mark Questions** | 4 | 2 |  |
| 1 |  | Derive the Figure of Merit of the DSB-SC system. |  | 12 | CO-1 |
|  |  |  |  |  |  |
| 2 |  | Derive the Figure of Merit of the SSB-SC system. |  | 12 | CO1 |
|  |  |  |  |  |  |
| 3 |  | Derive the Figure of Merit of the AM system. |  | 12 | CO1 |
|  |  |  |  |  |  |
| 4 |  | Derive the input Signal to Noise Ratio of the FM system. |  | 12 | CO2 |
|  |  |  |  |  |  |
| 5 |  | Derive the output Signal-to-Noise Ratio of the FM system. |  | 12 | CO2 |
|  |  |  |  |  |  |
| 6 |  | Audio Signal Bandlimited to 15 KHz is transmitted through a channel after modulation. Power loss in the channel is given as 50 dB.2 sided Noise power spectral density is 10−10 𝑤/𝐻𝑧. 𝐹𝑖𝑛𝑑 transmitted power required to get (𝑆/𝑁) o/P of 40 dB.  If the modulation scheme used is  a) DSB  b) AM with 𝜇 = 1  c) FM with 𝛽 = 5 |  | 12 | CO2 |
|  |  |  |  |  |  |