

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-19) Regular Examinations August – 2021**ANALOG COMMUNICATIONS****[Electronics and Communication Engineering]****Time: 3 hours****Max. Marks: 60****Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

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|----|----|--|---------|----|-----|-----|
| 1. | a) | Define standard form of Amplitude Modulation (AM) and explain the time and frequency domain expression of AM wave. | 6 Marks | L2 | CO1 | PO2 |
| | b) | The output power of an AM Transmitter is 1KW when sinusoidal signal modulated to depth of 100%. Calculate the power in each side band when the modulation depth is reduced to 50%. | 6 Marks | L2 | CO1 | PO2 |

(OR)

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|----|----|---|---------|----|-----|-----|
| 2. | a) | Discuss about frequency domain description of VSB modulation with neat diagram. | 6 Marks | L2 | CO1 | PO1 |
| | b) | Explain coherent detection of SSB waves with the help of block diagram. | 6 Marks | L3 | CO1 | PO2 |

UNIT-II

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|----|----|--|---------|----|-----|-----|
| 3. | a) | An FM radio link has a frequency deviation of 40KHz, the modulating signal frequency is 4 KHz. Calculate bandwidth needed for the link. What will be the bandwidth, if the frequency deviation is reduced to 20 KHz. | 6 Marks | L1 | CO1 | PO2 |
| | b) | Explain the FM demodulation using first order PLL. | 6 Marks | L2 | CO1 | PO4 |

(OR)

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|----|----|---|---------|----|-----|-----|
| 4. | a) | Show that frequency modulation can be derived using phase modulation. | 6 Marks | L4 | CO1 | PO2 |
| | b) | Explain how zero crossing detector can be used as an FM demodulator. | 6 Marks | L2 | CO1 | PO4 |

UNIT-III

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|----|----|--|---------|----|-----|-----|
| 5. | a) | Discuss in detail about threshold effect in FM system. | 6 Marks | L4 | CO2 | PO2 |
| | b) | An FM receiver receives an FM Signal $v(t) = 10 \cos(2\pi 10^8 t + 6) \sin(2\pi 10^6 t)$. Calculate Figure of Merit of this receiver. | 6 Marks | L4 | CO2 | PO2 |

(OR)

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|----|----|--|---------|----|-----|-----|
| 6. | a) | Derive the expression for signal to noise ratio at the output of envelope detector of a normal AM System. | 6 Marks | L4 | CO2 | PO2 |
| | b) | A message signal band limited to 10 KHz is transmitted through channel after modulation, power loss in the channel is 40dB and double sided noise power spectral density is given by 10^{-10} Watt/Hz. Find the transmitted power required to get output SNR of 50dB. If modulation schemes used is i) AM with $\mu=1$; ii) FM with $\beta=4$. | 6 Marks | L1 | CO2 | PO1 |

UNIT-IV

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|----|----|---|---------|----|-----|-----|
| 7. | a) | Draw the block diagram of low level and high level AM transmitter and explain its working. | 6 Marks | L1 | CO3 | PO1 |
| | b) | Draw the block diagram of super heterodyne receiver and explain the function of each block. | 6 Marks | L1 | CO3 | PO3 |

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|----|----|---|---------|----|-----|-----|
| 8. | a) | Explain about simple AGC and delayed AGC. | 6 Marks | L4 | CO3 | PO2 |
| | b) | A super heterodyne receiver the intermediate frequency is 15MHz and the local oscillator frequency is 3.5GHz. If the frequency of the received signal is greater than the local oscillator frequency, then what is image frequency? | 6 Marks | L1 | CO3 | PO1 |

UNIT-V

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|----|----|---|---------|----|-----|-----|
| 9. | a) | Explain the Time division multiplexing. | 6 Marks | L1 | CO4 | PO1 |
| | b) | Explain the PWM modulation and its generation with neat sketches. | 6 Marks | L3 | CO4 | PO2 |
- (OR)**
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|----|----|--|---------|----|-----|-----|
| 10 | a) | Explain the generation and demodulation of PPM with the help of block diagram. | 6 Marks | L1 | CO4 | PO1 |
| | b) | Compare the PAM, PWM and PPM. | 6 Marks | L2 | CO4 | PO1 |

