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Question Paper Code: 12065

M.E. DEGREE EXAMINATION, MAY 2014.

First Semester

Structural Engineering

01PSE104 - ADVANCED CONCRETE TECHNOLOGY

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

(Use of Mix design tables and charts are permitted.)

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. List out the composition of an ordinary Portland cement.
2. List out the applications of special cement.
3. Define workability of concrete.
4. Give the significance of compacting factor test.
5. List the various methods of proportioning of concrete during mix design process.
6. Define target mean strength of the concrete.
7. Mention the significance of aerated concrete.
8. What is meant by high density concrete?
9. Quote the effects of cold weather on concrete.
10. Define gunite or shotcrete.

PART - B (5 x 14 = 70 Marks)

11. (a) Write short notes on the following types of cement.

- (i) Super Sulphated Cement (5)
- (ii) Low Heat Cement (4)
- (iii) Air-Entraining Cement. (5)

Or

(b) List the methods available for measurement of moisture content of aggregates. Explain any three methods in detail. (14)

12. (a) Explain any four factors affecting the workability of concrete. (14)

Or

- (b) (i) Describe the testing procedure of setting time of cement. (7)
- (ii) Write short notes on durability of the concrete. (7)

13. (a) Design a mix for M30 grade of concrete as per IS10262-2009 using the following specifications.

- Specific gravity of Cement = 3.10
- Specific gravity of Fine aggregate = 2.56
- Specific gravity of coarse aggregate = 2.75
- Degree of workability = 0.95 compaction factor
- Degree of quality control = medium. (14)

Or

(b) Explain about the sampling and acceptance criteria of concrete. (14)

14. (a) Brief short notes on the following artificial aggregates.

- (i) Brick bats (5)
- (ii) Foamed slag (5)
- (iii) Cinder. (4)

Or

(b) Describe about the preparation of sulphur impregnated concrete with its applications. (14)

15. (a) Explain hot weather concreting in detail and its limitations. (14)

Or

(b) Describe about pre-packed concrete with its properties and applications. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Write short notes on the following.

(i) Aggregate impact value (5)

(ii) Deval Attrition Test. (5)

Or

(b) (i) Explain about vacuum dewatered concrete. (5)

(ii) Briefly discuss about bacterial concrete. (5)
