

1057**Code : 15CE43T***Register
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IV Semester Diploma Examination, Nov./Dec. 2017**CONCRETE TECHNOLOGY****Time : 3 Hours]****[Max. Marks : 100**

- Note :**
- (i) Answer any **six** questions from Part – A. Each question carries **05** marks.
 - (ii) Answer any **seven** questions from Part – B and question No. **19** is compulsory and any **six** from the remaining. Each main questions carries **10** marks.
 - (iii) Students allowed to use IS 10262-2009. Assume any missing data suitably.

PART – A

1. Mention chemical compositions of cement and different test conducted on cement. **5**
2. List the permissible limits of impurities in water as per IS code. **5**
3. What are the advantages of concrete ? **5**
4. Write the differences between Gel/space ratio and water cement ratio. **5**
5. What are the properties of fresh concrete ? **5**
6. Write a note on aggregate cement bond strength. **5**
7. What are the factors affecting concrete mix proportions ? **5**
8. Explain different methods of curing. **5**
9. Write a short note on ready mix concrete. **5**

PART – B

10. (a) Explain the test conducted on sieve analysis of fine aggregate. 5
(b) State the conditions under which the water-cement ratio law is valid. 5
11. (a) How size, shape and texture of coarse aggregates is important in concrete ? 5
(b) Write a note on adjustment on site for workability while preparing concrete mix. 5
12. (a) Explain in details factors contributing to cracks in concrete. 5
(b) Differentiate between segregation and bleeding. 5
13. Explain the techniques of measuring and factors affecting measurement of ultrasonic pulse velocity. 10
14. (a) Differentiate between the plastic shrinkage and drying shrinkage. 5
(b) Mention different types of joints in concrete and its locations. 5
15. (a) Differentiate between hand mixing and machine mixing. 5
(b) Explain precautions to be taken during hot weather concreting. 5
16. Write the situations of use the following equipments. Pans, wheel barrows, transit mixers, chutes and tower cranes. 10
17. What is fibre reinforced concrete, mention advantages and its specific applications ? 10
18. Mention advantages and applications of waste/recycle materials in concrete. 10

19. Design concrete mix proportion for 20 grade by IS 10262 – 2009.

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Design Stipulations for Proportioning.

- (a) Grade designation : M20
- (b) Type of cement : OPC 43 grade IS 8112
- (c) Max. nominal size of aggregate : 20 mm
- (d) Min. cement content : 320 kg/m^3
- (e) Max. water cement ratio : 0.55
- (f) Workability : 75 mm (slump)
- (g) Exposure condition : Mild
- (h) Degree of supervision : Good
- (i) Type of aggregate : Crushed angular aggregate
- (j) Max. cement content : 450 kg/m^3 .
- (k) Chemical admixtures : Not used.

Test data for materials :

- (a) Cement used : OPC 43 grade.
 - (b) Specific gravity of cement : 3.15
 - (c) Specific gravity of
 - (i) Coarse aggregate : 2.68
 - (ii) Fine aggregate : 2.65
 - (d) Water absorption
 - (i) Coarse aggregate : 0.6%
 - (ii) Fine aggregate : 1.0%
 - (e) Free (Surface) moisture
 - (i) Coarse aggregate : NIL
 - (ii) Fine aggregate : NIL
 - (f) Siene analysis :
 - (i) Coarse aggregate : conforming to table 2 of IS 383
 - (ii) Fine aggregate : conforming to Zone I of IS 383
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