



Eighth Semester B.E. Degree Examination, July/August 2021
Advanced Concrete Technology

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions.

2. Use of IS456-2000 and IS:10262-2009 is permitted.

- 1 a. Enumerate the importance of Bogue's compounds in ordinary Portland cement. (07 Marks)
b. Explain rheology of concrete in terms of Bingham's parameters. (06 Marks)
c. What are the factors affecting strength and elasticity of concrete? (07 Marks)
- 2 a. What are plasticizers? Mention the types of plasticizers. Write a brief note on electrochemical activity of superplasticizers. (10 Marks)
b. What are mineral admixtures? Explain briefly the role of i) Metakaoline ii) Silica fume iii) Flyash as mineral admixture. (10 Marks)
- 3 a. Explain the factors affecting the mix design of concrete. (06 Marks)
b. Using Indian standard code method of mix design arrive to a mix proportion for the following data:
i) Characteristic compressive strength required in the field at 28 days = 35MPa
ii) Minimum size of aggregate = 20mm angular
iii) Degree of workability = 0.92 compaction factor
iv) Degree of quality control = good
v) Type of exposure = moderate
vi) Specific gravity of cement = 3.15
vii) Specific gravity of coarse aggregate = 2.65
viii) Specific gravity of fine aggregate = 2.60
ix) Free surface moisture coarse aggregate = Nil
x) Free surface moisture fine aggregate = Nil
xi) Fine aggregate conforming to zone = III
xii) Maximum $\frac{w}{c} = 0.5$ and minimum/maximum cement content = 320/450 kg/m³. (14 Marks)
- 4 a. Define Permeability. Explain the reasons of permeability. (08 Marks)
b. Explain thermal conductivity, thermal diffusivity and specific heat. (12 Marks)
- 5 a. What is Ready Mixed Concrete (RMC)? Explain briefly advantages of RMC. (10 Marks)
b. Explain the materials used in self compacting concrete and also the process of production, mixing placing and curing of self compacting concrete. (10 Marks)
- 6 a. What are the different types of fibres used in fibre reinforced concrete? (04 Marks)
b. What is ferro cement? List the various applications of ferro cement. (08 Marks)
c. Explain the factors effecting properties of fibre reinforced concrete. (08 Marks)
- 7 a. Write short notes on:
i) Light weight concrete
ii) High density concrete. (10 Marks)
b. Discuss in brief the properties of high performance concrete in fresh and hardened state. (10 Marks)
- 8 Explain the following:
a. Destructive tests on hardened concrete (08 Marks)
b. Rebound hammer test (06 Marks)
c. Pulse velocity test. (06 Marks)

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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.