



R20 Regulation

Subject code: 3P4DB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, February 2024

ANALOG COMMUNICATIONS **(ELECTRONICS & COMMUNICATION ENGINEERING)**

Maximum Marks: 70

Date: 19.02.2024 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 which carries 10M.
 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)		CO	Bloom Tx
1	Define the transmission efficiency of AM signal.	CO1	L1
2	State how a DSB-SC signal may be generated.	CO1	L2
3	Mention the advantages and disadvantages of SSB-SC transmission.	CO2	L1
4	Write down an expression for the time-domain representation of a VSB signal.	CO2	L1
5	State Carson's rule of FM bandwidth.	CO3	L1
6	Differentiate phase modulation and frequency modulation.	CO3	L3
7	Name the important components of external noise and internal noise.	CO4	L1
8	Define the term noise equivalent bandwidth of a filter.	CO4	L1
9	What is meant by image frequency?	CO5	L1
10	What exactly, does a noise limiter do in AM receiver and how?	CO5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	How AM is generated using square law modulator? Derive relevant expressions. (10M)	CO1	L2
OR			
12	A. Explain the generation of DSB-SC signal using balanced modulator. Derive the expression for DSB-SC signal. 5M B. A carrier signal $c(t) = 10 \cos(2\pi \cdot 10^6 t)$ is modulated by a message signal $m(t) = 2 \cos(8\pi \cdot 10^3 t)$ to generate a DSB-SC signal. Sketch the spectrum, calculate the BW and power. 5M	CO1	L2 L3
13	Explain Time domain description and generation of SSB wave. (10M)	CO2	L2
OR			
14	A modulating signal of $2 \cos 5000t$ is amplitude modulated over a carrier signal of $5 \cos 20000t$. Derive the expressions for the modulation index, LSB and VSB frequencies, Bandwidth and the ratio of Side Band Power in the Total Power of AM wave. (10M)	CO2	L3

15	A. Explain how a PLL can be used as an FM demodulator. (5M) B. With a neat circuit diagram explain the working of a Balanced Frequency discriminator. (5M)	CO3	L2 L2
	OR		
16	Distinguish between FM and PM by giving its mathematical analysis. (10M)	CO3	L3
17	What are the types of noise? Explain any two in detail. (10M)	CO4	L2
	OR		
18	A. With neat sketch explain the generation of Pre-emphasis and De-emphasis. (5M) B. Explain the effect of noise in SSB system. (5M)	CO4	L2 L2
19	Discuss in detail about AM and FM transmitters with block diagram. (10M)	CO5	L2
	OR		
20	A. Discuss the method of generation of a PWM signal. (5M) B. How a PPM signal can be generated from a PWM signal? (5M)	CO5	L2 L3