Dr. Saurabh

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- OCT- 2018

B.Tech 9TH Sem

MAX. MARKS: 25

COURSE CODE: Design of Steel Structures

COURSE NAME: 10B11CE611

MAX. TIME: 1.5HRS

COURSE CREDITS: 4

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1. Design of sag rods for consecutive purlins near the supported end of a roof truss system as shown in the Fig 1. The purlins are supported at one –third points by sag rods. Also design the ridge rod between the ridge purlins. The data given are c/c spacing of truss =6m, spacing of purlins =1.4m, self weight of the roofing=200N/m^2, intensity of wind pressure=1500N/m^2, slope of the roof truss=25° and no access is provided to the roof. **[5,CO2]**
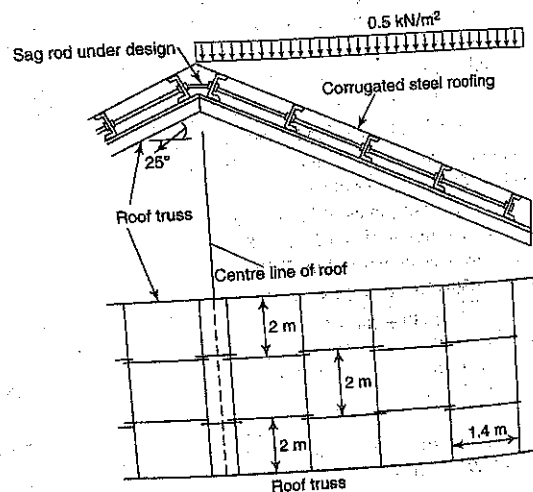

Fig. 1

Q2. A tension member in a bridge structure 10m long is subjected to an axial tensile factored load of 1800kn. design the section with channels facing each other as shown in the Fig 2. Assume f_u= 410MPa and f_y=250MPa. **[7,CO2]**
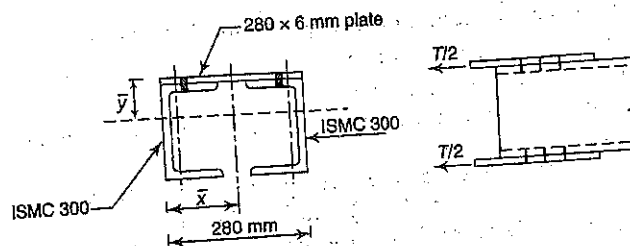

Fig.2

Q3. Write short notes on the following

[7, CO3]

a) Long, short and intermediate compression members

b) Slender compression members

c) Elastic buckling of slender compression members

Q4. Determine the design axial load on the column section ISMB350 given that height of column is 3m and that it is pin-ended. Use the following properties. [6,CO3]

f_y= 250N/mm^2, f_u= 410N/mm^2, t_f= 14.2mm, t_w=8.1mm, b= 140mm, self weight= 524N/m

c/s area= 6670mm^2, r_z= 143mm, r_y=28.4mm