17504

11819

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE of the following : **12**

(a) Explain the process of hydration of cement.

(b) Draw labelled diagram of vicat apparatus with plunger, initial & final setting needle.

(c) State any four types of cement with their special uses.

(d) As a site engineer write steps you will take to store cement on site.

(B) Attempt any ONE : **1 × 6 = 6**

(a) Define fineness modulus and write procedure to determine FM of fine aggregate in Lab.

(b) Write any three properties of coarse aggregate and their effects on behaviour of concrete.

2. Attempt any FOUR of the following : **4 × 4 = 16**

(a) State any four grades of concrete as per IS 456-2000, with their proportions.

(b) Write importance of w/c ratio in concrete technology.

(c) State four factors affecting workability property of concrete.

(d) Explain the procedure of determining compressive strength of concrete.

(e) State any four objectives of concrete mix design.

(f) Write any four types of NDT of concrete and state importance of NDT in present construction practices.

3. Attempt any FOUR : **4 × 4 = 16**

(a) Write classification of aggregates according to source and size.

(b) Write procedure to determine silt content of sand in Lab.

(c) Determine FM of fine aggregate from following data.

Initial Wt = 500 gm

Sieve size (mm)	4.75	2.36	1.18	600 μ	300 μ	150 μ	Pan
Wt Retained (gm)	10	50	50	90	180	100	30

(d) Write Lab procedure to determine Impact value of coarse aggregate.

(e) State procedure to determine quality of concrete by ultrasonic pulse velocity test.

4. (A) Attempt any THREE : **3 × 4 = 12**

(a) Write various concreting operations in proper sequence.

(b) Write any four types of formwork and gives four requirements of good formwork.

(c) Define curing and list any three methods of curing.

(d) Explain two different methods of water proofing.

(B) Attempt any ONE : **1 × 6 = 6**

(a) Write any three methods of transportation of concrete and three precautions for transportation.

(b) State importance and need for waterproofing and name two materials used for water proofing.

5. Attempt any FOUR : **4 × 4 = 16**

(a) Define chemical admixture. Write any three types of admixture.

(b) Write any two advantages and two disadvantages of RMC.

(c) Write four effects of cold weather on concrete.

(d) Write significance of admixture in concrete.

(e) Write four uses of superplasticizers in concrete.

(f) State any four points of difference between FRC and RMC.

6. Attempt any FOUR : **4 × 4 = 16**

(a) Different volume batching and weight batching method. (any four points)

(b) Draw a neat sketch of expansion joint.

(c) Differentiate between Retarders and Accelerators. (any four points)

(d) Write two uses of light weight concrete and two uses of high performance concrete.

(e) Write factors affecting of hardened concrete properties. (any four)
