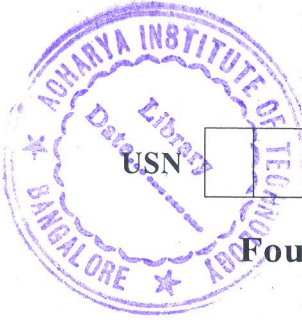


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# CBCS SCHEME

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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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**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 =  $360\text{kg/m}^3$
  - 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 =  $450\text{kg/m}^3$
  - 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 (10 Marks)
  - ii) Fiber reinforced concrete (06 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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