



Regulation R17

Subject code: 1P4DD

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Year II Semester Supplementary Examinations, February 2024
ANALOG COMMUNICATIONS
(ECE)**Maximum Marks: 70**

Date: 23.02.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 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**All the following questions carry equal marks****(10X2M=20 Marks)**

Q.NO	QUESTIONS	Marks	CO	Blooms Tx
1	What is the time division multiplexing?	2	CO1	L2
2	What is ring modulator?	2	CO1	L1
3	Categorize all AM techniques.	2	CO2	L3
4	Describe applications of different AM systems.	2	CO2	L1
5	Calculate the average power of an FM signal.	2	CO3	L3
6	Write the disadvantages of FM systems?	2	CO3	L3
7	Classify the sources of Noise?	2	CO4	L4
8	Define Shot noise?	2	CO4	L1
9	What are image frequencies? Explain.	2	CO5	L1
10	What is the need for AGC circuit?	2	CO5	L1

Part-B**Answer All the following questions.****(10M X 5=50Marks)**

11.a	Explain switching modulator.	6	CO1	L2
b.	A standard AM transmission, sinusoidally modulated to depth of 40%, produces side band frequencies of 6.824 and 6.854 MHz. The amplitude of each sideband frequency is 50v. Determine the amplitude and frequency of the carrier?	4	CO1	L3
OR				
12.a	Use the envelope detector to demodulate AM wave with a neat sketch.	6	CO1	L3
b	Consider an AM signal $\phi_{am}(t) = (1 + A \cos \omega_m t) \cos \omega_c t$, where the message signal frequency $\omega_m = 5$ KHz and the carrier frequency, $\omega_c = 100$ KHz. The constant $A = 15$. Can this signal be demodulated by an envelope detector? What will be the output of the envelope detector? Find the frequency spectrum of the envelope detector output.	4	CO1	L4

13	List out the various methods used to generate SSB signals with neat sketches.	10	CO2	L2
	OR			
14	Evaluate the expression for VSB along with need of VSB modulation.	10	CO2	L3
15.a	Derive the expression for FM signal from fundamentals and differentiate narrow band FM and wide band FM.	6	CO3	L2
b	Explain the principle of direct method of generation of FM signal using relevant diagrams.	4	CO3	L2
	OR			
16.	Generate the wide band FM With a neat block diagram.	10	CO3	L3
	OR			
17	Draw the block diagram of FM demodulator and explain the effect of noise in detail and compare the performance of AM and FM in the presence of noise.	10	CO4	L2
	OR			
18	Justify that the pre-emphasis and de-emphasis in FM is used to reduce the noise ,With a neat block diagram.	10	CO4	L4
19	Design the block diagram of a super heterodyne receiver and explain its operation? What are the advantages of this receiver?	10	CO5	L3
	OR			
20	Generate a simple AGC circuit and what are the different types of AGC explain them.	10	CO5	L3