

KADI SARVA VISHWAVIDYALAYA

B.E. (Civil) Semester-VI Examination, May'2015

Subject Code: CV603

Subject: Design of RC Structure

Date: 04/05/2015

Time: 10:30 am to 1:30 pm

Total Marks: 70

Instructions:

- (1) Answer each section in separate answer sheet
- (2) Use of IS:456 is permitted.
- (3) All questions are Compulsory
- (4) Indicate **clearly**, the options you attempt along with its respective questions number.
- (5) Use the last page of main supplementary for **rough work**

Section-I

Q-1 (All Compulsory)

- (A) Discuss the various philosophies of the design in R. C. C. structures. Also discuss the merits and demerits of each. [5]
- (B) Explain Under- reinforced and Over- reinforced beam and draw the modes of failure. [5]
- (C) What is meant by Aspect Ratio? State the limits of the same for One way and two way slabs. Also show the sharing of the loads on the adjacent beams of both the slabs by sketch. [5]

OR

- (C) Explain the steps for design of doubly reinforced beam. [5]

Q-2 Answer the following Questions

- (A) Find the Moment of Resistance of a singly reinforced concrete beam of 230mm width and 450 mm effective depth, reinforced with 5 bars of 12 mm diameter of Fe415 and M20 concrete. [5]
- (B) Find the Moment of Resistance of a T beam of M15 Concrete grade with following details: $D_f = 125\text{mm}$; $b_f = 750\text{mm}$; $d = 450\text{mm}$; $b_w = 230\text{mm}$; $A_{st} = 4\text{-}20\text{mm}$ dia Fe415 bars [5]

OR

- (A) An R. C. C. beam of size 300 wide and 600mm deep is reinforced by tension bars as 5nos. of 25mm dia. and compression bars as 3nos. of 20mm dia. Calculate the moment of resistance of beam if the clear cover is 25mm on both the sides. [5]
- (B) An R. C. C. T-beam has breadth of flange as 1000mm, thickness of flange 120mm, effective depth 600mm and width of web 230mm. It is reinforced by 4-25mm dia. bars. Calculate the ultimate moment of resistance for the same. [5]

Q-3 Answer the following Questions

- (A) Design a rectangular beam having an effective span of 5.0 m. The superimposed load is 45 kN/m and size of beam is 230 mm x 450 mm. Assume the suitable data. Design for the M25 and fe415 grades of materials. [5]
- (B) Design the appropriate vertical shear reinforcement for above question (Q-3(A)). Use 6mm dia. bars as a shear reinforcement. [5]

OR