



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SECOND SEMESTER M.TECH. (AVIONICS ENGINEERING)

MAKE-UP EXAMINATIONS, JUNE 2024

ANALOG AND DIGITAL COMMUNICATIONS [AAE 5429]

REVISED CREDIT SYSTEM

Time: 3 Hours

Date: 26 June 2024

Max. Marks: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

Q.NO	Questions	Marks	CO	BTL
1A.	What is the need for FM over AM?	(02)	1	4
1B.	Explain the various types of amplitude modulation.	(03)	1	4
1C.	Give the mathematical representation of an FM wave.	(05)	1	4
2A.	What is an amplitude detector? Why is it used for?	(02)	2	4
2B.	Explain the power calculation for SSBSC signal.	(03)	2	4
2C.	What is the working principle of BJT collector modulator? Also give a mathematical analysis of the same.	(05)	2	4
3A.	Compare AM and PM modulation schemes.	(02)	3	2
3B.	Explain the principle of Voltage-Controlled Oscillator.	(03)	3	4
3C.	Explain indirect method of FM generation with proper block diagram.	(05)	3	4
4A.	Explain Nyquist criterion.	(02)	4	3
4B.	What is QAM? Explain with diagrams.	(03)	4	4
4C.	Explain error detection and correction in digital communication in detail.	(05)	4	5
5A.	What is meant by delta modulation?	(02)	5	3
5B.	Explain Schwartz inequality.	(03)	5	4
5C.	Explain MPSK and DPSK with all necessary diagrams and equations.	(05)	5	4