B.E. (Civil Engineering) Eighth Semester (C.B.S.)

Elective - III : Advanced Concrete Technology

P. Pages : 2 **NIR/KW/18/3625**

Time : Three Hours * 1 3 8 5 * 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 Hydration Process of Concrete. **6**

b) Explain Hydrated Cement paste of blended Cement. **7**

OR

2. a) Explain various types of special purpose cement. **6**

b) Explain transition zone in concrete. **7**

3. a) Write short notes on: **7**
i) Fiber reinforcement concrete ii) Ultra Rapid hardening Concrete

b) Explain various concreting Techniques. **6**

OR

4. a) Describe in short Recycled Aggregate. **6**

b) Write in brief about Auto clave aerated concrete. **7**

5. a) Differentiate between British and American Method of Mix design. **6**

b) Write a short note on Quality control of concrete. **7**

OR

6. Design a concrete Mix for M45 grade of concrete with the following data. **13**

a) Type of cement - OPC 43 grades

b) Maximum size of Aggregate - 20mm

c) Exposure condition - severe (RCC)

d) Workability - 125mm Slump

e) Minimum cement content - $320\,kg/m^3$

f) Maximum W/C ratio - 0.45

g) Method of placing concrete - pumping.

h) Degree of supervision - good.

i) Type of Aggregate - Crushed Angular Aggregate

j) Specific gravity of coarse aggregate - 2.80

k) Specific gravity of fine aggregate - 2.70

l) Water absorption
Coarse aggregate - 0.5 percent
Fine aggregate - 1.0 percent.

m) Grading of coarse aggregate confirming to table 2 of IS383

n) Grading of fine aggregate confirming to grading zone-II.

7. a) Explain various Failure modes in concrete. **6**

b) Describe various factors affecting Modulus of Elasticity of Concrete. **7**

OR

8. a) What do you mean by Fatigue Strength of Concrete. **6**

b) What are the various factors influencing the strength of concrete. **7**

9. a) Explain the permeability of concrete. **7**

b) Describe classification of causes of concrete. **7**

OR

10. a) Explain the phenomenon of Freezing and Thawing of concrete. **7**

b) Explain Sulphate Attack. **7**

11. a) Explain what do you mean by Probe Penetration. **7**

b) Explain the concept of Ground Penetration Radar. **7**

OR

12. a) Write a short note on Stress Wave Propagation Method. **7**

b) Write a short notes on core Test. **7**

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