B. Tech. Sem – VIII (Civil Engg.) (2014 COURSE) (CBCS) :
SUMMER - 2019

SUBJECT-ELECTIVE-III ADVANCED STEEL DESIGN

Day: Thursday
Date: 30/05/2019

S-2019-2878

Time: 02.30 PM TO 05.30 PM
Max. Marks: 60

N.B.:

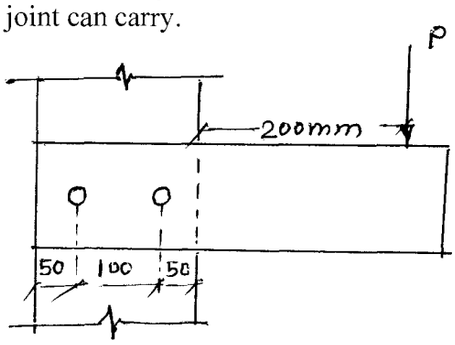
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if necessary.
4) Use of IS800, IS875, IS456, Steel Table is **ALLOWED**.

Q.1 A truss member is subjected to design compressive force of 300 kN. The length of member is 3m. Design the member and its connection with gusset plate. **(10)**

OR

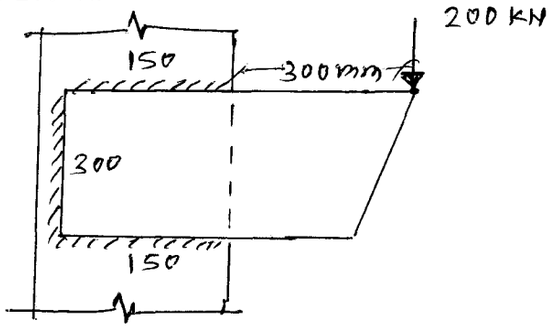
Q.1 A simply supported beam of span 3m is subjected to design point load of 200kN at midpoint. The beam is laterally unsupported. Design the beam using ISMB200. Provide additional plates if required. **(10)**

Q.2 A bracket is connected to column by M20 bolts as shown in figure. Determine maximum load 'P' the joint can carry. **(10)**

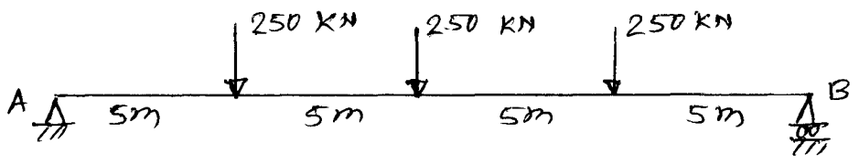


OR

Q.2 A bracket is welded as shown in figure. Determine minimum size of weld required to carry a load of 200kN. **(10)**



Q.3 Design suitable cross section for welded plate girder loaded as shown in figure. **(10)**



P.T.O.

OR

Q.3 A welded plate girder has following section. **(10)**
Top flange -300x 16 mm
Bottom flange -300 x 16 mm
Web-1000 x 8 mm
The girder carries point load of 60kN at mid-span. Design load bearing stiffer for this girder under the point load.

Q.4 A beam ISMB 500 of span 4m connected with column. Design bolted moment resisting connection between beam and column. The beam is subjects to design load of 50 kN/m over whole span. **(10)**

OR

Q.4 For a hall of size 16m x 9m, prepare framing plan and explain design procedure for beam, column, column base and connection between them. **(10)**

Q.5 A column is made from 2-ISMC 400 placed face to face with 100mm clear spacing between them. It is subjected to axial compression of 1000 kN and moment 200 kN.m. Design base plate and anchor bolts for this column. **(10)**

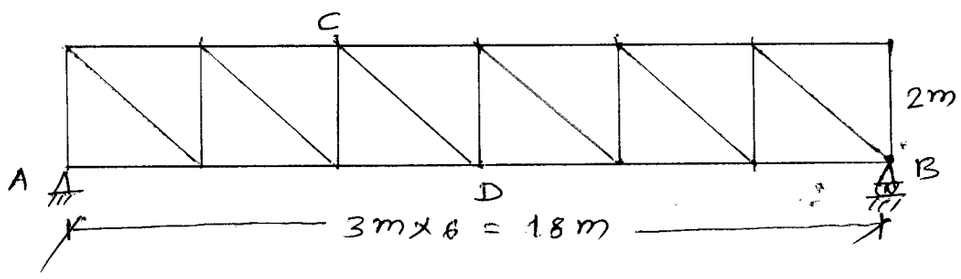
OR

Q.5 Draw neat sketch of Column base and explain design of base plate and anchor bolt. **(10)**

Q.6 Draw typical layout of gantry girder system and explain its design methodology. **(10)**

OR

Q.6 A truss bridge of span 18m, height 2m and width 3.5m is subjected to design DL 10kN/m^2 and LL-20kN/m^2, calculate design force in member CD. **(10)**



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