

17504

16172

3 Hours / 100 Marks

Seat No.

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- 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) Answer any **THREE** of the following :

12

- (i) Which type of cement is required for :
 - (a) Marine structure
 - (b) Chimney of a factory
 - (c) Canal lining
 - (d) Dam construction
- (ii) State the precautions to be taken while storing the cement at site.
- (iii) Enlist any four lab tests for OPC. Explain any one of them in brief.
- (iv) Why rapid hardening cement is not used in mass concreting ? Why it gains early strength than OPC ?

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P.T.O.

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

- (i) Define Hydration. Explain in brief heat of hydration of cement.
- (ii) What is meant by Adulteration of cement ? Explain its importance with respect to properties of concrete. How Adulteration is determined in laboratory ?

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

- (i) Name any four types of cement and state their uses.
- (ii) State the factors affecting the workability of concrete.
- (iii) State the minimum grade of concrete for different exposure conditions.
- (iv) State objectives of concrete mix design.
- (v) State the limitations of Rebound Hammer Test.
- (vi) Explain in detail Ultrasonic Pulse Velocity Test.

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

- (i) Define Fineness Modulus of aggregates. What is the range of value for fine and coarse aggregates ?
- (ii) What are the impurities in aggregates ? In what way they affect concrete ?
- (iii) How is Bulking of sand measured in laboratory ?
- (iv) State the effect of following properties of coarse aggregates on compressive strength of concrete :
 - (a) size of aggregate
 - (b) shape of aggregates
 - (c) surface texture
 - (d) water absorption

- (v) What are different concreting operations ? Why the supervision is necessary on these operations ?
- (vi) How the following structural elements cured ?
 - (a) Test block
 - (b) Bridge slab
 - (c) Precast products
 - (d) Columns

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

- (i) How Abrasion Test on aggregate is carried out ?
- (ii) State four properties of fine aggregate.
- (iii) State the meaning of NDT. Enlist the methods of NDT stating suitability of each.
- (iv) State the precautions to be taken during transportation and placing of concrete in formwork.

(B) Answer any ONE of the following : 6

- (i) What are the different joints in concrete ? Explain with neat sketch.
- (ii) Explain in detail IS-Method of mix design with steps.

5. Answer any FOUR of the following : 16

- (i) Draw a sketch for formwork for a foundation of R.C.C. column footing.
- (ii) State requirements of formwork (any four).
- (iii) What are the problems faced in hot weather concrete ? Write any four.
- (iv) Name any four admixtures used in concrete.
- (v) Define Admixtures and state any three purposes of adding admixtures in concrete.
- (vi) What do you mean by RMC ? State its applications. (Any three)

6. Answer any FOUR of the following :**16**

- (i) State the situations where white cement is used. Why white cement is costly as compared to O.P.C ?
 - (ii) Explain in brief “Infra-red Radiation” method of curing.
 - (iii) State need of water-proofing. Name two materials used for water proofing.
 - (iv) State the properties of Accelerating and air-entraining Admixture.
 - (v) State four points of differences between reinforced concrete and fibre reinforced concrete.
 - (vi) State one application each for following types of concrete :
 - (a) R.C.C.
 - (b) Prestressed concrete
 - (c) Precast concrete
 - (d) Fibre-reinforced concrete
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