Code No: R100506

ADVANCED CONCRETE TECHNOLOGY

Time: 3 hours **Max.Marks:100**

Answer any FIVE questions
All questions carry equal marks

\- - -

Note: No code book or data sheet is allowed.

1.a) Explain the influence of Bogue's Compounds on properties of cement.
b) Explain the role of mineral admixtures in the modern concrete technology. [10+10]

2.a) Distinguish between segregation and bleeding and explain the various factors influencing segregation and bleeding.
b) Explain the maturity concept of concrete and its application. [10+10]

3.a) Explain the effect of size of aggregate on strength of concrete and the relation between compressive and tensile strength of concrete.
b) Explain the classification of shrinkage of concrete and factors influencing the shrinkage. [10+10]

4. Design a M30 grade concrete mix for an RC structure, as per Bureau of Indian standards, to be subjected to moderate exposure condition for the following requirements:
Maximum nominal size of aggregate = 20 mm.
Minimum Cement content = 360 kg/m^3
Maximum water-cement ratio =0.45
Type of Aggregate = Crushed angular aggregate.
Degree of Workability = 0.96 Compaction Factor
Degree of quality control = Weigh batching, Regular supervision.
Standard Deviation = 5 MPa.
Fine Aggregate = Natural River Sand confirming to Zone II
Type of cement = OPC 53 grade
Specific gravity of cement = 3.01
Bulk density of cement = 1440 kg/m^3. [20]

Property	Fine Aggregate	Coarse Aggregate
Specific gravity	2.67	2.68
Bulk Density (kg/m^3)	1780	1890
Free Surface Moisture (%)	2	1
Fineness Modulus	2.3	6.2

5.a) Explain the role of different types of special concrete in the present day construction practice.
b) Explain the factors influencing the strength of Geo-polymer concrete. [10+10]

6.a) Explain the significance of non-destructive testing methods of concrete.
b) Explain the significance of durability of concrete and the various methods of assessment of durability. [10+10]

7.a) Explain the alkali aggregate reaction and also various measures to control alkali aggregate reaction.

b) Explain the acceptance criteria for the quality of concrete. [10+10]

8.a) Explain Entroy and Shacklok method of Concrete mix design.

b) Explain the significance of fiber reinforced concrete in the concrete construction industry. [10+10]

--ooOoo--