

313322

24225

3 Hours / 70 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 answer 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. **Attempt any FIVE of the following:** **10**
  - a) Enlist Bogue's compound for cement.
  - b) Define fineness modulus for aggregate.
  - c) Define water cement ratio.
  - d) State any four types of vibrators.
  - e) Write two advantages and disadvantages of steel formwork.
  - f) What is function of retarders?
  - g) What are the different types of mineral admixture?

P.T.O.

**2. Attempt any THREE of the following: 12**

- Explain the method to determine initial and final setting time of cement.
- State any four effects of excess silt on properties of concrete.
- State four types of cement and state their field application.
- Calculate fineness modulus for the given data of fine aggregate. Total weight of F.A. = 1000 gm.

Sieve size in mm	4.75	2.36	1.18	600 $\mu$	300 $\mu$	150 $\mu$	Pan
Wt. retained in gm.	25	70	230	254	295	106	20

**3. Attempt any THREE of the following: 12**

- State the necessity of supervision in concreting operations and precaution to be taken to avoid the wastage of material.
- State Duff Abraham's law and its equation. Explain with graph, how compressive strength varies with different w/c ratio.
- Explain stepwise procedure of compaction factor test.
- Define impermeability of concrete. Enlist factors affecting it.

**4. Attempt any THREE of the following: 12**

- Enlist the various concrete operation in sequence and explain anyone in detail.
- State the stripping time of removal of formwork as per IS 456-2000 –
  - Vertical sides of beams
  - Beam soffits with props left in position
  - Slab with props left in position
  - Slab with removal of props span above 4.5m.
- List any four trade names for different types of admixtures.
- Compare air entraining admixture with superplasticizer.
- Define cold weather concreting and enlist the effect of cold weather on concrete.

- 5. Attempt any TWO of the following:** **12**
- a) Explain the laboratory procedure to determine the compressive strength of concrete cubes as per IS-516-1959 with reference to following points –
    - i) Preparation of test specimen
    - ii) Procedure of testing
    - iii) Interpretation of results.
  - b) Explain the method of concrete mix design procedure by I.S. method as per IS-10262.
  - c) List the various methods of NDT and explain rebound hammer test with its working principle.
- 6. Attempt any TWO of the following:** **12**
- a) Explain determination of bulking of fine aggregate with neat sketch and state its two effects on concrete.
  - b) Describe procedure to determine impact value of an aggregate?
  - c) List the different joints in concrete explain with neat sketch.
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