R20 Regulation *Subject code: 3P4DB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, June 2026

ANALOG COMMUNICATIONS

(ECE)

Maximum Marks: 70 Date: 10.06.2026 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)		Marks	CO	BTL
1	What is the formula for calculating efficiency of an AM wave?	2M	1	L1
2	What is the band width of DSB-SC signal?	2M	1	L1
3	Write the expression for SSB.	2M	2	L1
4	State the advantages of VSB modulated wave.	2M	2	L1
5	Define Carson's rule.	2M	3	L1
6	Define the terms carrier swing, highest frequency attained in FM?	2M	3	L1
7	List out various noise sources.	2M	4	L1
8	Define SNR.	2M	4	L1
9	Write the importance of image frequency rejection ratio.	2M	5	L1
10	Define pulse modulation.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Explain the amplitude modulation with neat sketch. b) Explain the need for modulation.	7M 3M	1	L2
	OR			
12	With a neat block diagram explain the operation of Time division multiplexing.	10M	1	L2
13	With a neat block diagram explain how a SSB-SC wave is generated using Phase Discriminator method with only USB is transmitted and by rejecting the LSB.	10M	2	L2
	OR			
14	Draw the block diagram for the modulation of a VSB signal and explain the principle of operation.	10M	2	L2
15	a) Explain how a varactor diode is used to generate FM signal. Explain with the necessary mathematical equations. b) Determine the bandwidth of a commercial FM transmission if frequency deviation is 75 kHz and modulating frequency is 15 kHz.	6M 4M	3	L2
	OR			

16	With necessary equations explain the generation method of WBFM?	10M	3	L2
17	Derive the Figure of Merit in AM System and calculate with 50 % (μ=0.5) Modulation.	10M	4	L2
	OR			
18	What is FM threshold effect? Justify how threshold effect reduction is achieved in FM receiver?	10M	4	L2
19	Draw the block diagram of a super heterodyne receiver and explain its operation.	10M	5	L2
	OR			
20	Explain the generation and detection of "Pulse Width Modulation" with neat diagrams.	10M	5	L2