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**Question Paper Code: 52962**

M.E. DEGREE EXAMINATION, DECEMBER 2015

Elective

Structural Engineering

15PSE507 – ADVANCED CONCRETE TECHNOLOGY

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

(IS 456: 2000, IS 10262:2009 and Charts from ACI 211.1-91-1991 and DOE1988 are permitted)

(5 x 20 = 100 Marks)

1. (a) (i) Distinguish between plasticizers and super plasticizers. (4)
- (ii) Explain in detail of any two tests for Hardened concrete. (8)
- (iii) What are the various factors which affect the workability of concrete? (8)

Or

- (b) (i) Explain in detail about any three tests for aggregates. (10)
- (ii) Explain in detail about any three tests for cement. (10)
2. (a) (i) Write short notes on Sulphate attack and Alkali attack. (8)
- (ii) List the different types of workability aids and describe the various factors affecting the workability of concrete. (10)
- (iii) List the methods for control of bleeding. (2)

Or

- (b) (i) Explain the determination of the various elastic moduli for concrete. (12)
- (ii) Describe the reasons for the cracking of concrete and how it affects durability? (6)
- (iii) Define the term creep. (2)

3. (a) (i) Design the concrete mix for the following data: characteristic compressive strength = 20 MPa, maximum size of aggregate = 20 mm (angular), Degree of workability = 0.9 CF, Degree of quality control = good and type of exposure = severe. Water absorption by CA = 0.5% and moisture content in FA = 2.0%. Assume any suitable missing data. (14)
- (ii) Describe about the sampling and Acceptance criteria. (6)

Or

- (b) (i) Explain the factors that influence the choice of mix design. (6)
- (ii) Explain in detail about the statistical quality control and acceptance criteria of concrete. (10)
- (iii) Describe the sequence of steps should be followed in ACI method. (4)
4. (a) (i) Describe about Shotcrete and Grouting (8)
- (ii) Explain the properties of polymer impregnated concrete. (8)
- (iii) What are the advantages of using fly ash in concrete? (4)

Or

- (b) (i) Explain in detail about the light weight concreting and its applications. (10)
- (ii) Explain how the use of fibre influences the properties of concrete? (8)
- (iii) What is self-compacting concrete? (2)
5. (a) (i) Describe the method of pumping of concrete. (6)
- (ii) Explain transportation and placing procedure in concrete. (10)
- (iii) List the merits of Vacuum dewatering in concrete. (4)

Or

- (b) (i) Describe in detail about hot weather concreting and cold weather concreting. (10)
- (ii) Describe the method of steam curing. (6)
- (iii) What are the properties of materials used for mass concrete? (4)