| Reg. No. | | | | | | | | | | | | | |
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| Question Paper Code | 12103 |
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28 JUL 2023

**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023**

Third Semester

**Electronics and Communication Engineering**

(Common to Computer Science and Engineering & Information Technology)

**20ESEC301 - COMMUNICATION ENGINEERING**

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

| | | *Marks, K-Level, CO* |
|---|---|---|
| 1. | Describe the Phasor diagram of AM wave. | *2,K1,CO1* |
| 2. | What are the advantages of DSB-SC and SSB-SC over AM? | *2,K1,CO1* |
| 3. | Compare FM and PM. | *2,K2,CO2* |
| 4. | List the difference between NBFM and WBFM. | *2,K2,CO2* |
| 5. | Compare QAM and QPSK. | *2,K2,CO4* |
| 6. | Explain the term "ISI"? How do you alleviate ISI? | *2,K2,CO4* |
| 7. | Define Hamming distance and calculate its value for two code words 11100 and 11011. | *2,K2,CO5* |
| 8. | Define entropy and its property. | *2,K1,CO5* |
| 9. | Write about aperture actuators used in satellite. | *2,K1,CO6* |
| 10. | Define Pseudo-Noise sequence. | *2,K1,CO6* |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

| | | | |
|---|---|---|---|
| 11. | a) | Explain the working of super heterodyne receiver with neat block diagram. Also mention its advantages. | *13,K2,CO1* |
| | | **OR** | |
| | b) | Explain the generation of DSB-SC using balanced modulator and ring modulator. | *13,K2,CO1* |
| 12. | a) | Explain in detail about FM generation using indirect method. | *13,K2,CO2* |
| | | **OR** | |
| | b) | Explain in detail about FM detection method. | *13,K2,CO2* |
| 13. | a) | Discuss the operation of a QPSK modulator with a neat diagram. Draw its truth table, phasor and constellation diagram. | *13,K2,CO4* |

**OR**

b) Explain with a neat diagram how the ASK signal is generated and detected? List its advantages, disadvantages and applications. *13,K2,CO4*

14. a) Five source messages are probable to appear as m1= 0.4, m2 = 0.15, m3 = 0.15, m4 = 0.15 and m5 = 0.15. Examine coding efficiency for Shannon Fano coding and Huffman coding. *13,K3,CO5*

**OR**

b) (i) State Shannon's various theorems and explain each theorem in detail. *7,K2,CO5*

(ii) Discuss in detail about bandwidth –S/N tradeoff. *6,K2,CO5*

15. a) Discuss the FDMA and TDMA techniques used in wireless communication with their merits and demerits. *13,K2,CO6*

**OR**

b) Define CDMA. Explain CDMA encoder and decoder with the help of neat block diagram. Also mention itsS advantages, disadvantages & applications. *13,K2,CO6*

**PART - C (1 × 15 = 15 Marks)**

16. a) Explain the working of Delta Modulator (DM) and Adaptive Delta Modulator (ADM) with neat block diagrams. Also explain how the performance of Delta Modulator is improved by making the step size control. *15,K2,CO3*

**OR**

b) In what situation multiplexing is used? How could you compare the performance of different multiplexing techniques? Discuss in detail. *15,K2,CO3*