Code No: R31013 **R10** **Set No: 1**

III B.Tech. I Semester Supplementary Examinations, May 2013

CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. (a) Explain the mechanism of 'Hydration' of Cement.
   (b) Describe various mineral and chemical admixtures.

2. (a) Explain the properties of aggregates used for making concrete.
   (b) Explain the necessity of grading curves.

3. (a) What is meant by segregation and bleeding? Explain their importance in concrete.
   (b) Define workability and explain various factors affecting the workability of concrete.

4. (a) Describe maturity of concrete.
   (b) Explain the relation between the compressive strength and tensile strength of concrete.

5. Explain various non-destructive testing methods of concrete.

6. (a) Explain the mechanism of shrinkage and the factors affecting the same.
   (b) Explain dynamic modulus of elasticity of concrete.

7. Design M 25 grade of concrete using the following data:
   Grade of cement: 43 Grade OPC
   Degree of quality control: Good
   Maximum size of aggregate: 20 mm
   Slump required: 75 mm
   Fineness modulus of coarse aggregate: 6.2
   Fineness modulus of fine aggregate: 3.2
   Density of coarse aggregate: 1550 kg/m^3
   Density of fine aggregate: 1500 kg/m^3
   Sand: Zone I
   Assume any other data suitably.

8. (a) Explain the different types of fibres used in concrete and describe the factors affecting the properties of fibre reinforced concrete.
   (b) Explain light weight aggregates.

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Code No: R31013 **R10** **Set No: 2**

III B.Tech. I Semester Supplementary Examinations, May 2013
CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Describe the chemical composition of cement.
   (b) Explain the various tests for physical properties of cement.

2. (a) Explain the grading of aggregates and how do you get a specified grading?
   (b) Explain the various characteristics of aggregates influencing the properties of fresh concrete and hardened concrete.

3. (a) Compare slump test and compacting factor test for determining the workability of concrete.
   (b) Explain the effect of time and temperature on workability of concrete.

4. (a) Explain the relation between the strength and water-cement ratio of concrete.
   (b) Explain the factors affecting the strength of concrete.

5. Explain various tests to be conducted on hardened concrete.

6. (a) Explain the relation between modulus of elasticity and strength of concrete.
   (b) Describe the creep of concrete and explain the variation of creep with time.

7. Design M 20 grade of concrete using the following data:
   Grade of cement: 43 Grade OPC
   Degree of quality control: Good
   Maximum size of aggregate: 40 mm
   Slump required: 50 mm
   Fineness modulus of coarse aggregate: 6.2
   Fineness modulus of fine aggregate: 3.2
   Density of coarse aggregate: 1450 kg/m^3
   Density of fine aggregate: 1500 kg/m^3
   Sand: Zone II
   Assume any other data suitably.

8. (a) Explain the various types of polymer concrete.
   (b) Explain the characteristics of high performance concrete.

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Code No: R31013 **R10** **Set No: 3**

III B.Tech. I Semester Supplementary Examinations, May 2013
CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Explain the application of different types of admixtures.
   (b) Explain the importance of setting time of cement. Describe the IS specification of setting time of cement.

2. (a) What do you mean by gap graded aggregate? Explain its important features.
   (b) Describe the factors influencing the selection of maximum size of aggregate.

3. (a) Explain the various tests used to measure the workability of concrete.
   (b) Explain the setting times of concrete.
   (c) Differentiate segregation and bleeding.

4. (a) Describe gelspace ratio.
   (b) Explain various methods of curing of concrete.

5. (a) Explain various factors affecting strength of concrete.
   (b) Describe any two Non-destructive testing methods of concrete.

6. (a) Explain factors affecting the modulus of elasticity of concrete.
   (b) Describe the shrinkage of concrete and explain different types of shrinkage.

7. Design M 30 grade of concrete using the following data:
   Grade of cement: 53 Grade OPC
   Degree of quality control: Good
   Maximum size of aggregate: 20 mm
   Slump required: 75 mm
   Fineness modulus of coarse aggregate: 6.2
   Fineness modulus of fine aggregate: 3.2
   Density of coarse aggregate: 1500 kg/m^3
   Density of fine aggregate: 1450 kg/m^3
   Sand: Zone II
   Assume any other data suitably.

8. (a) Describe the properties of polymer concrete.
   (b) Explain the following:
   (i) No-fines concrete
   (ii) High performance concrete

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Code No: R31013 **R10** **Set No: 4**

III B.Tech. I Semester Supplementary Examinations, May 2013
CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Describe various types of admixtures.
   (b) Explain the importance of fineness of cement. Write the IS specification of fineness of cement.

2. (a) Name the deleterious substances in the aggregates and explain about their influence on concrete.
   (b) Explain the following:
   i. Gap grading and ii. Maximum size of aggregate

3. (a) Explain the various steps in manufacturing of concrete.
   (b) Explain the various factors affecting the workability of concrete.

4. (a) Explain in detail the Abram's Law.
   (b) Define curing and describe the different method of curing.

5. (a) Explain the procedure to determine flexural strength of concrete.
   (b) Explain the necessity of non-destructive testing. Describe the codal provisions of NDT.

6. (a) Explain the factors affecting the creep and shrinkage of concrete.
   (b) Explain Poission's ratio. How do you find the Poission's ratio of concrete?

7. Design M 25 grade of concrete using the following data:
   Grade of cement: 43 Grade OPC
   Degree of quality control: Good
   Maximum size of aggregate: 20 mm
   Slump required: 75 mm
   Fineness modulus of coarse aggregate: 6.5
   Fineness modulus of fine aggregate: 3.2
   Density of coarse aggregate: 1500 kg/m^3
   Density of fine aggregate: 1400 kg/m^3
   Sand: Zone I
   Assume any other data suitably.

8. (a) Describer the procedure for determining the properties of self consolidating concrete.
   (b) Explain the following:
   (i) Cellular concrete (ii) High density concrete

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