**18EC505**

**Hall Ticket Number:**

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| **III/IV B.Tech(Regular) DEGREE EXAMINATION** | | | |
| **February, 2021** | **Electronics & Communication Engineering** | | |
| **Fifth Semester** | **Analog And Digital Communications** | | |
| **Time:** Three Hours | | **Maximum:**50 Marks | |
| *Answer ALL Questions from PART-A.* | | | (1X10 = 10 Marks) |
| *Answer* ***ANY FOUR*** *questions from PART-B.* | | | (4X10=40 Marks) |
| **Part - A** | | | |

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| 1. | Answer all questions | | (10X1=10 Marks) | | | |
|  | a) | Define Under modulation. | | CO1 | |  |
|  | b) | Compare AM, DSB-SC and SSB-SC in terms of Bandwidth. | | CO1 | |  |
|  | c) | A broadcast AM transmitter radiates 50KW of carrier power. What will be the radiated power at 85% modulation? | | CO1 | |  |
|  | d) | State Carson’s rule. | | CO2 | |  |
|  | e) | Define Angle Modulation. | | CO2 | |  |
|  | f) | What is pre-emphasis? Why is it used? | | CO2 | |  |
|  | g) | Differentiate between coherent and non coherent detection. | | CO3 | |  |
|  | h) | List the errors in delta modulation. | | CO3 | |  |
|  | i) | What is meant by Companding? | | CO4 | |  |
|  | j) | Sketch the signal constellation diagram of BASK. | | CO4 | |  |
|  | **Part - B** | | | | | |
| 2. | a) | List out the methods for generation of SSB-SC signal and explain any one of the method in detail. | | CO1 | | 5M |
| b) | Discuss the working of envelope detector with a neat circuit diagram. | | CO1 | | 5M |
|  |  | | | | | |
| 3. | a) | Explain the generation of AM wave using Switching modulator. | | CO1 | | 5M |
|  | b) | Explain about COSTAS loop with a neat block diagram for demodulating DSB-SC wave. | | CO1 | | 5M |
|  |  | | | | | |
| 4. | a) | Discuss the FM generation using Indirect method. | | CO2 | | 5M |
|  | b) | Draw the block diagram of FM Superhetrodyne receiver and explain the function of each block. | | CO2 | | 5M |
|  |  | | | | | |
| 5. | a) | Explain with appropriate sketches and relevant mathematical expressions about demodulation of a FM signal. | | CO2 | 5M | |
|  | b) | An FM signal is represented in time domain as s (t) = 10Cos (2π106 t + 5Sin 8π103t). Calculate the frequency deviation, modulation index, power and band width. | | CO2 | 5M | |
|  |  | | | | | |
| 6. |  | Explain in detail about transmitter and receiver of PCM. | | CO3 | | 10M |
|  |  | | | | | |
| 7 | a) | Given the data stream of 01011110, sketch the transmitted sequence of pulses for each of the following line codes i) Unipolar NRZ ii)Polar NRZ iii ) Unipolar RZ iv) Polar RZ v) Manchester code | | CO3 | | 5M |
|  | b) | Compare PAM, PWM and PPM pulse modulation techniques. | | CO3 | | 5M |
|  |  | | | | | |
| 8. |  | Explain in detail about generation and detection of ASK | | CO4 | | 10M |
|  |  | | | | | |
| 9. | a) | Define matched filter. Evaluate the impulse response of matched filter. | | CO4 | | 5M |
|  | b) | With neat sketch explain the working principle of QPSK. | | CO4 | | 5M |

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