Question Paper Code : 57137

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Sixth Semester

Civil Engineering

CE 6002 – CONCRETE TECHNOLOGY

(Regulations 2013)

Time : Three Hours **Maximum : 100 Marks**

Mix design tables and charts are permitted.
Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Name the major compounds of ordinary Portland cement and mention the approximate percentage of each.
2. What should be the qualities of water to be used in concrete making ?
3. What is meant by pozzolanic action ?
4. State the advantages and disadvantages of using super plasticizers in concrete ?
5. What are the objectives of a concrete mix design ?
6. Distinguish between Design mix and Nominal mix.
7. Why does a concrete cylinder fail at a lower stress than a concrete cube ?
8. What are the effect of water cement ratio on concrete strength and durability ?
9. Define : High Performance Concrete.
10. What is polymer concrete ? State its advantages.

PART – B (5 × 16 = 80 Marks)

11. (a) (i) What are the raw materials for the manufacture of cement ? Mention their functions in the properties of cement. (6)

(ii) Discuss the role of various major compounds of cement and its hydrated products in the properties of cement. (10)

OR

(b) (i) What are the requirements of physical and mechanical properties of good coarse aggregate for concreting ? (6)

(ii) Explain any two methods of finding the abrasion valve of a coarse aggregate. (10)

12. (a) (i) Name the various types of plasticizers used in concrete and discuss the action in detail. (10)

(ii) List the materials used for air entrainment in concrete and describe their effects on the properties of concrete. (6)

OR

(b) Discuss the effects of adding fly ash, silica fume and ground granulated blast furnace slag in concrete.

13. (a) What are the factors affecting proportioning of a concrete mix ? Discuss each in detail.

OR

(b) Design a concrete mix for reinforced concrete work for the following requirements using IS : 10262-2007 code.

Characteristic strength at 28 days : 35 MPa

Exposure condition : severe

Degree of workability : slump = 50 mm

Quality control : very good

Cement : OPC (specific gravity = 3.15)

Fine aggregate : zone II sand (specific gravity = 2.64)

Coarse aggregate : maximum size = 20mm (specific gravity = 2.7)

Water absorption of coarse aggregate = 1%

Free surface moisture in sand = 2%

Assume any data required.

14. (a) What is meant by Workability of Concrete ? Enumerate the various methods to ascertain the workability. Disouss anyone of them in brief.

OR

(b) Explain the method of finding the flexural and split tensile strength for concrete.

15. (a) Brief thc production of geo-polymer concrete and enlist the salient parameters affecting the compressive strength of geo-polymer concrete.

OR

(b) Write short notes on :

(i) Shortcrete **(4)**

(ii) SIFCON **(4)**

(iii) Ready mixed concrete **(4)**

(iv) Ferrocement **(4)**

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