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Register Number :

7942

Name of the Candidate :

**POST DIPLOMA/DIPLOMA IN CONCRETE TECHNOLOGY AND DESIGN
OF CONCRETE STRUCTURES EXAMINATION MAY 2014.**

510 — CONCRETE TECHNOLOGY

Time : Three hours

Maximum : 100 marks

Answer ONE full question from each Unit.

All questions carry equal marks.

(5 × 20 = 100)

UNIT I

1. Write on any TWO of the following :
 - (a) What are the types of cement? Explain any one.
 - (b) Explain hydration of cement.
 - (c) Briefly explain setting time test on cement.
 - (d) Explain the properties of aggregates.
 - (e) Discuss about quality of water used in concrete.

Or

2. Write on any TWO of the following :
 - (a) Explain briefly about properties of concrete ingredients.
 - (b) Explain sulphate resisting cement.
 - (c) Discuss alage aggregate reaction of concrete.
 - (d) What is meant by elongation index? Explain briefly.
 - (e) What is meant by masonry concrete? Explain.

UNIT II

3. Write on any TWO of the following :
 - (a) Explain workability of concrete.
 - (b) Define compaction of concrete. Why it is necessary?
 - (c) Discuss about segregation of concrete.
 - (d) What are the methods adopted for batching of concrete?
 - (e) Define mixing and explain their types.

Or

4. Write on any TWO of the following :
- (a) Explain the types of concrete.
 - (b) Differentiate fresh concrete and hardened concrete.
 - (c) Explain the methods of placing of concrete.
 - (d) What is meant by Laitance? Where it is available in the concrete?
 - (e) Explain the methods of curing of concrete.

UNIT III

5. Write on any TWO of the following :
- (a) Discuss the properties of concrete.
 - (b) Explain the testing method of flexural strength of concrete.
 - (c) What are all the factors affecting durability of concrete.
 - (d) Discuss the term creep of concrete.
 - (e) Discuss about elasticity behaviour of concrete.

Or

6. Write on any TWO of the following :
- (a) Discuss the factors affecting permeability of concrete.
 - (b) What is crack? What are their effect in concrete?
 - (c) Write short notes on frost resistance.
 - (d) How the water-cement ratio affect the strength of concrete?
 - (e) Explain the testing procedure for compressive strength of concrete.

UNIT IV

7. Write on any TWO of the following:
- (a) Discuss about Air entraining agents in concrete.
 - (b) What are the role on pozzolanic admixture in concrete?
 - (c) Write short notes on Accelerators.
 - (d) Discuss about aerated concrete and sulphur infiltrated concrete.
 - (e) Explain the special concreting methods.

Or

8. Write on any TWO of the following :
- (a) Write short notes on Admixtures in concrete.
 - (b) Explain about Air detracting agents in concrete.
 - (c) Discuss about high density concrete.
 - (d) What is RMC? Explain briefly.
 - (e) Write short notes on NO fires concrete.

UNIT V

9. Write on any TWO of the following :
- (a) What are the methods of proportioning of concrete?
 - (b) Explain the procedure for Road note No. 4 method.
 - (c) Differentiate Nominal mix concrete and design mix concrete.
 - (d) Explain step by step procedure for IRC 44 method.
 - (e) Compare ACI committee method and I.S. code method.

Or

10. Using ACI method, design a concrete mix of medium workability required to be used in the interior column of a multi storeyed building.

The following design specifications apply characteristics strength at 28 days = 27.5 Mpa.

Non-air entraining OPC. Specific gravity = 3.15

Compressive and fire aggregate of satisfactory quality, graded within generally acceptable limits.

Coarse aggregate : Crushed stone 40 mm max.

Bulk specific gravity = 2.68

Dry rodded weight = 1600 kg/m³

Absorption = 0.5 %

Total moisture content = 2%

Fine Aggregate : Natural sand,

Bulk specific gravity = 2.64

Finess modulus = 2.8

Absorption = 0.7%

Total moisture content = 6%

Standard deviation = 6.6

Proportion defective = 5%

Assume any other data if necessary.
