Ref: Ex/Con/T/322/2017

B. Construction Engineering 3rd Year 2nd Semester Examination 2017

DESIGN OF STRUCTURE - II

Part I

Times : Three hours | Full Marks : 100

Answer total two question with **Q1** and **any other** Question

Use of relevant IS 456 is allowed. Assume any suitable data not provided.
Design should be explained with neat sketches.

1. (a) Derive the expression of moment of resistance for the balanced section adopting **working stress method** of design using M25 grade of concrete and Fe415 grade of steel. 8

   (b)Design a corner floor slab of a residential building having clear size of 3000 mm x 3600 mm supported on 250 mm wide beams. Use M25 grade of concrete & Fe415 steel. Show reinforcement details in plan and at important sections. 17

2. Design a fixed beam having a span of 5.0 m subjected to a udl. of 25KN/m. The grade of concrete is M25 and Fe415 grade of steel is used. Calculate and design the beam adopting by working stress method. Draw neat sketches of longitudinal & cross sections at important location. 25

3. (a) Design a circular column having subjected to an axial load of 350 KN. The effective length of column is 3.2 m, Use M25 grade of concrete and Fe415 grade of steel. 10

   b) Find the safety of the same column as designed if it is subjected to an eccentric load of 200 KN with a bi-axial eccentricity of 50 mm about both the axes instead of the 350 KN axial load only. 15

4. Design an isolated footing for the circular column subjected to an axial load of 350 KN as stated in Q 3(a). The grade of concrete is M25 and Fe415 grade of reinforcing steel is used. Draw neat sketches showing plan & elevation with reinforcement details. 25

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B. Construction Engineering 3rd year 2nd semester Exam 2017.

Sub: Design of Structure -II

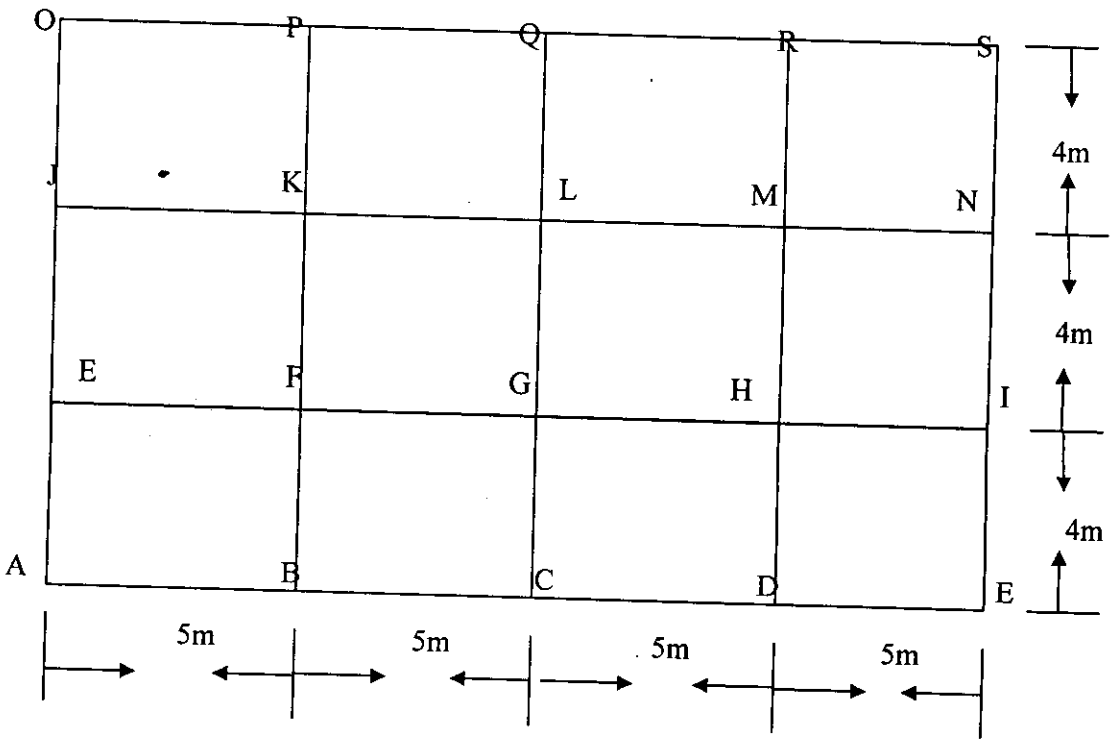
PART-II

Full marks -50

Answer separate sheet for answer.

Allow IS 456 :2000 in the exam hall.

Answer all the Questions (25X2=50)



1. Design the RCC Slab of BCGF with the following data
   LL= 3.0 KN/m^2
   M25 grade concrete & FE-500 HYSD Bar
   Size of beam is 250X450 MM
   Size of column 400X400 mm
   Use Limit state method for design.
   Shown also reinforcement details.

2. Design the beam of GH with the following data
   LL imposed on beam = 40 KN/m^2
   M25 grade concrete & FE-500 HYSD Bar
   Size of column 400X400 mm, Depth of beam should be restricted 450 mm.
   Use Limit state method for design. Shown also reinforcement details.

3. Design a column of 4 meter length with cross section 400X400 . The axial load of the column is 2000KN. If safe bearing capacity of column is 15 T/M^2 then design a suitable footing. Assume M25 Grade concrete and Fe-500 HYSD Bar. Show also the details of reinforcement of Column and footing. Use Limit state method for design of column only.