



17504

15116

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--

- 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** of the following :

12

- a) Define hydration and hardening of cement.
- b) What is initial and final setting time of cement.
- c) Enlist four field tests for cement.
- d) Enlist ingredients of cement.

B) Attempt **any one** of the following :

6

- a) Explain with neat sketch the experimental procedure to determine crushing value of aggregates.
- b) Sieve analysis was conducted on sand with 500 gm of sample and observations are as below. Determine F.M. of sand

Sieve size (mm)	10	4.75	2.36	1.18	600 μ	300 μ	150 μ
Weight Retained (gm)	0	10	50	50	95	185	110

2. Attempt **four** of the following :

16

- a) Define workability and explain any 3 factors affecting workability of concrete.
- b) State different methods of mix design and explain any one in detail.
- c) State two advantages and two dis-advantages of rebound hammer test.
- d) Define bleeding, segregation, shrinkage and creep.
- e) Explain the procedure for determination of compressive strength of concrete cubes.
- f) State Duff Abraham's Law and its equation.

P.T.O.



- 3.** Attempt **four** of the following : **16**
- a) Define formwork and enlist four requirements of good formwork.
 - b) Enlist different methods of transportation of concrete and explain any one.
 - c) Enlist four precautions to be taken while placing the concrete.
 - d) State four precautions to be taken during compaction of concrete.
 - e) Define curing and state necessity of curing.
 - f) Give types of joints and enlist any 6 materials used for filling joints.
- 4. A)** Attempt **three** of the following : **12**
- a) Explain phenomenon of bulking of sand.
 - b) Explain in detail ultrasonic pulse velocity test.
 - c) Differentiate between weight batching and volume batching (any 4 points).
 - d) Enlist any 4 precautions to be taken while storing the cement.
- B)** Attempt **one** of the following : **6**
- a) Explain the experimental procedure to determine silt content of sand sample.
 - b) Explain with sketch slump cone test.
- 5.** Attempt **four** of the following : **16**
- a) Enlist any 4 methods of waterproofing and material used for each method.
 - b) Enlist different types of admixtures and function of each (any 4).
 - c) State 2 advantages and 2 limitations of RMC.
 - d) What is fibre reinforced concrete ? Write any 2 applications of it.
 - e) Write short note on light weight concrete.
 - f) Enlist any 4 effects of hot weather on concrete.
- 6.** Attempt **four** of the following : **16**
- a) Write four reasons why grading of aggregate is necessary.
 - b) Define flakiness index and elongation index.
 - c) Write stripping time for removal of formwork for
 - i) Slabs with props left in position
 - ii) Beams soffits with props left in position.
 - d) Enlist any 4 precautions to be taken during cold weather concreting.
 - e) Define admixtures and state any 3 purposes of using admixtures in concrete.
 - f) Write short note on self compacting concrete.
-