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Total Number of Pages: 02

**M.TECH**  
**CEPE102**

**1<sup>st</sup> Sem Mtech Regular/ Back Examination – 2015-16**

**ADVANCE CONSTRUCTION MATERIALS**

**BRANCH(S): Structural Engineering/Structural & Foundation Engineering**

**Time: 3 Hours**

**Max marks: 70**

**Q.CODE:T897**

**Answer Question No.1 which is compulsory and any five from the rest.**

**The figures in the right hand margin indicate marks.**

- Q1 Answer the following questions: (2 x 10)
- What are the two important stages of concrete?
  - Define *rheology* of concrete.
  - State the role of *accelerator* and a *retarder* in concrete preparation.
  - What do you mean by high strength concrete? Give an example.
  - Distinguish between *fibre reinforced concrete* and *reinforced cement concrete*.
  - State different types of materials used for preparation of *ferrocement*.
  - How corrosion in reinforcing steel can be restricted.
  - Explain the term: *polymer concrete composite*.
  - Distinguish between plasticizers and superplasticizers.
  - State some applications of ferrocement.
- Q2 a) What do you mean by workability of concrete? Distinguish between segregation and bleeding. (2+2)
- b) Explain any one laboratory test to measure workability of concrete. (6)
- Q3 Describe the various factors which control the creep and shrinkage behaviour of concrete. Describe the Concrete Mix Design procedure recommended by the Indian Standard. (3+7)
- Q4 Describe the various parameters which are responsible for corrosion of concrete and corrosion of reinforcing steel. What do you mean by volume fraction in FRC? (7+3)
- Q5 a) Explain the influence of water/cement ratio on strength of concrete. Describe the method of preparation of light weight concrete. (5+5)
- Q6 Explain application of FRP in sandwich panels. Explain architectural uses of composites. (5+5)
- Q7 a) What do you mean by fibre reinforced concrete? Describe various mechanical and physical properties of fibre reinforced concrete. State the types of fibres and matrices used in fibre reinforced concrete. (2+5+3)

Q8 Write short notes on **any two** of the followings. .

(5 x 2)

- a) Concreting under extreme weather conditions
- b) Grades of concrete
- c) Durability of concrete
- d) Microstructure of hardened concrete