



UG-6403
B. Arch. - II (Sem. - IV) Examination
May\June - 2012
Structural Desing & Systems - IV
(New Course)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

<p>नीचे दर्शायेव निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination :</p> <p>B. Arch. - II (Sem. - IV)</p> <p>Name of the Subject :</p> <p>Structural Design & Systems - IV (New Course)</p> <p>Subject Code No. : 6 4 0 3 Section No. (1, 2,.....): Nil</p>	<p>Seat No. :</p> <table border="1" style="width: 100%; height: 20px;"><tr><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td></tr></table> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center; margin-top: 10px;">Student's Signature</div>						

- (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, IS-875 and IS-800 is permitted.

- 1 A singly reinforced rectangular beam section of 300mm × 450mm over all depth is reinforced with 2-25 + 1-16 mm diameter bars at bottom. Find out the moment of resistance of a beam. An effective cover for a beam is 50 mm. Use the grade of steel, Fe-415 and grade of concrete, M-15. **10**

- 2 Design a beam 'AB'; of a building given in **Fig.-1**. Use M-20 grade of concrete and Fe-415 grade of steel. Live load is 4Kn/sq.m draw your designed section showing reinforcement detailing. **10**

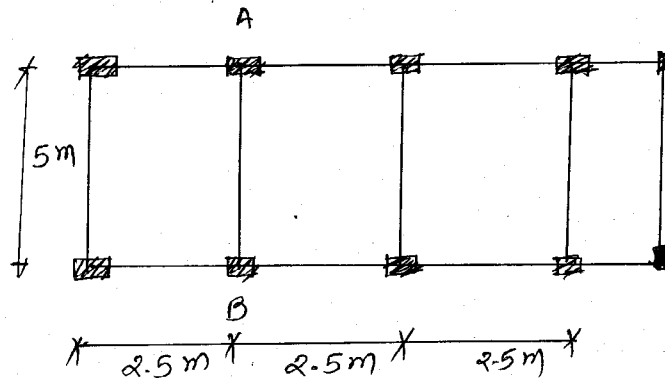


Fig.-1

OR

- 2 Design a Simply supported slab panel of dimension $3\text{m} \times 3\text{m}$ if the live load on a slab is 3 KN/sq.m . The grade of steel is Fe-415 and that of concrete is M-20. Draw your designed section showing reinforcement detailing.
- 3 Design a shear reinforcements for a simply supported beam of span 5m. Subjected to a shear force of 240 KN. The beam section is of $230\text{mm} \times 650\text{mm}$ over all depth. Use the grade of steel; Fe-415 and grade of concrete; M-20. The area of steel required in tension zone is 1710 sq.mm . Draw your designed section showing reinforcement detailing. 10
- 4 Design a simply supported slab of effective span of 4m. Building is used for residential purpose. Use M20 & Fe-415 grades of concrete & steel. Draw your designed section showing reinforcement detailing. 10
- 5 (a) Explain following load bearing structural elements-wall, buttress, arch, pier. Explain how it transfers load, also give your comments how, where & when you can use it in load bearing structure. 6
 (b) What is confined masonry system ? Explain with proper plan & required sections in detail. 4

OR

- (b) Draw a section showing reinforcement detailing for a continuous slab.