

## III B.Tech. I Semester Regular Examinations, November/December - 2012 CONCRETE TECHNOLOGY (Civil Engineering)

Time: 3 Hours

**Code No: R31013** 

Max Marks: 75

Answer any FIVE Questions All Questions carry equal marks \*\*\*\*\*

Assume missing data suitably

- (a) Describe the oxide composition of Ordinary Portland Cement.
   (b) What are the main compounds into which the above oxides will transform in the process of fusion?.
- 2. (a) Explain the phenomenon of bulking of fine aggregates and its practical significance in mix proportioning.(b) Explain Alkali-aggregate reaction and its effect on the final product of concrete.
- 3. (a) List out various field and laboratory tests that are conducted to assess the properties of fresh concrete.(b) Explain Compaction Factor test describing the test equipment. Compare the Compaction factor values to Slump of the concrete for different workability.
- 4. (a) Explain Plowman's procedure for assessment of maturity of concrete.

(b) The strength of a sample of fully matured concrete is found to be 40Mpa. Find the strength of identical concrete at age of 7 days when cured at an average temperature during daytime at  $18^{\circ}$  and night time at  $9^{\circ}$  centigrade. The plowman's constants A and B are 32 and 54 respectively.

- 5. (a) What are the factors affecting the strength of concrete?(b) Explain the procedure for measuring split tensile strength.
- 6. (a) Explain phenomenon of creep in concrete. Explain measurement of creep in creep with loading diagram.
  - (b) Explain various factors influencing creep in concrete.
- 7. (a) Explain with neat diagram non-destructive evaluation of concrete using Pulse Velocity Method.

(b) What are the techniques of measuring pulse velocity through concrete and factors affecting the measurement of pulse velocity?

8. (a) Explain significance of concrete mix design. What are various factors to be kept in mind while designing a concrete mix?
(b) Explain I.S Code method of mix design. What are various mix design features incorporated in revised IS 456-2000.

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1. (a) Describe the significance of Soundness of cement.

(b) Explain procedure to assesses soundness in laboratory with details of the equipment.

- 2. (a) What is aggregate abrasion value? Explain its significance. (b) Explain procedure for assessment of aggregate abrasion value with neat sketch of the equipment.
- 3. (a) Explain workability of concrete? List out various tests to measure workability of concrete. (b) Explain the significance of the tests on concrete at fresh state while we are interested only in concrete at hardened state?
- 4. (a) Explain the effect of gel space ratio on strength of hardened concrete. (b) Calculate the theoretical strength of a sample of concrete made with 600gm of cement with 0.44 water/cement ratio, on full hydration and 75% hydration based on concept of gel /space ratio. Specific volume of cement is 0.319ml/gm
- 5. (a) What are the tests carried out in the laboratory for finding the compressive strength and tensile strength of hardened concrete. (b) Explain Griffith's hypothesis.
- 6. (a) List out different Non-Destructive evaluation techniques to assess the strength of concrete.
  - (b) Explain Radio active method of assessment of strength of concrete
- 7. (a) Explain High Density Concrete (b) Explain properties and applications of High Density concrete.
- 8. (a) Explain significance of concrete mix design. What are various factors to be kept in mind while designing a concrete mix? (b) Explain B.S Code method of mix design.

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## 1 of 1



## III B.Tech. I Semester Regular Examinations, November/December - 2012 CONCRETE TECHNOLOGY (Civil Engineering)

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Assume missing data suitably

- (a) Describe the oxide composition of Ordinary Portland Cement.
   (b) What are the main compounds into which the above oxides will transform in the process of fusion.
  - (c) Explain contribution of cement compounds to the strength of cement.
- 2. (a) What is aggregate crushing value? Explain its significance.(b) Explain procedure for assessment of aggregate crushing value with neat sketch of the equipment.
- 3. (a) List out various field and laboratory tests that are conducted to assess the properties of fresh concrete.(b) Explain slump test describing the test equipment. Compare the Compaction factor values to Slump of the concrete for different workability.
- 4. (a) Explain the effect of gel space ratio on strength of hardened concrete.
  (b) Calculate the theoretical strength of a sample of concrete made with 600gm of cement with 0.36 water/cement ratio, on full hydration and 75% hydration based on concept of gel /space ratio. Specific volume of cement is 0.319ml/gm
- 5. (a) What are the factors affecting the shrinkage of concrete and discuss their influence.
  - (b) How do you find permeability of hardened concrete in the laboratory?
  - (c) Discuss Carbonation Shrinkage

- 6. (a) What are the tests carried out in the laboratory for finding the compressive strength and tensile strength of hardened concrete.
  - (b) Explain Griffith's hypothesis.
- 7. (a) Explain properties and applications of Polymer concrete.(b) List out different Non-Destructive evaluation techniques to assess the strength of concrete.
- 8. (a) Explain significance of concrete mix design. What are various factors to be kept in mind while designing a concrete mix?
  (b) Explain I.S Code method of mix design. What are various mix design features incorporated in revised IS 456-2000.

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R10

Set No: 4

Max Marks: 75

Code No: R31013 III B.Tech. I Semester Regular Examinations, November/December - 2012 CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 3 Hours

Answer any FIVE Questions All Questions carry equal marks

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Assume missing data suitably

1. (a) List out various physical properties of ordinary Portland cement.

(b) Explain procedure to measure initial setting time in laboratory with details of the equipment.

- 2. (a) Explain the phenomenon of bulking of fine aggregates and its practical significance in mix proportioning.
  - (b) Explain Alkali-aggregate reaction and its effect on the final product of concrete.
  - (c) Explain deleterious materials and their limitations in coarse aggregates.
- 3. (a) Explain workability of concrete?
  - (b) Explain factor influencing workability of concrete

(c) Explain the significance of the tests on concrete at fresh state while we are interested only in concrete at hardened state?

- 4. (a) Explain the effect of gel space ratio on strength of hardened concrete.
  (b) Calculate the theoretical strength of a sample of concrete made with 600gm of cement with 0.36 water/cement ratio, on full hydration and 75% hydration based on concept of gel /space ratio. Specific volume of cement is 0.319ml/gm
- 5. (a) Explain Plowman's procedure for assessment of maturity of concrete.

(b) The strength of a sample of fully matured concrete is found to be 40Mpa. Find the strength of identical concrete at age of 7 days when cured at an average temperature during daytime at  $20^{\circ}$  and nighttime at  $10^{\circ}$  centigrade. The plowman's constants A and b are 32 and 54 respectively.

6. (a) Explain phenomenon of creep in concrete.

(b) Explain measurement of creep in creep with loading diagram.

- (c) Explain time dependent deformation in concrete subjected to sustained load.
- 7. (a) Explain with neat diagram non-destructive evaluation of concrete using rebound Hammer Method.

(b) What are the techniques of measuring pulse velocity through concrete and factors affecting the measurement of pulse velocity?

8. Explain salient features of Light weight concretes.

(b) Explain different types of fibres used to prepare fibre reinforced concretes and their relative features.

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