

Total No. of Questions : 10]

SEAT No. :

P4959

[Total No. of Pages : 3

[5059]-506

B.E. (Civil)

ADVANCED CONCRETE TECHNOLOGY

(2012 Pattern) (Elective - I)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or 2, Q. 3 or 4 Q. 5 or 6 ,Q.7 or 8,Q.9 or 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) What is heat of hydration? Explain the factors affecting heat of hydration. **[4]**

b) Write a short notes on **[6]**

i) High strength concrete

ii) High performance concrete

OR

Q2) a) Write a short note on Green Concrete. **[4]**

b) What do you mean by quality assurance and quality control? Give the IS recommendations of quality assurance. **[6]**

Q3) a) Write a short note on Copper Slag as fine aggregate. **[4]**

b) Explain the step by step procedure involved in the design of self-curing concrete. **[6]**

P.T.O.

OR

- Q4)** a) What are the different types of industrial waste materials useful for construction industry? Explain any one waste material based concrete in detail. [4]
- b) Write a short note on nondestructive testing methods [6]
- i) Break off maturity method,
- ii) Ground penetration radar

- Q5)** a) Write a short note on: Fibers with respect to volume, aspect ratio and orientation of fibers. [4]
- b) Write a short note on: [6]
- i) Carbon fibers
- ii) Metallic fibers
- c) Explain in detail interaction between fiber matrix composite under cracked and uncracked condition. [6]

OR

- Q6)** a) Write a short note on: Fiber matrix interfacial bond. [4]
- b) Enlist different metallic fibers. Explain their any two properties in brief. [6]
- c) Explain the basic concept of using fibers in the concrete composite. Explain the role of fibers improving the mechanical properties under tension and bending. [6]
- Q7)** a) Write a short note on steel fiber reinforced concrete composite. [4]
- b) Explain stress strain property and compressive strength properties of FRC. [6]
- c) What precautions should be taken during mixing and casting of fiber reinforced concrete composite? [6]

OR

- Q8)** a) Write a short note on: Applications of fiber reinforced concrete. [4]
b) Which are the quality control tests conducted for steel fiber reinforced concrete composites? [6]
c) Describe the SIFCON material with reference to definition, structure properties and its application. [6]

- Q9)** a) Define ferrocement? Write advantages of ferrocement? [6]
b) What are the different tests conducted on cement mortar as a ferrocement material? Explain any one in detail. [6]
c) Explain open mould technique for ferrocement with merits and demerits. [6]

OR

- Q10)** a) Explain how ferrocement differs than concrete? Write about tensile property of ferrocement. [6]
b) Enlist factors affecting ferrocement material in fresh and hardened state. Explain the effect of water cement ratio on properties of ferrocement material? [6]
c) Explain closed mould technique for ferrocement with merits and demerits. [6]

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