

08/01/18 (M)

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SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

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Total number of pages:[2]

Total number of questions:06

B.Tech. || CE || 4th Sem

Design of Concrete Structure - I

Subject Code:BTCE-403

Paper ID:

Time allowed: 3 Hrs

Max Marks: 60

Important Instructions:

- All questions are compulsory
- Assume any missing data
- Use of IS:456-2000 and SP:16 is allowed

PART A (2×10)

Q. 1. Short-Answer Questions:

- (a) Write about the chemical composition of Portland cement.
- (b) How would you classify of aggregates?
- (c) Define workability of concrete and name the factors affecting workability.
- (d) How flanged beam is different from Singly or doubly reinforced beam?
- (e) Define the assumption of W.S.M as per IS:456-2000.
- (f) How water cement ratio is important to workability of cement?
- (g) Why doubly reinforced beam is required as comparative to singly reinforced beam?
- (h) What do you meant by heat of hydration?
- (i) How grading of aggregate is useful for the preparation of a workable concrete?
- (j) What is the role of vibration table in the manufacturing or preparing process of concrete?

PART B (8×5)

Q. 2 Write about the various characteristics of Portland cement in detail.

CO1

OR

Explain various field and laboratory tests required to find the properties of cement.

CO1

Q. 3. What is the role of Size, texture, shape and specific gravity of aggregates in making a workable concrete?

CO2

OR

Name the numerous tests required for aggregates and explain any two in detail.

CO2

- Q. 4. Explain about the strength of concrete and write the factors affecting strength of concrete in detail. CO3

OR

What is the role of curing in achieving the Durability and Strength of concrete and also mention various methods of curing? CO3

- Q.5. How Design philosophy of limit state method is different from working stress method? Also write their assumptions. CO4

OR

Who would you design a beam to resist a bending moment of 45kNm using M20 and mild steel as per design philosophy of limit state method? CO4

- Q. 6. Design a rectangular beam for an effective span of 6m. The Superimposed load is 80kNm and size of beam is limited to 30cm x 70cm overall. Use M20 and Fe415 grade of steel. CO5

OR

Calculate the M.O.R of a T-beam using M20 mix and Fe 415 grade of steel . CO5
Given : width of flange = 750mm, $D_f = 120\text{mm}$, $D_w = 380\text{mm}$, $A_t = 350\text{mm}^2$, $W_w = 250\text{mm}$.