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Question Paper Code: 55U02

M.E. DEGREE EXAMINATION, APRIL 2019

Elective

Structural Engineering

15PSE502 - FORENSIC ENGINEERING AND REHABILITATION OF STRUCTURES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 1= 5 Marks)

1. The reaction of CO_2 with hydrated cement is known as CO1- R
(a) Corrosion (b) Silica-alkali reaction (c) Carbonic reaction (d) Unsoundness
2. For scaling cracks in concrete structures by epoxy, the minimum CO2 -R
width of routing should be
(a) 20mm (b) 15mm (c) 9mm (d) 6mm
3. Closely spaced fine meshes with cementitious mortar are called _____ CO3- R
(a) GFRP (b) CFRP
(c) Ferrocement (d) Hydrophobic cement
4. For effective guniting, the nozzle should be kept _____ CO4 -R
from the work preferable normal to the surface.
(a) 20 cm to 50 cm (b) 60 cm to 150 cm
(c) 160 cm to 180 cm (d) None of the above
5. _____ are intermediate between coatings and pore blocken CO5- R
(a) Membranes (b) Sealers (c) Ccloars (d) All the above

PART – B (5 x 3= 15Marks)

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| 6. | Write any four durability test for concrete. | CO1-U |
| 7. | Define the terms shotcrete and Guniting. | CO2-U |
| 8. | What is PMCC & PIC? | CO3- U |
| 9. | How to leak sealing applied? | CO4-U |
| 10. | Write short notes on leakage in structures. | CO5-U |

PART – C (5 x 16= 80 Marks)

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| 11. | (a) Explain the defects due to climate, chemicals, wear and erosion. | CO1- U | (16) |
| | Or | | |
| | (b) List and explain the parameters affecting the quality of concrete construction. | CO1- U | (16) |
| 12. | (a) An old masonry building constructed on clayey bed is under distress due to foundation failure/settlement. Suggest suitable foundation strengthening methods. | CO2- U | (16) |
| | Or | | |
| | (b) With simple sketch explain the methods of improving the strength of existing column and beams. | CO2- U | (16) |
| 13. | (a) Explain about ferrocement as rehabilitation material. | CO3-U | (16) |
| | Or | | |
| | (b) Explain about FRP composite laminates as a repair & rehabilitations material. | CO3-U | (16) |
| 14. | (a) Discuss the different strengthening techniques and their relative merits. | CO4 -U | (16) |
| | Or | | |
| | (b) Explain external post-tensioning strengthen techniques. | CO4 -U | (16) |
| 15. | (a) 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 structures. | CO5- U | (16) |
| | Or | | |
| | (b) Explain about modern technology for demolition. | CO5-U | (16) |