17504

11718

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) Define hydration of cement and enlist four compounds of cement.

(b) State effect of storage of cement on its strength. State four precautions while storing the cement.

(c) Write applications of blast furnace slag cement and low heat cement.

(d) Define normal consistency of cement. If normal consistency of cement is 32%, find percentage water required for soundness test and setting time test of cement.

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

(a) Enlist different properties of fine aggregate and state step-by-step procedure for determination of silt content of sand and their standards for silt content as per IS 383.

(b) Explain need and importance of impact value and abrassion value for coarse aggregate.

2. Attempt any FOUR of the following : **16**

(a) Explain significance of water cement ratio.

(b) State the minimum grade of concrete for different exposure condition.

(c) Define workability and state range values of workability requirement for different type of concrete work.

(d) State the step-by-step procedure for determination of compressive strength of concrete cubes.

(e) Enlist the methods of mix design and state the necessity of concrete mix design.

(f) State different methods of NDT and explain Rebound Hammer test.

3. Attempt any FOUR of the following : **16**

(a) Classify the aggregates based on its size and shape.

(b) Seive analysis was conducted on 3000 gm of fine aggregate and following observations were recorded. Find fineness modulus of sample :

Seive size (in mm)	4.75	2.36	1.18	0.6	0.30	0.15	0.075	Pan
Wt. of F.A. retained (in gm)	150	235	830	725	515	298	142	105

(c) Explain procedure for determination of water absorption of coarse aggregate.

(d) State the procedure to find crushing value of coarse aggregates.

(e) State the methods of measuring ultrasonic pulse velocity with appropriate sketches.

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

(a) State the different types of vibrators with their uses at different locations.

(b) Enlist the different methods of curing and explain any one method in detail.

(c) State any four requirement of good formwork. Draw a neat sketch of formwork for rectangular column.

(d) Enlist types of joints provided. Also state their necessity. Mention any two materials used for filling concrete joints.

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

(a) State the different stages in concreting operations & precautions to be taken to avoid the wastage of material.

(b) State the methods of waterproofing and explain any one method.

5. Attempt any FOUR of the following : **16**

(a) Write properties and applications of retarding admixtures.

(b) Define RMC & state advantages and limitations of RMC.

(c) State any four precautions to be taken in cold weather concreting.

(d) Define admixture in concrete and state purpose of admixtures.

(e) State the properties of air entraining admixtures and accelerating admixtures.

(f) Explain the applications of high performance concrete.

6. Attempt any FOUR of the following : 16

(a) State the purpose of mixing of concrete and types of mixer used for mixing concrete ingredients.

(b) Explain the procedure for joining old and new concrete work.

(c) State the purpose of water reducing admixtures and enlist any two.

(d) Write short note on : (i) light weight concrete, (ii) self compacting concrete.

(e) Describe the procedure for determination of workability of concrete using compaction factor test.
