

Code No: 154AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech II Year II Semester Examinations, February -2024****ANALOG AND DIGITAL COMMUNICATIONS****(Common to ECE, ECM)****Time: 3 Hours****Max. Marks: 75**

- Note:** i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) List different types of analog modulations. [2]
- b) Define modulation and explain the need of it. [3]
- c) Define modulation index and bandwidth of FM. [2]
- d) List the disadvantages of FM over AM. [3]
- e) What is receiver and give the classification of receiver? [2]
- f) Give the working principle of superhetrodyne receiver. [3]
- g) Define the Quantization Noise. [2]
- h) Write the working principle of DPCM. [3]
- i) List the applications of eye diagram. [2]
- j) Write the working of ASK- Modulator. [3]

PART – B**(50 Marks)**

- 2.a) Calculate the percentage power saving when the carrier and one of the sidebands are suppressed in an AM wave modulated to a depth of 100% and 50%.
 - b) With the help of waveforms and spectrum, describe the concept of Amplitude modulation both in time domain and frequency domain. [4+6]
- OR**
- 3.a) Draw and explain the principle of vestigial side band modulation.
 - b) Compare AM with DSB - SC and SSB - SC. [5+5]
4. What are the different demodulation techniques of FM? Explain the demodulation of F.M signal using balanced slope detector. [10]
- OR**
- 5.a) Discuss the generation of FM wave using direct method.
 - b) Compare NBFM and WBFM. [5+5]
- 6.a) Draw the block diagram of FM receiver and explain each block, briefly.
 - b) Draw and explain about Tuned radio frequency receiver. [5+5]
- OR**
- 7.a) Define Sensitivity, Selectivity and image frequency.
 - b) What is AGC? Explain different types of AGC. [5+5]

- 8.a) Describe the generation and demodulation of PPM with the help of block diagram.
b) Explain about the operation of DM and Adaptive DM. [5+5]

OR

- 9.a) With a neat waveform explain Flat-top PAM sampling.
b) How the performance of the PCM system is influenced by the noise and calculate SNR in the PCM system? [5+5]

- 10.a) Explain the generation and reception of DPSK signals with a neat block diagram.
b) Write a short note on ISI. [7+3]

OR

- 11.a) Write a short note on coherent BPSK Detection.
b) Explain the QAM technique in detail. [5+5]

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