U.S.N | | | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Civil Engineering

Semester End Examination; Dec - 2017/Jan - 2018

Advanced Concrete Technology

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
ii) Use of IS 10262 : 2009, IS 456 : 2000 are permitted.
iii) Any missing data may be suitably assumed.

UNIT - I

1 a. With the help of microscopic schematic model, explain the structure of hydrated cement paste. 10

b. Explain in detail the Alkali aggregate reaction. 10

2 a. List and explain any five factors affecting strength of concrete. 10

b. List and explain any five factors affecting elasticity of concrete. 10

UNIT - II

3 a. What is a plasticizer? Briefly explain the action of plasticizer. 10

b. Briefly explain how fly ash is obtained and also discuss its effect on hardened concrete. 10

4 a. List any ten effects of Air-entrainment on properties of concrete. 10

b. List any five forms of microsillica and also mention their corresponding bulk density. 10

UNIT - III

5 a. Explain in brief the precautions to be taken for, 5

i) Placing concrete within earthen mould ii) Placing concrete within usual formwork. 5

b. List out any ten benefits of SCC. 10

6. Design the mix for M20 grade concrete by IS method for the following data:

i) Maximum size of aggregate - 20 mm [angular] ii) Degree of workability - 100 mm slump

iii) Degree of quality control - Good iv) Type of exposure - Mild;

v) Specific gravity of cement - 3.15 vi) Specific gravity of FA - 2.6 20

vii) Specific gravity of FA - 2.6 viii) Zoning of FA - Zone III

ix) Free surface moisture - Nil for both aggregates

x) Aggregate condition - Saturated surface dry condition.

UNIT - IV

7 a. List any ten types of fibers that can be used in concrete. 10

b. List any ten types of light weight aggregates. 10

8 a. Discuss in brief about; 10

i) High Density Concrete ii) High Performance Concrete.

b. Write down any ten applications of ferrocement. 10

Contd....2

UNIT - V

9. Write short notes on :

a) Permeability of concrete b) Chemical attack on concrete 20

c) Corrosion of reinforcement d) Thermal conductivity.

10. Write short notes on :

a) Compression test b) Tension Test 20

c) Flexure Test d) NDT.

* * *