Total No. of Questions : 10] **SEAT No. :**

P3020 **[Total No. of Pages : 3**

[5354]-506
B.E. (Civil Engineering)
ADVANCED CONCRETE TECHNOLOGY
(2012 Pattern) (Elective - I)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:-

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Your answers will be valued as a whole.***
5) ***Use of electronic pocket calculator is allowed.***
6) ***Assume suitable data, if necessary.***
7) ***Use of IS code 10262,456 is not allowed.***

Q1) a) Write a short note on structural light weight concrete. **[4]**

b) Explain alkali aggregate reaction. State factors promoting and control of the reactions. **[6]**

OR

Q2) a) Explain how high performance concrete differs from high strength concrete. **[4]**

b) Write a short note related to the properties of concrete on **[6]**

i) Aggregate cement bond strength

ii) Effect of admixtures

Q3) a) Write a short note on Gap graded concrete. **[4]**

b) Explain the step by step procedure involved in the design of high performance concrete. **[6]**

OR

P.T.O.

Q4) a) Write a short note on Self curing concrete. **[4]**

b) Write a short note on non destructive testing methods **[6]**

i) Ground penetration radar

ii) Stress wave propagation method

Q5) a) What are the factors affecting the fiber interaction with matrix? **[4]**

b) Define fiber reinforced concrete composite. What are the different types of fibers used in the construction industry? Write the properties and application. **[6]**

c) Explain the historical development of fiber reinforced concrete composite. Explain the role of fibers improving the properties of concrete. **[6]**

OR

Q6) a) What is aspect ratio? How it can influence the properties of composites? **[4]**

b) Enlist different metallic fibers. Explain their any two properties in brief. **[6]**

c) Explain in detail interaction between fiber matrix composite under cracked and uncracked condition. **[6]**

Q7) a) What are the different properties of hardened FRC? Explain any two properties. **[4]**

b) Which are the quality control tests conducted for steel fiber reinforced concrete composites? Explain any one in detail. **[6]**

c) Which are the constituent materials used in the SIFCON? Explain the physical properties of each material? **[6]**

OR

Q8) a) Write a short note on polymer fiber reinforced concrete composite. **[4]**

b) Explain the behavior of SFRC under compression, tension and flexure? **[6]**

c) What precautions should be taken during mixing and casting of fiber reinforced concrete composite? **[6]**

Q9) a) Define ferrocement? What are its applications? **[6]**

b) Explain how ferrocement differs than concrete? Write about tensile property of ferrocement. **[6]**

c) Explain open mould technique for ferrocement with merits and demerits. **[6]**

OR

Q10)a) What are the advantages Ferrocement? **[6]**

b) What are the different tests conducted on cement mortar as a ferrocement material? Explain any one in detail. **[6]**

c) Explain closed mould technique for ferrocement with merits and demerits. **[6]**