Code No: 09A50101 **R09** **Set No. 2**

III B.Tech I Semester Examinations,December 2011
CONCRETE TECHNOLOGY
Civil Engineering

Time: 3 hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain in detail the compressive strength test on cement.
   (b) Explain the role of C_3S and C_3A on the properties of cement. [7+8]
2. Discuss in detail about new generation super plasticizers. [15]
3. Explain in detail how initial tangent modulus is determined in the laboratory. [15]
4. (a) What is the effect of vibration on the strength and durability of concrete?
   (b) Explain different types of vibrators. [8+7]
5. Design M 35grade concrete mix for the following data using BIS method: [15]

   CA: 16mm crushed granite
   FA: River sand confirming to zone III
   Workability : medium
   Quality control : medium
   Exposure : Moderate
   Cement : OPC 53 grade
   Specific gravity :convert : 2.99; FA: 2.65; CA: 2.55
   Water absorption by CA : 3 %
   Free surface moisture in FA: 3%
   Bulky of FA: 10%
6. (a) Explain how aggregate impact value is determined and its range.
   (b) Explain the bulking phenomenon of fine aggregate and its effect. [8+7]
7. (a) Explain the factors affecting the strength of hardened concrete.
   (b) Estimate the strength of concrete at 21 days using maturity concept for M30Grade cement cured at 10^0C for 4 hours and 16^0C for 8 hours and 20^0C for the rest of the period? Ploughmans coefficients are A:21; B:61. [8+7]
8. Explain in detail about High strength and high performance concretes. [15]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 09A50101 **R09** **Set No. 4**

III B.Tech I Semester Examinations,December 2011
CONCRETE TECHNOLOGY
Civil Engineering

Time: 3 hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain about the durability of concrete.
   (b) How do you convert to mix proportion by weight into volumetric proportion? [8+7]
2. (a) Define workability of fresh concrete.
   (b) Explain the factors affecting workability of concrete. [7+8]
3. (a) Explain the method of determining the specific gravity of fine aggregate.
   (b) Explain classification of aggregates. [7+8]
4. (a) How does the drying shrinkage effect creep? Explain in detail.
   (b) Explain about carbonation and shrinkage and its effects. [7+8]
5. (a) What is the role of special concretes in the modern construction industry? Discuss.
   (b) Differentiate between High strength and high performance concretes. [7+8]
6. (a) With reference to the mineral composition, explain the role of flyash and silica fume in the hydration of cement.
   (b) Explain about air - entraining admixtures. [8+7]
7. Estimate the strength of concrete using Abraim's law and Gel/Space law at 28 days for 750 grams of cement with 0.3;0.5; 0.65; water/cement ratios on full and 60 percent hydration? [15]
8. For a given cement C_3S = 55%, C_2S = 15%, C_3A = w%, C_4 AF = 12% Others=8 **[15]**

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 09A50101 **R09** **Set No. 1**

III B.Tech I Semester Examinations,December 2011
CONCRETE TECHNOLOGY
Civil Engineering

Time: 3 hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. What are chemical admixtures? Explain different types of admixtures. [15]
2. (a) Explain the relation between compressive and tensile strengths of concrete.
   (b) Explain steam curing at atmospheric pressure and high high pressure. [7+8]
3. (a) Explain the method of determining aggregate impact value.
   (b) Explain specific gravity test on fine aggregate. [7+8]
4. (a) How durability is taken care in the BIS method of mix design? Explain.
   (b) Discuss about various parameters to be considered in designing a durable concrete mix. [8+7]
5. (a) Explain the role of light weight concretes in structures.
   (b) What is no fines concrete? What are its advantages? [8+7]
6. (a) Explain different types of static modulus of concrete.
   (b) Explain about carbonation and shrinkage of concrete. [7+8]
7. (a) Explain Bogues compounds? Given the chemical composition of cement, how the Bogues compounds are calculated?
   (b) Explain heat of hydration of different Bogues compounds? [7+8]
8. (a) Explain how setting times of fresh concrete are determined.
   (b) Explain slump test on fresh concrete. [8+7]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 09A50101 **R09** **Set No. 3**

III B.Tech I Semester Examinations,December 2011
CONCRETE TECHNOLOGY
Civil Engineering

Time: 3 hours **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain the relation between tensile and compressive strengths of concrete.
   (b) Explain the split tension tests on cylinders and cubes with neat sketches.[8+7]
2. (a) Explain the soundness test using Lechatelier's equipment.
   (b) Discuss about heat of hydration of cement. [7+8]
3. (a) Explain various deleterious material in aggregates and their limits.
   (b) Explain the method of determining aggregate crushing value of coarse Aggregate. [8+7]
4. (a) Explain about cellular concrete.
   (b) Explain in detail about the orientation of fibres and aspect ratio of fibres in fibre reinforced concrete. [7+8]
5. (a) Explain in detail about the role of fly ash and GGBS on the properties of concrete.
   (b) How the slump loss can be managed? [8+7]
6. (a) Explain the Gel/Space ratio method of strength estimation of concrete.
   (b) Explain the maturity concept method of estimating strength of concrete.[8+7]
7. Design M 25grade concrete mix for the following concrete mix using BIS method. [15]

   CA: 20mm crushed granite
   FA: River sand confirming to zone IV
   Workability : 120mm slump
   Quality control : FAIR
   Exposure : Severe
   Cement : OPC 53 grade
   Specific gravity :convert : 3.09; FA: 2.65; CA: 2.65
   Water absorption by CA : 2.9 %
   Free surface moisture in FA: 5%
   Bulky of FA: 12%
8. (a) What are the BIS provisions for water used in concrete?
   (b) Explain the measures for reducing segregation and bleeding of fresh concrete. [7+8]

⋆ ⋆ ⋆ ⋆ ⋆