



**R22 Regulation** **Subject code: 4E4DB**

**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**

(Autonomous, Accredited by NAAC with 'A+' Grade)

**B.Tech IV Semester Supplementary Examinations, December 2024**

**ANALOG AND DIGITAL COMMUNICATIONS**

(ECE)

**Maximum Marks: 60**

Date: 05.12.2024

Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A		CO	Bloom Tx
All the following questions carry equal marks (10X1M=10 Marks)			
1.a)	Compare AM & DSB-SSC.	CO1	BL2
b)	The total power content of AM signal is 1kW. Determine the power being transmitted at the carrier frequency and each of the sidebands when the %modulation is 100.	CO1	BL3
c)	Define modulation index.	CO2	BL1
d)	Define instantaneous frequency deviation.	CO2	BL1
e)	Present the concept of frequency stability in the FM transmitter.	CO3	BL2
f)	What is image frequency?	CO3	BL1
g)	How PPM is derived from PWM?	CO4	BL2
h)	Paraphrase the concept of ADPCM.	CO4	BL2
i)	What is binary phase shift keying?	CO5	BL1
j)	Define QAM.	CO5	BL2
Part-B			Bloom Tx level
Answer All the following questions. (5X10M=50Marks)			
2	A) What is meant by modulation and explain the benefits of modulation. [6M] B) Draw the waveforms and spectrum of Amplitude Modulation (AM) for an arbitrary baseband signal $x(t)$ . [4M]	CO1	BL2
OR			
3	A) Explain generation of DSB-SC signal with the help of balanced modulator using diodes. [5M] B) Write short notes on frequency discrimination method of AM SSB – SC generation. [5M]	CO1	BL2
4	Derive time domain expression representing WBFM wave, also give equation representing its spectrum. [10M]	CO2	BL3
OR			

5	Explain the generation of FM using Armstrong method with a neat block diagram. [10M]	CO2	BL3
6	A) Explain the characteristics of a radio receiver. [4M] B) Explain the operation of Tuned radio frequency (TRF) receiver with the block diagram and mention its advantages and disadvantages. [6M]	CO3	BL2
OR			
7	What is AGC? Draw and explain a simple AGC circuit and what are the different types of AGC explain them. [10M]	CO3	BL3
8	A) Draw a neat block diagram explain the PCM system. [5M] B) With necessary equations and waveforms, explain the concept of PSK. [5M]	CO4	BL3
OR			
9	With a block diagram and necessary equations explain generation and detection of DPSK [10M]	CO4	BL5
10	Write a note on QPSK modulator and demodulator. Draw its phasor and constellation diagram. Explain bandwidth consideration of QPSK [10M]	CO5	BL4
OR			
11	Explain the concept of ASK and Derive its probability of error. [10M]	CO5	BL2