



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

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Civil Engineering

Semester End Examination; Dec. - 2015

Advanced Concrete Technology

Time: 3 hrs

Max. Marks: 100

*Note: i) Answer any FIVE full questions, selecting at least TWO full questions from each part.
ii) Missing data if any, may suitably assume.*

PART - A

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| 1 a. Explain the compound composition of cement and their influence on strength, setting and heat of hydration with the help of sketches. | 12 |
| b. Explain the influence of w/c ratio on capillary voids formation with the help of diagram. | 8 |
| 2 a. Explain electro static repulsion and steric hindrance action in case of high range water reducers. | 10 |
| b. Explain the effect of adding GGBS on strength and permeability of concrete with the help of neat sketches. | 10 |
| 3 a. Explain the various factors which affect the mix design of concrete. | 10 |
| b. Explain the following : | |
| i) Saturated and surface dry condition of aggregate | 10 |
| ii) Trial mix design and its necessity. | |
| 4 a. Explain the following : | |
| i) Chemical Attack | 12 |
| ii) Acid Attack | |
| iii) Efflorescence | 12 |
| iv) Alkali aggregate reaction. | |
| b. Briefly discuss about the durability requirements as per IS 456-2000 from the point of mix designs. | 8 |

PART - B

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| 5 a. What is high volume fly ash concrete? Explain the variation of strength with age in case of HVFA concrete with the help of neat sketch. | 6 |
| b. Explain the requirements of pumping concrete in case of RMC application. | 6 |
| c. Mention the various tests conducted on SCC and explain L-box test. | 8 |
| 6 a. Explain the effect of AR and VF of fibers on workability and ductility of SFRC with the help of neat sketches. | 10 |
| b. Explain the behavior of SFRC subjected to axial compression with the help of stress-strain diagram. | 10 |

- 7 a. What is HPC? Mention the various performance characteristics of HPC. Mention the factors which control the behavior of HPC. 10
- b. What is structural light weight concrete? What are the different ways of producing light weight concrete? 10
- 8 a. Explain the compressive strength and rebound relation with the help of neat sketch. Also discuss the factors influencing the rebound hammer results. 10
- b. Write a note on direct and indirect tensile strength of concrete and its relation with its compressive strength. 10

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