

B.E.Eighth Semester (Civil Engineering) (C.B.S.)
Elective - III : Advanced Concrete Technology

P. Pages : 2

Time : Three Hours



NKT/KS/17/7542

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Diagrams and chemical equations should be given whenever necessary.
 11. Illustrate your answers whenever necessary with the help of neat sketches.
 12. Use of non programmable calculator is permitted.

1. a) Explain in brief constituents of concrete. **6**
b) Explain transition zone in concrete. **7**

OR

2. a) What do you understand by special purpose cement. **6**
b) Explain hydration process of cement in brief. **7**
3. a) Write short note on : **6**
i) Nano concrete. ii) Underwater concrete.
b) Explain in brief concrete with different cementations materials. **7**

OR

4. a) Write short note on :- **6**
i) High performance concrete.
ii) Transportation concrete.
b) Explain in brief different concreting techniques used. **7**
5. a) Design a concrete mix for M-35 grade using fly ash. other data given below :- **14**
a) Type of cement = OPC 43 grade.
b) Type of fly ash = F type conforming to IS3812 (Port I).
c) Max. size of aggregate = 20 mm.
d) Minimum cement content = 320 kg/m³.
e) Max. w/c ratio = 0.45.
f) Specific gravity of cement = 3.15.
g) Sp. gr. of fly ash = 2.2.
h) Sp. gr. of C.A. = 2.78.
i) Sp. gr. of F.A. = 2.70.

- j) Water absorption for C.A. is 0.5% & for F.A. is nil.
k) Free surface moisture for C.A. is nil & for F.A. is 1.5%.
grading of C.A. is conforming to Table 2 of IS383 & grading of F.A. is falling in zone I.

OR

6. a) Explain in brief acceptance criteria of concrete. 6
b) Describe in brief quality control of concrete. 8
7. a) What are the failure modes in concrete? 6
b) What are the factors influencing strength of concrete? 7

OR

8. a) Explain in brief stress-strain relationship & modulus of elasticity. 6
b) Write short note on :- 7
i) Compressive strength. ii) Tensile strength.
iii) Fatigue strength. iv) Impact strength.
9. a) Explain permeability of concrete. 6
b) Explain Freezing & Thawing of concrete. 7

OR

10. a) What do you understand by sulphate attack. 6
b) Explain corrosion of embedded steel in concrete. 7
11. a) What are various advanced non-destructive testing methods. Explain any one in brief. 7
b) What are the relationship between pulse velocity & static Young's modulus of elasticity. 7

OR

12. a) Write short note on **any three**. 7
i) Probe penetration.
ii) Break off maturity method.
iii) Nuclear method.
iv) Magnetic method.
