(2)

CBCS SCHEME

USN | | | | | | | | | |

15CV/CT44

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Concrete Technology

Time: 3 hrs. Max. Marks: 80

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Any missing data may be suitably assumed.
3. IS-10262 mix design code is allowed.

Module-1

1 a. Explain the importance of conducting the soundness test on cement and the procedure of conducting the soundness test. **(08 Marks)**

b. Explain bulking of aggregates and grading of aggregates. **(08 Marks)**

OR

2 a. Explain the effect of chemical admixtures on fresh and hardened properties of concrete. **(12 Marks)**

b. What are Bogue's compound? Explain. **(04 Marks)**

Module-2

3 a. Explain slump test done to find out workability of concrete. **(08 Marks)**

b. Explain segregation and bleeding of concrete. **(08 Marks)**

OR

4 a. Explain manufacture of concrete in detail. **(12 Marks)**

b. Explain methods of curing of concrete. **(04 Marks)**

Module-3

5 a. Define durability of concrete. Explain how concrete is made durable against
i) Sulphate attack
ii) Freezing and Thawing
iii) Corrosion of steel
iv) Chloride attack. **(12 Marks)**

b. Explain briefly, rebound hammer test and ultrasonic pulse velocity test. **(04 Marks)**

OR

6 a. Distinguish between:
i) Creep and shrinkage
ii) Plastic shrinkage and drying shrinkage **(10 Marks)**

b. Discuss the factors affecting strength of concrete. **(06 Marks)**

Module-4

7 Design a concrete mix for a concrete of M45 grade as per IS10262:2009, with following stipulations.

i) Grade designation = M45
ii) Type of cement OPC 53 conforming to IS12269
iii) Maximum nominal size of aggregate = 20mm
iv) Minimum cement content = 360kg/m^3
v) Maximum water cement ratio = 0.45
vi) Workability = 125mm (slump)
vii) Exposure condition = severe
viii) Method of placing = pumping
ix) Degree of supervision = good
x) Type of aggregate = angular aggregate
xi) Maximum cement content = 450kg/m^3
xii) Chemical admixture = super plasticizer (capable of reducing water content upto 20% max)
xiii) Fine aggregate = conforming to grading zone – I. **(16 Marks)**

OR

8 Design a concrete mix for M20 grade concrete as per IS10262-2009 with following data:

I. Design stipulation:
   i) Maximum size of aggregate (angular) = 20mm
   ii) Degree of workability = 100mm (slump)
   iii) Degree of quality control = Good
   iv) Type of exposure = Mild

II. Test data for materials
   i) Specific gravity of cement = 3.15
   ii) Specific gravity of coarse aggregate = 2.60
   iii) Specific gravity of fine aggregate = 2.60
   iv) Water absorption of coarse aggregate = 0.50%
   v) Water absorption of fine aggregate = 1.0%
   vi) Sieve analysis of fine aggregate = zone-II. **(16 Marks)**

Module-5

9 a. Discuss in detail
   i) Light weight concrete
   ii) Fiber reinforced concrete **(10 Marks)**

b. Explain the properties of fibers used in concrete. **(06 Marks)**

OR

10 a. Explain the test conducted on self compacting concrete. **(10 Marks)**

b. List the advantages and disadvantages of RMC. **(06 Marks)**

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