



17504

21415

3 Hours/100 Marks

Seat No.

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- Instructions:**
- (1) **All questions are compulsory.**
 - (2) Attempt **all** questions including Question No. 1 which is **compulsory.**
 - (3) Answer **each** next main question on a **new page.**
 - (4) Illustrate your answers with **neat sketches wherever necessary.**
 - (5) Figures to the **right** indicate **full marks.**
 - (6) **Assume** suitable data, if **necessary.**
 - (7) **Use of Non-programmable Electronic Pocket Calculator is permissible.**
 - (8) **Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.**
 - (9) **Use of Steam tables, logarithmic, Mollier's chart is permitted.**

MARKS

1. A) Attempt **any three** of the following : **(3×4=12)**
 - a) Enlist four Bogue's compounds with their formula and % in O.P.C.
 - b) What do you mean by low heat cement and give two properties and two uses of it.
 - c) Draw a labelled sketch of a Vicat apparatus with plunger. Initial and final setting time needle.
 - d) List four physical properties of cement.
1. B) Attempt **any one** of the following : **6**
 - a) Define terms – specific gravity, Bulk density and % water absorption.
 - b) Explain step by step procedure for determination of aggregate crushing value.
2. Attempt **any four** of the following : **16**
 - a) State the necessity of supervision for concrete operation.
 - b) Define water-cement ratio and give two different grades of concrete with strength, value and nominal mix proportion.
 - c) Define segregation and bleeding of concrete, list any one factor which affects the above properties.
 - d) Define workability and list four factors affecting workability.
 - e) Enlist two advantages of NDT and list four methods of NDT.
 - f) State two objectives of mix design and list six factors affecting concrete mix design.

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3. Attempt **any four** of the following : 16
- a) Give classification of aggregate w.r.t. shape and size.
 - b) Explain with sketch bulking of sand.
 - c) Define flaky and elongated aggregate.
 - d) Describe step by step the procedure to determine aggregate impact value.
 - e) State the working of rebound Hammer and list two limitation of it.
4. A) Attempt **any three** of the following : 12
- a) List two materials used for form work and give six good requirement of form work.
 - b) List six precautions while placing of concrete.
 - c) Give two methods of batching and compaction.
 - d) Give importance and need of water proofing.
4. B) Attempt **any one** : 6
- a) Define curing and list four methods of curing and explain in brief any one.
 - b) List type of joint and give procedure for joining old and new concrete.
5. Attempt **any four** of the following : 16
- a) What is an admixture ? Enlist any three admixture and its effect on concrete.
 - b) Give four advantages of RMC and two uses of it.
 - c) List effect of hot weather of concrete.
 - d) List trade names for different type of admixture.
 - e) List eight different types of admixtures.
 - f) List four types of special concrete and explain in brief about self compacting concrete.
6. Attempt **any four** of the following : 16
- a) List method of transportation and give four precaution to be taken during transportation.
 - b) Draw a sketch of expansion joint with load transfer device.
 - c) What do you mean by air entraining admixture and plasticizers ?
 - d) What do you mean by fiber reinforced concrete and light weight concrete ?
 - e) Describe slump cone test with sketch.
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