

17504

21819

3 Hours / 100 Marks

Seat No.

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- 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) Enlist the Bogue's compounds of cement with its effect on cement properties.
- (b) Define fineness of cement. State its effect on hydration of cement.
- (c) Explain in brief the soundness test on cement.
- (d) State two properties and two applications of rapid hardening cement.

- (B) Attempt any ONE of the following :** **6**
- (a) Enlist any six properties of fine aggregate.
 - (b) Explain the determination of fineness modulus of coarse aggregate.
- 2. Attempt any FOUR of the following :** **16**
- (a) Define water-cement ratio. Also state Duff Abraham's w/c ratio law.
 - (b) Explain the necessity of supervision for concreting operation. (min four points)
 - (c) Explain the factors affecting workability of concrete. (any four)
 - (d) Explain the compaction factor test to determine workability of concrete mixture.
 - (e) Enlist any four objectives of concrete mix design.
 - (f) Explain the ultrasonic pulse velocity test.
- 3. Attempt any FOUR of the following :** **16**
- (a) Enlist the requirements of good aggregate. (min 4 points)
 - (b) Explain silt content laboratory test of fine aggregate.
 - (c) Explain aggregate impact test.
 - (d) Explain aggregate abrasion test.
 - (e) Explain compressive strength test carried out on concrete.

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

- (a) Differentiate between weight batching and volume batching. (min 4 points).
- (b) Enlist any four precautions to be taken while transportation of concrete mixture.
- (c) State any four methods of compaction of concrete with their suitability.
- (d) Explain the necessity of waterproofing of concrete. (min. 4 points)

(B) Attempt any ONE of the following : 6

- (a) What is “stripping time of formwork” ? State the values of stripping time for beam, column and slab as per IS 456-2000.
- (b) Enlist the types of joints in concrete (any two). Also explain in brief the method of joining old and new concrete.

5. Attempt any FOUR of the following : 16

- (a) Define chemical admixture in concrete. Also state any three purposes of adding admixtures in concrete.
- (b) State any two properties and two applications of ready mix concrete.
- (c) State any four ill-effects of hot weather concreting.
- (d) State the applications of accelerating admixture and retarding admixture. (any two each)
- (e) Define an air entraining admixture. State any two situations to use it.
- (f) State two advantages and two disadvantages of self-compacting concrete over ordinary concrete.

6. Attempt any **FOUR** of the following :

16

- (a) Enlist any four methods of concrete curing with their suitability.
 - (b) Draw a neat labelled sketch of expansion joint in concrete.
 - (c) Define water reducing admixture. Give its effect on workability and strength of concrete.
 - (d) State two advantages and two disadvantages of fiber reinforce concrete.
 - (e) How will you make the concrete impermeable in nature ? (min 4 points)
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