SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: ☐☐☐☐☐☐☐☐☐☐☐☐   Total number of pages:[2]

Total number of questions:06

B.Tech. || CE || 4ᵀʰSem

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
- BIS 456 & SP16 are permitted in Examination.

PART A (2×10)

Q. 1.   Short-Answer Questions:

(a) Classify the aggregates.

(b) Define bulking of sand.

(c) What is the roll of setting time of concrete in its strength achievement?

(d) Write the formula to find development length of steel bars in concrete as per BIS.

(e) Differentiate between segregation & bleeding.

(f) How would you achieve the durability of concrete.

(g) What is different between under reinforced and over reinforced section ?

(h) What is Abram's law?

(i) What do you mean by modulus of rupture.

(j) Define flanged beam.

PART B (8×5)

Q. 2   Explain in detail about characteristics of Portland cement.   CO1

OR

Write about chemical composition of Portland cement and also explain chemical admixtures used in manufacturing of concrete.   CO1

Q. 3.   Classify the aggregates. Also explain its mechanical properties.   CO2

OR

Explain the procedure to grade the fine and course aggregates. Also describe   CO2
the thermal properties of aggregates.

Q.4 Explain in detail about workability and factor effecting on it.

OR CO3

How would you measure the workability of concrete by performing various tests.

CO3

Q. 5. How would you determine Neutral axis depth and moment of resistance of beam by limit state method.

OR CO4

Calculate the amount of steel required in T-Beam to develop a moment of resistance of 240 kNm at working loads. Use M25 mix and Fe415 grade steel. Given: Width of flange is 800mm, depth of flange is 150mm width of web is 200 mm, overall depth of beam is 550mm , 5-28dia bars are in compression zone at 70mm effective cover and 3-16dia bars are in tension zone at 50mm effective cover.

CO4

Q.6. Design a simply supported roof slab for a room 8m X3.5 m clear in size if the CO5 superimposed load is 5 kN/m^2. Use M25 mix and mild steel.

OR

Design a short column, circular in section to carry an axial load of 2200kN using mild steel and M20 mix

CO5