A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U1105

B.E. / B.Tech. DEGREE EXAMINATION, APRIL /MAY 2025

Professional Elective

Civil Engineering

21CEV105 - REPAIR AND REHABILITATION OF STRUCTURES

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Under what conditions maintenance will be carried out CO1-U

   (a) Maintenance (b) Repair (c) Rehabilitation (d) Inspection

2. The following is (are) scheduled maintenance CO1-U

   (a) Overhauling of machine (b) Cleaning of tank

   (c) Whitewashing of building (d) All of the above

3. The time elapsed from the point the machine fails to perform its function to the point it is repaired and brought into operating condition is CO2-App

   (a) Down time (b) Break Down time (c) Both (a) and (b) (d) Idle time

4. Durability of concrete is proportional to _____ CO1-U

   (a) Sand content (b) Water cement ratio

   (c) Aggregate ratio (d) Cement aggregate ratio

5. High strength concrete should have compressive strength of ….. CO1-U

   (a) 100-150 N/mm^2 (b) 60-100 N/mm^2

   (c) 40-50N/mm^2 (d) none of these

6. Density of no fines concrete with light weight aggregate vary from _____ kg/m^3. CO1-U

   (a) 1600-1900 (b) <300 (c) >2500 (d) >300

7. Non-destructive is used to determine ……. CO3-App

(a) Location of defects (b) Chemical composition

(c) Corrosion of metals (d) All of these

8. Which of the following is used as sealant? CO1-U

(a) Epoxies (b) Silicones (c) Polysulphides (d) All the above

9. The complete or partial dismantling of a building or structure by pre-planned and controlled methods is known as CO1-U

(a) Compaction (b) Demolition (c) Finishing (d) Packing

10. Which equipment used for starting the explosion in explosive material? CO2-App

(a) Detonators (b) Starting cap (c) Current switch (d) None of the above

PART – B (5 x 2 = 10 Marks)

11. Due to reinforcement corrosion, Whether early deterioration occurs to the structures exposed to marine environment? Justify your answer. CO1-U

12. Enlist the methods of corrosion protection. CO3-App

13. How to determine the temperature attained by concrete during fire? CO3-App

14. List the methods to overcome low member strength in concrete structures. CO1-U

15. What are the preventive measures to be adopted to make the structures stable against marine exposure? CO1-U

PART – C (5 x 16 = 80Marks)

16. (a) Explain the factors influencing corrosion of reinforcement and also explain the importance of cover thickness. CO1-U (16)

Or

(b) Explain the causes, solution and preventive measures for
(i) Bug Holes
(ii) Honeycombing CO1-U (16)

17. (a) Discuss in details about thermal properties of concrete. CO3-App (16)

Or

(b) Explain the various corrosion protection methods. CO3-App (16)

18. (a) Elaborate the factors that affect the fire resistance of concrete structures. CO3-App (16)

Or

	(b)	In a three-storey residential building the roof concreting is in progress. As a site engineer what are the factors you would check to maintain the quality of concrete.	CO3-App	(16)
19.	(a)	Whether Sulphur Infiltrated concrete can be employed in Precast Industry.!? Also Narrate your answer about achieving high strength in the manufacturing of Precast Roofing Elements.	CO1-U	(16)
		Or		
	(b)	Explain the various Coatings to reinforcement and cathodic protection.	CO1-U	(16)
20.	(a)	With simple sketch, explain the method of improving the strength of existing columns and beams.	CO1-U	(16)
	(b)	Consider a RC structure in a marine environment, discuss the possible types of distress likely to affect the structure and suggest suitable remedy/protection for the structure.	CO1-U	(16)