**18EC505**

**Hall Ticket Number:**

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| **III/IV B.Tech(Regular / Supplementary) DEGREE EXAMINATION** | | | |
| **January, 2022** | **Electronics & Communication Engineering** | | |
| **Fifth Semester** | **Analog and Digital Communications** | | |
| **Time:** Three Hours | | **Maximum:** 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X10 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |
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| 1. | a) | What should be the range of modulation index in AM for demodulating the signal without any distortion? | | CO1 |  |
|  | b) | What is the need for modulation? | | CO1 |  |
|  | c) | Calculate the efficiency of AM wave for 100% Modulation. | | CO1 |  |
|  | d) | What is the significance of Carson’s rule? | | CO2 |  |
|  | e) | What are the types of angle modulation? | | CO2 |  |
|  | f) | Compare AM and FM in terms of BW. | | CO2 |  |
|  | g) | What is the use of regenerative repeater in PCM? | | CO3 |  |
|  | h) | What are the drawbacks of DM system? | | CO3 |  |
|  | i) | Sketch the constellation diagram of BPSK. | | CO4 |  |
|  | j) | Define matched filter and mention its importance. | | CO4 |  |
| **Unit –I** | | | | | |
| 2. | a) | With necessary expressions, waveforms and spectrums, Explain AM for an arbitrary baseband signal m(t). | | CO1 | 5M |
|  | b) | A Carrier of 750 W, 1 MHz is amplitude modulated by sinusoidal signal of 2 KHz to a depth of 50%. Calculate Bandwidth, Power in sidebands and total power transmitted | | CO1 | 5M |
| **(OR)** | | | | | |
| 3. | a) | List out the methods for generation of SSB-SC signal and explain any one of the method in detail | | CO1 | 5M |
|  | b) | Compare AM, D.S.B-SC, S.S.B-SC and V.S.B transmission. | | CO1 | 5M |
| **Unit –II** | | | | | |
| 4. | a) | Derive the expression for Narrow band FM and compare it with AM. | | CO2 | 5M |
|  | b) | A Sinusoidal carrier of 20V, 2 MHz is frequency modulated by sinusoidal message signal of 10V, 50 kHz and Kf=55 kHz/V. Find Frequency deviation (∆f), Modulation index (β), band width and power. | | CO2 | 5M |
| **(OR)** | | | | | |
| 5. |  | With neat sketches explain pre-emphasis and de-emphasis in F.M. | | CO2 | 10M |
| **Unit –III** | | | | | |
| 6. | a) | Explain different types of quantization. | | CO3 | 5M |
|  | b) | State and prove sampling theorem. | | CO3 | 5M |
| **(OR)** | | | | | |
| 7. |  | With a neat sketch explain the principle and operation of PCM and mention its advantages. | | CO3 | 10M |
| **Unit –IV** | | | | | |
| 8. |  | | Explain about QPSK in detail with waveforms. | CO4 | 10M |
| **(OR)** | | | | | |
| 9. | a) | Explain in detail about generation , detection and probability of error of FSK | | CO4 | 10M |

