313322

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer 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. Attempt any FIVE of the following: **10**

a) Enlist different Bogue's compounds in cement.

b) Define fine aggregate and coarse aggregate.

c) Define concrete.

d) Enlist different grades of concrete as per IS 456.

e) State concrete operations in sequence.

f) List any four physical properties of OPC.

g) List four materials used for filling joints in concrete.

Marks

2. Attempt any THREE of the following: **12**

a) Explain I.S. code test method for finding initial and final setting time of cement.

b) State any four field tests on cement.

c) State different requirements of good aggregates.

d) Explain determination of workability by slump cone test method.

3. Attempt any THREE of the following: **12**

a) State Duff Abraham's water cement ratio law. Explain effect of w/c ratio on strength of concrete with graph.

b) State four precautions to be taken during placing of concrete.

c) Define formwork and state removal time of formwork for slab and beam as per IS 456-2000.

d) Define admixture in concrete. State the different types of admixtures used.

4. Attempt any THREE of the following: **12**

a) Explain:

i) Self compacting concrete

ii) Light weight concrete.

b) Enlist different cementitious admixtures used in concrete and explain any one.

c) Give two uses of rapid hardening cement and low heat cement each. (Field Applications)

d) Explain the procedure of bulking of sand with neat sketch.

e) Define workability and state different factors affecting workability.

Marks

5. Attempt any TWO of the following: **12**

a) Explain step by step procedure of concrete mix design as per IS 10262-2009.

b) Explain the laboratory procedure to determine the compressive strength of concrete cubes with reference to following points:

i) Preparation of test specimen

ii) Procedure of testing

iii) Interpretation of results.

c) i) Define segregation. Give two preventive measures to avoid segregation:

ii) Suggest the degree of workability in terms of slump.

1) Mass concrete foundation

2) Road Pavement

3) Heavily reinforced concrete.

6. Attempt any TWO of the following: **12**

a) Determine the fineness modulus of the fine aggregate using following data.

Weight of sample = 1 kg.

Sieve size (mm)	4.75	2.36	1.18	0.6	0.3	0.15	Pan
Weight retained (gm)	85	175	280	220	135	90	15

b) Explain ready mix concrete (Advantages Disadvantages and Properties.)

c) i) Suggest relevant method of transportation of concrete used for construction in following situation -

1) Concreting in Hilly areas.

2) Concreting of high rise buildings.

3) Concreting under water.

ii) Suggest the relevant type of vibrator to be used for following construction.

1) Prefabricated RCC member

2) Casting of Hollow blocks and solid concrete blocks.

3) Road pavement slab.