



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SECOND SEMESTER M.TECH. (AVIONICS ENGINEERING)

END SEMESTER EXAMINATIONS, MAY 2024

ANALOG AND DIGITAL COMMUNICATIONS [AAE 5429]

REVISED CREDIT SYSTEM

Time: 3 Hours

Date: 09 May 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 modulation?	(02)	1	4
1B.	Explain the various types of analog modulation.	(03)	1	4
1C.	Give the mathematical representation of an AM wave.	(05)	1	4
2A.	What is modulation index? How it affects the modulation?	(02)	2	4
2B.	Explain the power calculation for DSBSC signal.	(03)	2	4
2C.	What is the working principle of BJT base modulator? Also give a mathematical analysis of the same.	(05)	2	4
3A.	Compare FM and PM modulation schemes.	(02)	3	2
3B.	Explain Pre- emphasis and De- emphasis circuits.	(03)	3	4
3C.	Explain direct method of FM generation with proper block diagram.	(05)	3	4
4A.	Explain the terms quantization and quantization error.	(02)	4	3
4B.	What is a matched filter? What are its properties?	(03)	4	4
4C.	Explain inter symbol interference and Nyquist criterion in detail with all necessary diagrams and equations.	(05)	4	5
5A.	What is meant by Automatic Repeat Request (ARQ) in data transmission?	(02)	5	3
5B.	Explain Gram-Schmidt Orthogonalization Procedure.	(03)	5	4
5C.	Explain BPSK and QPSK with all necessary diagrams and equations.	(05)	5	4