

Concrete Technology (313322)

MSBTE Diploma · K-Scheme · Model Question Paper — Set C

Time: 3 Hours**Max. Marks: 70****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. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following:**10**

- a) Write the full names of C_3S , C_2S , C_3A and C_4AF .
- b) Define bulk density of aggregate. State its unit.
- c) Define creep of concrete.
- d) State any two uses of low heat cement.
- e) List any four materials used for filling joints in concrete.
- f) State any two advantages of using admixtures in concrete.
- g) Define lightweight concrete. State its density range.

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

- a) Explain the laboratory procedure to determine the compressive strength of cement.
- b) Explain any four field tests carried out on cement before using it at site.
- c) Classify aggregates according to size and shape.
- d) Describe the aggregate crushing value test with a neat sketch. State the IS limits.

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

- a) State Abrams' law. Explain the effect of water–cement ratio on strength and durability of concrete with a graph.
- b) Define workability. State the factors affecting workability of concrete.
- c) Define impermeability of concrete. State the factors affecting it.
- d) State the concreting operations in sequence. Explain mixing of concrete.

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

- a) Compare air-entraining admixture with superplasticizer. (Any four points)

- b) Enlist the cementitious (mineral) admixtures. Explain ground granulated blast furnace slag (GGBS).
- c) State the properties and applications of high performance concrete.
- d) Define formwork. State the removal time of formwork for slab and beam as per IS 456:2000.
- e) Explain the procedure of joining old and new concrete with a sketch.

Q.5 Attempt any TWO of the following:

12

- a) Explain the step-by-step procedure of concrete mix design as per IS 10262:2019.
- b) Explain the slump cone test with a neat sketch. Suggest the slump required as per IS 456 for: i) mass concrete ii) heavily reinforced sections iii) in-situ piling.
- c) Explain the laboratory procedure to determine the compressive strength of concrete cubes as per IS 516 with reference to: i) Preparation of test specimen ii) Procedure of testing iii) Interpretation of results.

Q.6 Attempt any TWO of the following:

12

- a) Calculate the fineness modulus of fine aggregate from the following sieve analysis. Total mass of sample = 1000 g.

IS sieve	4.75 mm	2.36 mm	1.18 mm	600 µm	300 µm	150 µm	Pan
Mass retained (g)	40	150	240	300	150	90	30

Also find the grading zone of the sand as per IS 383 and draw its grading curve.

- b) At a building site, freshly placed concrete shows segregation and bleeding. Suggest suitable remedial measures with reasons.
- c) Draw a neat labelled sketch of formwork for an RCC beam and slab. State any four requirements of good formwork.

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in