

Question Paper Code : 80181

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Sixth Semester

Civil Engineering

CE 6002 — CONCRETE TECHNOLOGY

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different types of test conducted on cement?
2. Write any two advantages of Portland pozzolana cement.
3. What is the importance of super plasticizers added in cement concrete?
4. What are the factors affecting amount of air entrainment?
5. Write any four methods of proportioning.
6. On what circumstances high grade concretes are utilized effectively?
7. What are the advantages of ring tension test?
8. Define bleeding.
9. Enumerate SIFCON.
10. How geopolymer concretes is more advantage than cement concrete in construction industry?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the effect of properties of aggregate on concrete. (8)
(ii) What is the effect of water cement ratio on strength and durability of concrete? (8)

Or

- (b) (i) Explain physical properties of OPC. (8)
(ii) Compare the physical properties of 33, 43 and 53 grades of concrete. (8)
12. (a) Differentiate between accelerators and retarders with suitable examples and also how you can determine dosage of admixtures? (16)

Or

- (b) Explain the effect of concrete properties while adding silica fume and GGBS. (16)
13. (a) Design a concrete mix for M₄₀ grade of concrete using IS method with the following data :
- (i) Type of cement – OPC 43 grades
 - (ii) Maximum size of aggregate – 20 mm
 - (iii) Exposure condition – Severe (RCC)
 - (iv) Workability – 125 mm slump
 - (v) Minimum cement content – 320 kg/m³
 - (vi) Maximum W/C – 0.45
 - (vii) Method of placing concrete – pumping
 - (viii) Degree of supervision – good
 - (ix) Type of aggregate – Crushed angular aggregate
 - (x) Super plasticizer will be used
 - (xi) Specific gravity of coarse aggregate – 2.80
 - (xii) Specific gravity of fine aggregate – 2.70
 - (xiii) Water absorption : Coarse aggre. – 0.5%, fine aggre. – 1%.

Grading of coarse aggregate is conforming to Table 2 of IS 383 and grading of Fine Grading of coarse aggregate is conforming to Table 2 of IS 383 and grading of fine aggregate is falling in zone II.

Or

- (b) Design a concrete mix for M35 grade of concrete using F type fly ash. Adopt BIS method with the following data :

- (i) Type of cement – OPC 43 grades
- (ii) Maximum size of aggregate – 20 mm.
- (iii) Exposure condition – Severe (RCC)
- (iv) Workability – 100 mm slump
- (v) Minimum cement content – 320 kg/m³
- (vi) Maximum W/C – 0.45
- (vii) Method of placing concrete – pumping
- (viii) Degree of supervision – good
- (ix) Type of aggregate – Crushed angular aggregate
- (x) Super plasticizer will be used
- (xi) Specific gravity of coarse aggregate – 2.80
- (xii) Specific gravity of fine aggregate – 2.70
- (xiii) Specific gravity of fly ash – 2.2
- (xiv) Water absorption : Coarse aggre. – 0.5%, fine aggre. – Nil.

Grading of coarse aggregate is conforming to Table 2 of IS 383 and grading of Fine aggregate is falling in zone I.

14. (a) Explain the procedure of any three tests conducted on workability of concrete. (16)

Or

- (b) Explain the factors influencing the strength results. (16)

15. (a) Explain the following : (6 + 5 + 5)

- (i) High strength concrete
- (ii) Fibre reinforced concrete
- (iii) Ready mix concrete.

Or

- (b) Explain the following : (5 + 6 + 5)

- (i) Ferrocement concrete
- (ii) High performance concrete
- (iii) Geopolymer concrete.