

17981

16117

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. **Attempt any TEN of the following:** **20**
- What is initial and final setting time for cement?
 - What is the use of rapid hardening cement?
 - State any four precautions taken while storing cement.
 - State any four properties of fine aggregates.
 - Define specific gravity of coarse aggregate.
 - Define water cement ratio.
 - Enlist two methods of mix design.
 - Define concrete and enlist any two grades of concrete.
 - Define workability of concrete.
 - State the two objects of curing.
 - What is mean by stripping time of formwork?
 - State any two advantages of RMC.
 - State the use of admixtures in concrete.
 - What is the effect of temperature on concreting?

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- 2. Attempt any FOUR of the following:** **16**
- a) Explain in brief heat of hydration of cement.
 - b) Write any four physical properties of cement.
 - c) Enlist any four types of cement and state their respective uses.
 - d) Explain the procedure for determination of compressive strength of concrete.
 - e) Give types of joints in concreting and enlist any four materials used for filling joints.
 - f) State the purpose of finishing of concrete and enlist types of finishing.
- 3. Attempt any FOUR of the following:** **16**
- a) Explain the procedure for determination of crushing value of aggregates.
 - b) Enlist any four requirements of good aggregates.
 - c) What is mean by bulking of sand? Explain with neat sketch.
 - d) Classify the aggregates with respect to shape and size.
 - e) Define flakiness index and elongation index.
 - f) Describe the factors affecting bulk density of aggregates.
- 4. Attempt any FOUR of the following:** **16**
- a) What are the factors affecting workability of concrete? State the methods of measuring workability of concrete.
 - b) State Duff Abraham's law and its equation.
 - c) What is mix design? State objectives of mix design.
 - d) What are the advantages and disadvantages of timber formwork and steel formwork?
 - e) State the object and principle of ultrasonic pulse velocity test on concrete.
 - f) Define compressive strength, durability, impermeability and modulus of elasticity of hardened concrete.

- 5. Attempt any FOUR of the following: 16**
- a) State the factors affecting compressive strength of concrete.
 - b) Define batching. Why weight batching is preferred over volume batching?
 - c) Enlist different methods of transportation of concrete and explain any one.
 - d) List out methods of compaction and explain any one.
 - e) Compare tilting and non tilting type mixer.
 - f) What is the importance of water proofing? Name any four materials used for water proofing?
- 6. Attempt any FOUR of the following: 16**
- a) Write any two precautions to be taken while concreting in hot and cold weather conditions.
 - b) What is fibre reinforced concrete? Write any two applications of it.
 - c) State the meaning of following types of concrete with one application of each.
 - (i) High performance concrete
 - (ii) Light weight concrete
 - (iii) Precast concrete
 - (iv) Prestressed concrete
 - d) What is the function of retarders and accelerators? In which condition are they used?
 - e) What is super plasticizer? State its uses.
 - f) Distinguish between additives and admixtures.
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