Reg.	No.	



MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal)

II SEMESTER M.TECH. (Construction Engineering & Management) END SEMESTER EXAMINATIONS, MAY 2024

SUBJECT: MAINTENANCE AND REHABILITATION OF REINFORCED CONCRETE STRUCTURES [CIE 5404]

REVISED CREDIT SYSTEM

TIME: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

Answer **ALL** the questions.

Q. No		Marks	CO	BL
1A.	Explain the strategies for improving the availability of an asset and determine the failure rate if the asset fails 4 times in a year.	5	1	4
1B.	Explain the principles of reliability centred maintenance and its advantage over conventional system.	5	1	4
2A.	Explain the impact of carbonation in degradation of concrete.	5	2	4
2B.	Recommend a suitable method to assess the quality of concrete in an existing structure. Assess its correlation with the strength of concrete.	5	2	5
3A.	 Recommend a suitable repair method for the following situation a) To offset the strains caused by drying shrinkage in concrete. (3 Marks) b) To provide tensile and flexural strength in all direction (2 Marks) 	5	3	5
3B.	Explain the mechanism of corrosion inhibition with suitable example.	5	3	4
4A.	Recommend a suitable polymer-based emulsion to prevent dampness and efflorescence of terraces. Comment on its salient features.	5	4	5
4B.	Compare suitable placement technique of repair material in a weakened concrete pier. Draw neat sketches of any one technique.	5	4	4
5A.	Plan for a suitable repair technique for the superstructure of bridge with reported cracks and spalling of concrete. Draw neat sketches wherever applicable	5	4	4
5B.	Assess the condition of a bridge structure with a unique rating number URN 20362544. Draw a neat flowchart of the process involved.	5	5	5