



RM-6403

B. Arch. - II (Sem. - 4) Examination

May / June - 2010

Structure - IV

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दशांशवैध निशानोंवाणी विगतो उत्तरवडी पर अवश्य दधवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :

B. ARCH. - 2 (SEM. - 4)

Name of the Subject :

STRUCTURE - 4

Subject Code No. : 6 4 0 3 Section No. (1, 2.....) : NIL

Seat No. :

Student's Signature

- (2) Assume suitable data wherever necessary and specially mention them.
- (3) Figures to the right of each quesiton indicate full marks.
- (4) Use of IS456, IS 875 and IS 800 is permitted.
- (5) Programmable calculator is not allowed.

Q - 1 **12**

A singly reinforced rectangular beam section of 300 mm width and 600 mm Over all depth is reinforced with 3 - 25 mm diameter bars at bottom . Find out the moment of resistance of a beam ,If it is subjected to a sagging moment. Use the grade of steel ;Fe - 250 and grade of concrete ; M -15.

Q - 2 **15**

Write whether the statement is true or false ? Why ?

1. A concrete grade M-20 means concrete mix 1:1.5 : 3.
2. Ultimate State Method of Design Gives Most economical Design .
3. We Must always design an Over reinforced Section .
4. A steel Grade Fe -250 means ,the design stress of steel for limit stress method is 150 N / mm² .
5. Another name of working stress method of design is Limit stress of design.

Q - 3 **12**

Design a simply supported slab of panel dimension 4 m X 4.5 m , for a residential purpose . If the grade of steel is Fe - 415 and that of concrete is M-20 .

OR

Q-3 **12**

Design a simply supported slab of Panel dimension 3.5 m x 8 m . The live load on a slab is 3 Kn / Sq.m. Use M-20 & Fe-415 Grade of concrete & steel.

RM-6403]

1

[Contd...

Q -4 **15**
Design a beam 'AB'; of a school building ,given in **fig-1** . Use M-20 grade of concrete and Fe- 415 grade of steel . Live load on a slab is 4 Kn/ sq. m

Q -5 **12**
A rectangular beam section of 230 mm width and 500 mm depth is reinforced with 5 - 16 mm diameter bars at bottom and 3 - 16 mm diameter bars at top. Find out the moment of resistance of a beam . Use the grade of steel; Fe - 415 and grade of concrete; M -15

Q -6 **12**
Answer the following Questions.

1. Calculate all moments required to design a slab panel "ABCD" given in **fig.- 1**, If the design total load , including the self weight ; on a slab is 8.25 Kn/ sq.m .
2. Under which circumstances ,We Design a Doubly reinforced Section?
3. How many limit states are there ? For which limit state we design a section?
4. In R.C.C. ,Why we use steel as an reinforcement?

Q - 7 **08**
For a doglegged staircase shown in **fig-2** locate position of column & beam in plan & draw necessary sections passing through waist slab. Draw reinforcement detailing in waist slab. Also explain load transfer.

OR

Q -7
Draw a typical plan & a section of a Two way Slab .

Q - 8 **14.**
Design a shear reinforcements for a simply supported beam of span 5 m. Subjected to a shear force of 200 KN. The beam section is of 230 mm X 600 mm over all depth. Use the grade of steel; Fe - 415 and grade of concrete; M -20.

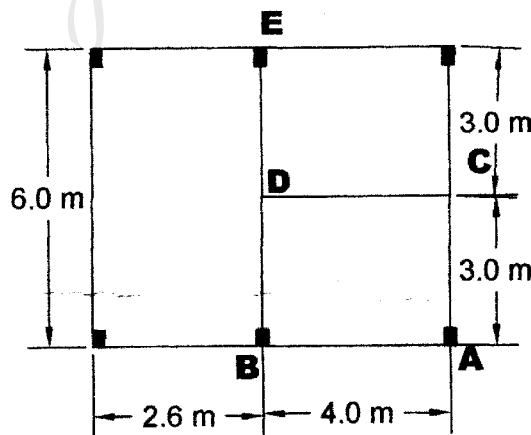
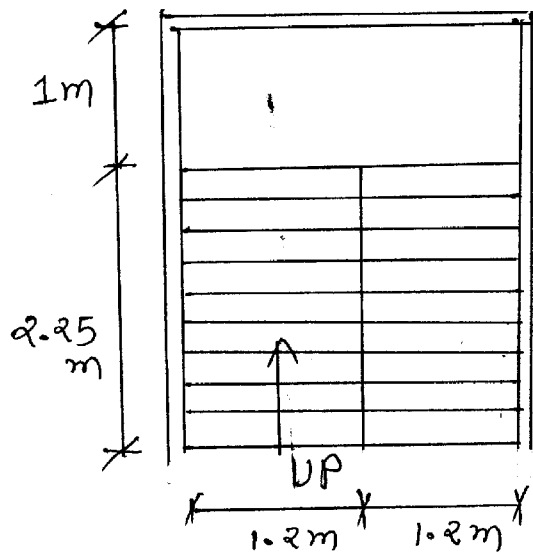


fig. 1



T = 0.25 m
R = 0.15 m
Head Room = 3 m

FIG- 2

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