17504

11920

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

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

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

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

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

Marks

1. (A) Attempt any THREE of the following : **3 × 4 = 12**

(a) State any four field tests on cement.

(b) State Bogue's compounds with their effect on properties of cement.

(c) Compare the properties of rapid hardening cement and Low heat cement.

(d) Enlist any four physical properties of OPC. State how fineness of cement is determined by sieving method.

(B) Attempt any ONE of the following : **1 × 6 = 6**

(a) Define bulking of sand and state effect of bulking of sand on concrete.

(b) State any four properties of coarse aggregate and state the procedure of determination of impact value of coarse aggregate.

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

(a) State any four factors affecting the workability of concrete.

(b) State four objectives of concrete mix design.

(c) Giving diagram, state step by step procedure of slump cone test.

(d) Define segregation and bleeding of concrete.

(e) State necessity of supervision for concreting operations. (Any Four)

(f) State the importance of NDT of concrete and explain rebound hammer test.

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

(a) State factors affecting workability of concrete (any Four) and explain any one.

(b) What is meant by grading of aggregate and define well graded, uniformly graded and gap graded aggregate ?

(c) Classify the aggregate w.r.t. size & shape.

(d) Determine fineness modulus of a sample of fine aggregate for the following observations. Total sample 1000 gms.

Sieve size	Wt. Retained on Sieve gms
4.75 mm	14
2.36 mm	128
1.18 mm	266
600 μm	285
300 μm	154
150 μm	84
75 μm	34
Pan	35

(e) Define water cement ratio and state Duff-Abraham's law.

(f) State factors affecting compressive strength of concrete (Any Four) and explain any one.

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

(a) State advantages and limitations of volume and weight batching.

(b) State any four differences between steel formwork and timber formwork.

(c) Why curing of concrete is essential & name any four methods of curing ?

(d) State types of joints in concrete and draw neat sketch of any one joint.

(B) Attempt any ONE of the following : **1 × 6 = 6**

(a) Enlist stages in concreting operations and state two precautions to be taken to avoid wastage of materials.

(b) State any six precautions to be taken during transportation of concrete.

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

(a) State four purposes of using admixtures in concrete.

(b) State the effect of hot weather on concrete.

(c) State any four chemical admixtures used in concrete and situations where it is used.

(d) Compare accelerating admixture with retarding admixture.

(e) What is R.M.C. ? State any two advantages and two disadvantages of RMC.

(f) State any four properties of Fiber Reinforced concerte.

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

(a) State step by step procedure of testing of concrete for compressive strength.

(b) State the precautions to be taken for keeping concrete mixer in good condition.

(c) State any four precautions to be taken while placing of concrete.

(d) State any four properties of high performance concrete.

(e) State precautions to be taken while concreting in cold weather.
