RAN-5936

B.Arch-II, (Sem.-IV) Examination

March / April - 2019

Structural Design & systems - IV

Time: 2 Hours]   **[Total Marks: 30**
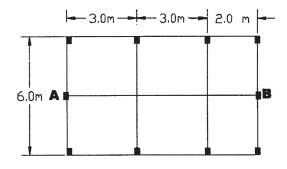
સૂચના : / Instructions

1.

2. Assume Suitable data & specifically mention it.

3. Figures to the right indicate full marks.

4. Use of Nonprogrammable scientific calculator is permitted

5. Use of IS - 456 and IS 875, is permitted.

Q-1   Calculate design load on a beam 'AB'; of a residential building, given in fig-1.   08

OR

Q-1(a)   A singly reinforced rectangular beam section of 300 mm width and 450 mm overall depth is reinforced with 2-16 mm + 2-12 mm at bottom. Find out the limiting moment of resistance of a beam, if it is subjected to a sagging moment. Use the grade of steel; Fe - 500 and grade of concrete ; M -15   05

(b) Write weather the following statements are true or false with reason. 03

    (1) Limit state method gives conservative results in comparison with working stress method.

    (2) We always design over reinforced section.

Q-2 Design a shear reinforcement for a simply supported beam of span 5.6 m Subjected to a maximum shear force 250 KN. The beam section is of 300 mm X 600 mm over all depth. Use the grade of steel; Fe - 415 and grade of concrete; M - 20. Total 3 bars of 25 mm dia+2 bars of 16 mm dia. are used in tension zone. Draw your designed section showing reinforcement detailing.   12

Q-3 Design a simply supported slab of effective panel dimension 4.5 m x 5.5 m; used for a residential purpose, if the grade of steel is Fe - 415 and that of concrete is M-20. Draw your designed section showing reinforcement detailing   10

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