PVP 20

Code: 20CE4501A

III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2024

REPAIR AND REHABILITATION OF STRUCTURES
(CIVIL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain the factors that influence the durability of concrete. How do water-cement ratio and cement type affect durability?	L2	CO1	7 M
	b)	Explain in detail about common types of damages caused by corrosion in concrete structures.	L2	CO1	7 M
OR					
2	a)	Explain the differences between internally and externally generated temperature differences in concrete structures.	L2	CO1	7 M
	b)	Identify common causes of distress in concrete structures and discuss how poor construction practices contribute to these issues.	L4	CO1	7 M

		UNIT-II			
3	a)	Describe the general steps involved in the damage assessment of a concrete structure. What factors must be considered during the assessment?	L4	CO2	7 M
	b)	Explain in detail about half cell potential survey test.	L2	CO2	7 M
		OR			
4	a)	Outline a typical procedure for assessing damage in a reinforced concrete beam. Include the key steps and tools that would be used.	L2	CO2	7 M
	b)	How can the results of non-destructive and semi-destructive testing methods be integrated to provide a comprehensive assessment of concrete damage?	L4	CO2	7 M
		UNIT-III			
5	a)	Explain in detail about polymeric concrete and give some examples where polymer concrete can be used for repairs.	L2	CO3	7 M
	b)	Describe about any two types of industrial wastes used in the preparation of concrete.	L3	CO3	7 M
		OR			
6	a)	Explain in detail about bacterial concrete.	L2	CO3	7 M
	b)	Explain the concept of fibre-reinforced concrete (FRC). How does the inclusion of fibres improve the properties of concrete?	L2	CO3	7 M

UNIT-IV					
7	a)	Explain how do you diagnose distress of a structure.	L2	CO4	7 M
	b)	Outline the various repair techniques and explain any two in detail.	L4	CO4	7 M
OR					
8	a)	Describe the process of autogenous healing.	L2	CO4	7 M
	b)	Explain with a neat sketch stitching of cracks, repair by jacketing.	L2	CO4	7 M
UNIT-V					
9	a)	What is resin injection, and how is it used to repair cracks in concrete? Discuss its effectiveness in comparison to traditional grouting techniques.	L3	CO5	7 M
	b)	What are the common reasons for needing to strengthen existing concrete structures? Provide examples where strengthening is necessary.	L2	CO5	7 M
OR					
10	a)	Analyze the role of section enlargement in the seismic rehabilitation of concrete structures.	L4	CO5	7 M
	b)	Critically assess the effectiveness of cathodic protection in extending the service life of concrete structures in marine environments.	L4	CO5	7 M