B.E. (Civil Engineering) Semester Seventh (C.B.S.)
Elective - I : Advanced Construction Materials

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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. Diagrams and chemical equations should be given whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.

1. a) Define Cement, & Write the special purpose of Cement. **5**

b) Explain the manufacturing process of Cement. **4**

c) Write The Various Types of Finishes & Treatments. **4**

OR

2. a) Difference between High Strength Concrete & High Performance Concrete. **5**

b) Explain Self Compacting Concrete. **4**

c) Explain Supplementary Cementitious Material. **4**

3. a) Write short note on Light Gauge Structural Steel. **6**

b) Difference between TMT & HYSD Steel bar. **7**

OR

4. a) What are different protective coatings used for steel. **7**

b) Write note on New Alloy steel (Aluminum) **6**

5. a) Explain briefly the advantages and disadvantages of timber product. **5**

b) A wall of a continuously heating house in Srinagar consist of 25 mm thick plywood back by insulation. The inside temp. at the surface of the wall is 31ºC while that at the outside surface is 0ºC the thermal conductivities of the plywood and the insulation are 1.70 and 0.020 J/(s.m) resp. If the exposed area of the wall is 32 m^2. determine the thickness of insulation when the heat loss through the wall is to be restricted to.
A) 7.5%   B) 10% **9**

OR

6. a) A wall of a house in Jammu consists of 180 mm thick light weight concrete backed by insulation. The inside temp. at the surface of the wall is 35ºC while that at the outside surface is 5ºc. The thermal conductivities of the light weight concrete and the insulation are 1.25 and 0.030 J/(s.m) resp. If the exposed area of the wall is 65 m^2, determine the thickness of insulation when the heat loss through the wall is to be restricted to. **9**

      A)   5%   B)   10%

    b) What is Ferro cement and state its Application. **5**

7. Write short notes on **any three.** **14**
    a)   Difference between Tar and Bitumen.
    b)   Geo-Membranes.
    c)   Agro - Waste materials.
    d)   Disposable Materials.

OR

8. Write short notes on **any three.** **14**
    a)   Types of Retarders.
    b)   Water Proofing Compounds.
    c)   Bituminous Materials.
    d)   Geo-Synthetics.

9. a) Write design considerations of building formwork. **7**

    b) Advantages and Disadvantages of Plywood and Timber. **6**

OR

10. a) What are Different causes of failure of formwork. **7**

    b) What is Plywood? Why is odd number of laminates used in plywood? where are these commonly used? **6**

11. a) List the types of smart material and How is it Classified based on the basic properties modified. **7**

    b) What is Dielectric Elastomer? Write in brief about self Healing materials. **6**

OR

12. a) Describe briefly the basic requirements for a smart structure. And What is Smart Hydro gels. **6**

    b) What is Bio cement? Write in brief about photo mechanical materials. **7**

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