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Question Paper Code: 55U02

M.E. DEGREE EXAMINATION, NOV 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. Crystallization of acids in concrete can cause CO1- R
(a) Wetting shrinkage (b) Drying shrinkage
(c) Expansive disruption (d) None of the above
2. For sealing cracks in concrete structures by epoxy, the minimum CO2 -R
width of routing should be
(a) 3 mm (b) 9 mm (c) 6 mm (d) 15 mm
3. The polymer latex acts in a concrete as a CO3- R
(a) Water -reducer (b) Strength -reducer
(c) Binding -reducer (d) Permeability –reducer
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)

6. Mention any two factors contributing to durability of concrete. CO1-U
7. Define the terms shotcrete and Guniting. CO2-U
8. Write the benefit of chemical modifier. CO3- U
9. What is the purpose of sand blasting? CO4-U
10. Write short notes on balling machine. CO5-U

PART – C (5 x 16= 80 Marks)

11. (a) Explain about as built concrete properties Strength, permeability, thermal properties and cracking. CO1- U (16)
- Or
- (b) Explain the reason of cracks due to chemicals and foundation movements. CO1- U (16)
12. (a) Write the types of Defects in concrete, Masonry Structures, Plastic and in Steel Structures? CO2- U (16)
- Or
- (b) Explain the methods of inspection? Explain any 4 non-destructive test in concrete. CO2- U (16)
13. (a) Discuss about mineral admixtures as a repair material. CO3-U (16)
- Or
- (b) Define SIFCON & explain the characters & application in construction industry. CO3-U (16)
14. (a) Give a complete procedure of epoxy injection to structural crack repair in RC structural elements. CO4 -U (16)
- Or
- (b) Explain the classification of cracks and how the cracks can be measured and reported. CO4 -U (16)
15. (a) What are the techniques available to demolish the structures? Explain any one with detailed case study. CO5- U (16)
- Or
- (b) How do you strengthen the various structural elements? Explain in detail with sketches. CO5-U (16)