

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Dec 2021

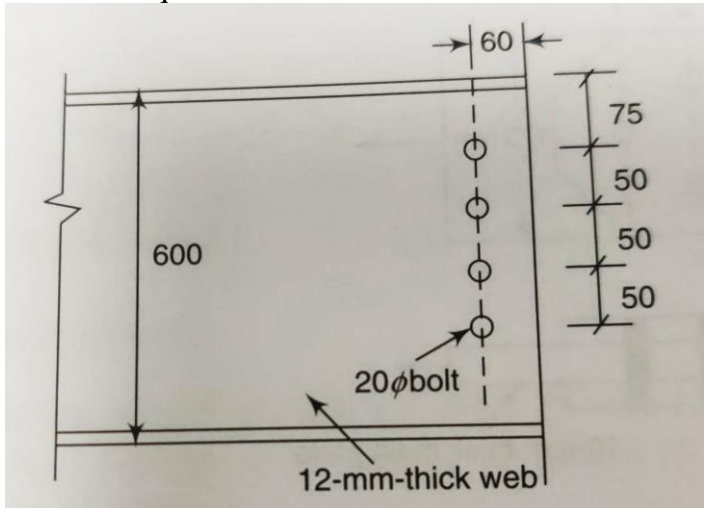
Course: Design of Steel Structure	Semester: VII
Program: B.Tech. Civil Engineering	Time: 03 hrs.
Course Code: CIVL 3007	Max. Marks: 100

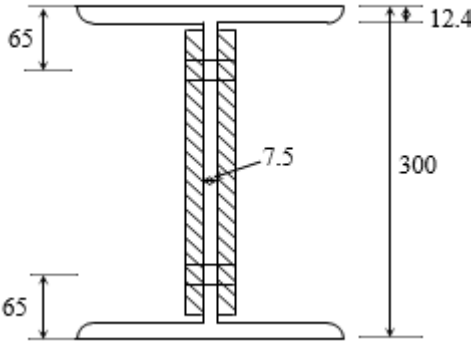
Instructions:
IS 800:2007 and IS 808:1989 should be Allowed/Provided
(Internal choice is available for Q 8 and Q 11)

SECTION A

S. No.		Marks	CO
Q 1	Discuss uncertainties in beam design (limit state design).	4	CO3
Q 2	Explain different parameters by which we can ensure structural stability.	4	CO1
Q 3	Describe the failure criteria for steel design members in tension.	4	CO2
Q 4	Discuss the design provision of intermediate braces in beams or columns.	4	CO3
Q 5	Discuss the design effects of purlin in industrial buildings.	4	CO4

SECTION B

Q 6	<p>An ISMB 600 is connected to a column of web cleats with a single row of bolts . If the reaction is 350 kN and there are 4- no's of 20mm diameter bolts through the web , check if the section is adequate for block shear failure.</p> <div style="text-align: center;">  </div>	10	CO1
Q 7	<p>An angle section ISA 65 x 65 x 6 connected to a gusset plate 8 mm thick. Design a weld to transmit a load equal to the full strength of the member. Use shop welds if required.</p>	10	CO1

Q 8	<p>Design the tensile strength of a channel ISMB300 with gusset plate connected to the web. The section is connected to end gusset plate by using two rows of 18 mm bolts at a section and a connection length of 100 mm.</p>  <p style="text-align: center;"><u>OR</u></p> <p>Design the tensile strength of section ISMB300 with gusset plate connected to the flange. The section is connected to end gusset plate by using four rows of 18 mm bolts at a section and a connection length of 100mm.</p>	10	CO2
Q 9	Determine the design axial load on the column section ISMB 350, given that the height of the column is 3m and it is pin ended.	10	CO2
SECTION-C			
Q 10	<p>Design an I Section purlin for an industrial building situated in the outskirts of Dehradun, to support a galvanized corrugated iron sheet roof for the following data:</p> <p>Spacing of the truss c/c = 6m Span of truss = 12m Slope of truss = 30° Spacing of purlins c/c = 1.5m Intensity of wind pressure = 2 kN/m² Weight of the galvanized sheets = 130 N/m² Grade of Steel = Fe 410</p>	20	CO4
Q 11	<p>Determine the design bending strength of ISLB 350 @ 486 N/m, where the design shear force V is less than the design shear strength. The unsupported length of the beam is 3m. Assume steel of grade Fe 410. considering the beam to be</p> <p>(a) Laterally Unsupported beam</p> <p style="text-align: center;"><u>OR</u></p> <p>(b) Laterally supported beam</p>	20	CO3