

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, May, 2019
B. Tech. in Civil Engineering, Semester IV

Roll No.....

CE409 Concrete Technology

Time: 3.00 hours

Max. Marks: 60

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. Question Paper consists of three parts (**Part-A, Part-B and Part-C**)
5. Answer **ALL** the questions from each part.

PART-A (01 marks each from i-iv & 02 marks each from v-vii)

1. (i) In Non-Destructive Testing of Concrete by Ultrasonic Pulse Velocity Method, if the Pulse Velocity by Cross Probing is between 3.0 to 3.5 Km/S then Quality Grading of concrete will be.....
- (ii) The standard consistency of a cement paste may be defined as that consistency which will permit a Vicat plunger having 10 mm diameter and 50 mm length to penetrate from the top of the mould to a depth of
- (iii) What do you mean by M15 concrete?
- (iv) The minimum grade of concrete that is used for RCC work as per IS: 456-2000 is.....
- (v) Draw the graph between water cement ratio and compressive strength of rapid hardening cement at 28 days.
- (vi) Why we add gypsum in cement?
- (vii) Differentiate between Segregation & Bleeding

PART-B (05 marks each)

- 2.. Classify the deleterious material present in concrete with example and also show that the presence of deleterious material after a certain limit in concrete will adversely affect the strength, workability and long term performance of the same.
3. Draw the graph showing variation in compressive strength due to each cement compound with days. and also analyze in detail the basic properties of cement compounds.

4. How will you measure the property of freshly mixed concrete or mortar which determines the ease and homogeneity with which it can be mixed placed, compacted and finished ?

5. Why Fineness modulus is important ? Determine fineness modulus of coarse aggregate sample weigh 2250 gm weight retained on each sieves are as follows.

IS sieve Numbers	40 mm	20 mm	16 mm	10 mm	Residue
Weight retained in gm	450	500	230	1050	20

7. Justify the statement “The structures located in tidal and atmospheric zone are more vulnerable to aggressive action of sea than those which are fully submerged in water”.

8. Analyze the phenomenon of Shrinkage and temperature effect over the concrete and also discuss the variation of shrinkage and moisture movement in the concrete with alternate drying and wetting with the help of suitable graph.

Part-C (10 Marks each)

8. Read the paragraph and answer the following questions:

Reinforced concrete uses steel to provide the tensile properties that are needed in structural concrete. It prevents the failure of concrete structures which are subjected to tensile and flexural stresses due to traffic, winds, dead loads, and thermal cycling. However, when reinforcement corrodes, the formation of rust leads to a loss of bond between the steel and the concrete and subsequently delamination and spalling. If left unchecked, the integrity of the structure can be affected. Reduction in the cross sectional area of steel reduces its strength capacity. This is especially detrimental to the performance of tensioned strands in pre-stressed concrete.

- Effect of reinforcement corrosion on structural behaviour.
- Causes of Reinforcement corrosion
- Control of Reinforcement corrosion

9. Highlight the crucial role of NDT techniques in everyday life and is necessary to assure safety and reliability. Discuss the following Non Destructive Tests for Concrete:

- Surface Hardness Tests – Rebound Hammer Test
- Ultrasonic Pulse Velocity Test