R18

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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