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Roll No

MVSE-203

M.E./M.Tech., II Semester

Examination, May 2018

Advance Concrete Technology

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Define workability. What are the factors effecting workability?

   b) What are the tests conducted on concrete at fresh stage? Explain any three types of tests clearly with neat sketches.

2. a) What are the factors influencing the strength of concrete? Sketch the graph showing the relation between strength versus water-cement ratio and explain.

   b) What is creep of concrete and discuss about factors influence the creep of concrete?

3. a) Write a note on Alkali Aggregate Reaction. Discuss the factors promoting this reaction and suggest the methods for controlling the same.

   b) What are the mineral admixtures? What are the mechanisms by which addition of fly ash enhances concrete properties?

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4. a) Explain in detail about the freezing and thawing effect in concrete and give the remedies to withstand the concrete properties at low and high temperatures.

   b) What is High Performance Concrete (HPC)? How is it proportioned to achieve desired properties explain in detail?

5. Design M_{30} grade concrete mix using IS method for mild exposure and good quality control. The workability required is 0.9 CF. maximum size of coarse aggregate is 20 mm and fine aggregate is conformed to zone-II. The specific gravity of cement is 3.15, specific gravity of coarse aggregate and fine aggregate is 2.67 and 2.54 respectively. Cement is OPC 53 grade, water absorption by CA is 2% and moisture content in FA is 4%. Assume any other suitable data if necessary.

6. What do you understand by SCC? How is it different from normal concrete? Explain in detail about different tests performed for developing SCC in laboratory with EFNAARC specifications.

7. a) Why Non-destructive testing is required to test concrete and give details of tests conducted through NDT?

   b) How does the HSPV method used for qualitative assessment of concrete? Explain in detail with equations.

8. What are the functions, applications, typical compounds present and the disadvantages of the following admixtures?

   a) Accelerating admixtures

   b) Air entraining agents

   c) Plasticizers

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