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**17CV/CT44**

## Fourth Semester B.E. Degree Examination, July/August 2021 Concrete Technology

Time: 3 hrs.

Max. Marks: 100

**Note: 1. Answer any FIVE full questions.  
2. Any missing data may be suitably assumed.  
3. Use IS10262:2009 design code is allowed.**

1. a. What are Bogue's compounds? Briefly explain their contribution towards gaining of strength of cement. (10 Marks)  
b. Explain the importance of shape and texture of aggregate used in concrete. (10 Marks)
2. a. What is an admixture? Explain the effect of mineral admixture on fresh and hardened properties of concrete. (10 Marks)  
b. What is grading of aggregate? Explain its significance in improving the properties of concrete. (10 Marks)
3. a. List out the good and bad practices of making and using fresh concrete. (10 Marks)  
b. Explain factors affecting workability of concrete. (10 Marks)
4. a. Explain the process of heat of hydration of cement. (10 Marks)  
b. Explain methods of curing of concrete in detail. (10 Marks)
5. a. Explain the process of sulphate attack and chloride attack on concrete. (10 Marks)  
b. Explain factors affecting shrinkage of concrete. (10 Marks)
6. a. Explain factors influencing strength of concrete. (10 Marks)  
b. Explain carbonation of concrete in detail. (10 Marks)
7. With the help of the following data, design M30 grade concrete :
  - Design stipulations :
    - (i) Characteristic compressive strength at 28 days = 30 MPa
    - (ii) Maximum size of aggregate = 20 mm
    - (iii) Degree of workability = Slump (75 mm)
    - (iv) Degree of quality control = Good
    - (v) Type of exposure = Severe
  - Test data for materials :
    - (i) Specific gravity of cement = 3.15
    - (ii) Specific gravity of coarse aggregate = 2.64
    - (iii) Specific gravity of fine aggregate = 2.61
    - (iv) Water absorption of fine aggregate = 1.0%
    - (v) Water absorption of coarse aggregate = 0.5%
    - (vi) Grading of fine aggregate = Zone 2

Any missing data may be assumed suitably. (20 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.

- 8 Design the concrete mix for M20 grade concrete with following data:  
Characteristic compressive strength at 28 days = 20 MPa.  
Maximum size of aggregate = 20 mm  
Workability = Slump (100 mm)  
Degree of quality control = Good  
Type of exposure = Mild  
Specific gravity of cement = 3.15  
Specific gravity of coarse aggregate = 2.60  
Specific gravity of fine aggregate = 2.60  
Sand conforming to zone 2.  
Assume any other data suitably. (20 Marks)
- 9 a. Explain various types of fibers used in concrete with their properties. (10 Marks)  
b. Explain application of fibre reinforced concrete and light weight concrete. (10 Marks)
- 10 a. Write a note on RMC. (10 Marks)  
b. Explain the materials used for manufacture of SCC. (10 Marks)

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