Total No. of Questions : 10]

SEAT No. :

P2954

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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

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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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