

19

SE - sem - IV - CBAS - CIVIL

CT

17/12/15

QP Code : 5470

(3 Hours)

[Total Marks : 80

**INSTRUCTIONS:** 1. Question number 1 is **COMPULSORY**. 2. Attempt any **THREE** from the remaining. 3. Each full question carries **EQUAL** marks. 4) **ASSUME** any suitable data, if needed.

1. a) What are the advantages of using Ready Mixed Concrete? (04 M)
- b) Write a short note on Plasticizers. (04 M)
- c) Discuss Sulphate Resisting Cement, in brief. (04 M)
- d) In a concrete work, concrete of grade M20 is to be used. The Standard Deviation = 4 MPa. In the course of testing concrete cubes, the following results are obtained from 4 non-overlapping consecutive cube tests, tested at 28 days (MPa): 27.81, 26.70, 23.71 & 18.18. Discuss the acceptance of the results. (04 M)
- e) The fine aggregates with Fineness Modulus 3.27 & the coarse aggregates with the Fineness Modulus 7.84 are available. Find the percentages of fine aggregates & coarse aggregates to be mixed together to obtain the combined Fineness Modulus = 6.9. (04 M)
2. a) Explain underwater concreting, in detail. (07 M)
- b) What is the effect of shape & size of aggregates on concrete workability? (06 M)
- c) Discuss Self Compacting Concrete, in detail. (07 M)
3. a) Discuss in detail, the Rebound Hammer test. (07 M)
- b) What are the functions of retarders? (06 M)
- c) Write a detailed note on High Performance Concrete. (07 M)
4. Write notes on the following. (20 M)
  - a) Compacting Factor Test
  - b) Segregation of concrete
  - c) Creep of concrete
  - d) Split Tensile Test

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5. Write notes on the following. (20 M)
- a) Shrinkage of concrete  
 b) Hot weather concreting  
 c) Distress in concrete  
 d) Curing of concrete

6. a) A nominal mix of grade M15 is to be adopted on site by using the table below. It is decided to use volume batching. Find out the volumetric proportions for the mix. Take bulk density of cement = 1445 kg/m<sup>3</sup>, that of sand = 1610 kg/m<sup>3</sup> & that of coarse aggregates = 1610 kg/m<sup>3</sup>. Consider the volumes on dry basis. (05 M)

TABLE: PROPORTIONS FOR NOMINAL MIX CONCRETE

Concrete Grade	Cement (1 bag) (kg)	FA + CA (kg)	Proportion of FA to CA (By mass) FA: CA	Water Content (Litres)
M15	50	330	1:2	32

- b) The following data represents the strength of concrete cubes of the same concrete grade, prepared & tested in the same conditions. Find the Standard Deviation of the results. The results are arranged in the ascending order. Each result is an average of three cube test results taken from the same batch. (05 M)

Sample No.	Cube Strength (MPa)	Sample No.	Cube Strength (MPa)	Sample No.	Cube Strength (MPa)
1	22.6	11	25.8	21	27.6
2	23.7	12	26.2	22	27.7
3	24.3	13	26.4	23	27.7
4	24.7	14	26.6	24	27.8
5	25.1	15	26.7	25	28
6	25.2	16	26.8	26	28.3
7	25.4	17	26.9	27	28.9
8	25.6	18	27	28	29.1
9	25.7	19	27.2	29	29.8
10	25.7	20	27.3	30	30

- c) Explain Fibre Reinforced Concrete, in brief. (05 M)
- d) Write a short note on mineral admixtures. (05 M)

END OF PAPER