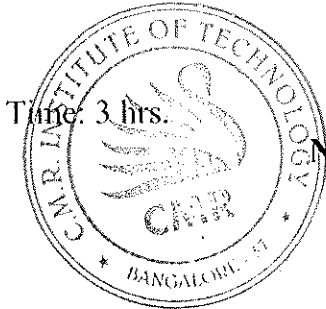


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## Fourth Semester B.E. Degree Examination, June/July 2016

### Concrete Technology



Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.  
2. Use of IS10262-2009 and IS 456-2000 is permitted.

#### PART – A

- 1 a. Describe any five field tests that can be done on cement. (10 Marks)
- b. Draw a flow chart for the manufacturing of cement by wet process. (10 Marks)
- 2 a. What do you understand by grading analysis? Explain how it is done for fine aggregates. (10 Marks)
- b. Mention the maximum impact value for wearing and non-wearing surfaces and also explain how impact test is done for coarse aggregate. (10 Marks)
- 3 a. What is workability? Explain its importance in fresh concrete. (10 Marks)
- b. List out any ten methods adopted for transportation of concrete. (10 Marks)
- 4 a. Explain the flocculation and de-flocculation of cement grains under the influence of superplasticizer, with the help of a diagram. (10 Marks)
- b. Briefly explain the effect of fly ash on fresh and hardened concrete. (10 Marks)

#### PART – B

- 5 a. Discuss any five factors affecting the strength of concrete. (10 Marks)
- b. Discuss any five factors affecting the strength test results. (10 Marks)
- 6 a. List out any ten factors contributing to cracks in concrete. (10 Marks)
- b. List out any five methods each for controlling sulphate attack and corrosion of steel due to chloride attack. (10 Marks)
- 7 Write short notes on the factors affecting the following:
  - a. Modulus of elasticity
  - b. Shrinkage
  - c. Creep
  - d. Workability
 (20 Marks)
- 8 With the help of the following design stipulations and test data for materials design a M20 grade concrete:
  - a. Design stipulations:
    - i) Characteristic compressive strength at 28 days = 20 N/mm<sup>2</sup>
    - ii) Maximum size of aggregate = 20 mm (angular)
    - iii) Degree of workability = 0.90 compacting factor
    - iv) Degree of quality control = good
    - v) Type of exposure = mild
  - b. 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 = 0.5% ;
    - v) Water absorption of fine aggregate = 1.0% ;
    - vi) Free moisture in coarse aggregate = Nil ;
    - vii) Free moisture in fine aggregate = 2.0% ;
    - viii) Grading of fine aggregate = Zone III
 Any missing data may be suitably assumed. (20 Marks)