



17504

16117

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** : 12
- a) State Boque compounds with their effect on properties of cement.
 - b) State various field tests on cement.
 - c) State the various grades of concrete w.r.t. different groups.
 - d) State the requirements of form work.
- B) Attempt **any one** : 6
- a) Define initial and final setting time of cement.
Explain the laboratory method to find initial and final setting time of cement.
 - b) i) State the qualities of good sand.
ii) Explain bulking of sand.
2. Attempt **any four** : 16
- a) State various types of cement. Explain any one.
 - b) Classify the aggregates w.r.t. shape.
 - c) Explain various properties of coarse aggregate. (any four)
 - d) Following observations are taken during the fineness modulus test on aggregate. The initial weight of sample is 500 gms. Calculate F.M.

| Sieve size | 4.75 mm | 2.36 mm | 1.18 mm | 600 μ | 300 μ | 150 μ | 75 μ | less than 75 μ |
|--------------------------|---------|---------|---------|-----------|-----------|-----------|----------|-----------------------|
| Mass retained in gms. | 16 | 76 | 104 | 84 | 128 | 82 | 4 | 6 |

P.T.O.



- e) Define concrete. State the necessity of supervision of concreting operations.
- f) Explain the terms :
 - i) Segregation
 - ii) Bleeding.

3. Attempt any four : **16**

- a) Explain silt content test.
- b) Explain aggregate impact test.
- c) State requirements of good aggregates. Give classification of aggregates.
- d) Define w/c ration. State Duff-Abraham's law with its significance.
- e) State the methods of NDT. Explain any one.

4. A) Attempt any three : **12**

- a) State the factors affecting workability.
- b) Explain the procedure to determine compressive strength of concrete in laboratory.
- c) Compare manual mixing with mechanical mixing of concrete.
- d) Explain fiber reinforced concrete.

B) Attempt any one : **6**

- a) Define compaction. State various types of vibrators used and explain with neat sketch poker vibrator.
- b) Define curing. State the objective. Explain any one method of curing.

5. Attempt any four : **16**

- a) Explain :
 - i) Screeding
 - ii) Floating operations on concrete.
- b) Define admixture. State its purpose.
- c) State the various precautions to be taken in placing of concrete.
- d) Draw sketch of formwork for beam.
- e) State any four precautions to be taken in cold weather concreting.
- f) Explain IS method of concrete mix design.

6. Attempt any four : **16**

- a) Differentiate between weight batching and volume batching.
 - b) State the effects of hot weather on concrete.
 - c) Explain R.M.C.
 - d) State different types of admixtures with functions of each.
 - e) What is high performance concrete ? State its advantages.
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