

Total No. of Questions : 10]

SEAT No. :

**P2954****[5154]-506**

[Total No. of Pages : 3

**B.E. (Civil Engineering)**  
**ADVANCED CONCRETE TECHNOLOGY**  
**(2012 Course) (End Semester) (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 previous concrete. **[4]**

b) What is copper slag? What is the effect of copper slag using as a fine aggregate on workability and strength of the concrete? **[6]**

OR

**Q2) a)** What is light weight concrete? How it can be achieved in practice? **[4]**

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

i) Jet cement concrete (Ultra rapid hardening concrete)

ii) Ultra light weight concrete

**Q3) a)** Write a short note on manufactured sand as a fine aggregate. **[4]**

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

OR

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

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

i) Stress wave propagation method

ii) Nuclear methods

**P.T.O.**

- Q5)** a) Enlist different naturally occurring fibers. Explain any two in detail. [4]
- b) Explain the merits and demerits of fibers in respect of fiber reinforced concrete. [6]
- c) Write a short note on: [6]
- i) Glass fibers.
- ii) Steel fibers

OR

- Q6)** a) Explain the historical development of fiber reinforced concrete composite. [4]
- b) Define fiber reinforced concrete composite? Enlist different naturally occurring fibers. Explain any two in brief. [6]
- c) Explain in detail interaction between fiber matrix composite under cracked and uncracked condition. [6]
- Q7)** a) Explain the behaviour of hardened steel fiber reinforced concrete under tension. [4]
- b) What precautions should be taken during mixing and casting of fiber reinforced concrete composite? [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) What are the factors affecting strength of hardened FRC? [6]
- c) Explain the behaviour of hardened steel fiber reinforced concrete under compression? [6]

- Q9)** a) Define ferrocement? What are its applications? [6]
- b) What are the different tests conducted on cement mortar as a ferrocement material? Explain any one in detail. [6]
- c) Explain skeletal armature method of ferrocement along with merits and demerits. [6]

OR

- Q10)**a) What are the advantages 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 open mould technique for ferrocement with merits and demerits. [6]

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