Reg. No. :

Question Paper Code : 90125

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fourth Semester
Civil Engineering
CE 8404 – CONCRETE TECHNOLOGY
(Regulations 2017)

Time : Three Hours | Maximum : 100 Marks

IS 456:2000 code is permitted.
IS 10262:2009 code is permitted.
Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. List the Bogue's components present in cement with its composition.

2. Define particle size distribution of aggregates.

3. List any four commercially available admixtures.

4. Differentiate mineral admixtures and chemical admixtures.

5. Compare design mix from nominal mixes.

6. Calculate the cement and water content for M35 design mix as per IS specifications.

7. Define laitance.

8. Write the advantages of SIFCON.

9. Define durability of concrete.

10. Draw stress strain curve for concrete.

PART – B (5×13=65 Marks)

11. a)i) Evaluate the hydration products of cements. (9)

ii) Classify the aggregates and reproduce its important role in concrete. (4)

(OR)

b) i) Rewrite the quality of water required for concrete. (4)

ii) Summarize the test procedure for water absorption and moisture content of aggregates. (9)

12. a) i) Describe the role of accelerators in concrete with its advantages and disadvantages. (8)

ii) Differentiate super plastizers and plasticizers. (5)

(OR)

b) Explain the effect of following admixtures on concrete properties.

i) Fly Ash. (5)

ii) GGBFS. (4)

iii) Silica Fume. (4)

13. a) Design a mix to achieve the compressive strength as 35 MPa at 28days curing period with following material properties

Specific gravity of cement - 3.15

Specific gravity of Ms and - 2.64

Specific gravity of coarse aggregate - 2.70

Moisture content in Ms and - 3.2%

Moisture content in coarse aggregate - 1.8%.

(OR)

b) Design a mix to achieve the compressive strength as 45 MPa at 28. days curing period with following material properties. (13)

Specific gravity of cement - 3.14

Specific gravity of fine aggregate - 2.68

Specific gravity of coarse aggregate - 2.74

Moisture content in fine aggregate - 2.84%

Moisture content in coarse aggregate - 1.75%

Water absorption of fine aggregate - 3.42%

Water absorption of coarse aggregate -2.04%

14.a) Explain in detail about the following fresh concrete properties

i) Compaction factor (4)

ii) Vee Bee consistency (4)

iii) Slump. (5)

(OR)

b) Describe about following hardened concrete properties

i) Permeability. (4)

ii) Water absorption. (4)

iii) Acid resistance. (5)

15.a) Describe in detail about fresh concrete properties of self compacting concrete. (13)

(OR)

b) i) Write about properties of high-performance concrete. (5)

ii) Write about properties of polymer concrete. (5)

iii) Define shotcrete. (3)

PART – C (1×15=15 Marks)

16. a) Explain about any two types of blended cements available in Indian market along with its properties and behavior. (15)

(OR)

b) Infer the necessary test results required in order to justify that the given grade of concrete has good quality and properties for an aggressive environmental condition. (15)