
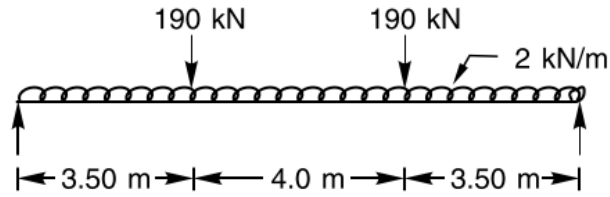


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022			
Course: Design of Steel Structure		Semester : VII	
Program: B.Tech. Civil Engineering		Time : 03 hrs.	
Course Code: CIVL 4034		Max. Marks: 100	
Instructions: IS 800 & IS 808 should be allowed/Provided			
SECTION A			
S. No.		Marks	CO
Q 1	A Write all the types of groove weld you know with neat sketches. B Name the different modes of failure of a bolted joint? C Classify the compression members according to the slenderness ratios. D Sketch five various types of roof truss. E Why does buckling of web occur in beams?	5 x 4 = 20	CO1 CO1 CO2 CO4 CO3
SECTION B			
Q 2	An ISLC 300 @ 324.7 N/m is to carry a factored tensile force of 900 kN. The channel section is to be welded at the site to a gusset plate 10 mm thick. Design the fillet weld if the overlap is limited to 350mm.	10	CO1
Q 3	Two plates each of 200 x 8mm are to be joined using 20mm diameter 4.6 grade bolts to form a lap joint. The joint is supposed to transfer a factored load of 280 kN. Design the joint and suitable pitch for the bolts.	10	CO1
Q 4	Design a single angle discontinuous strut to carry a load of 47 kN. The length of the strut is 3m between intersections. The strut is connected to 12 mm thick gusset plate with 24mm dia HSBG bolts.	10	CO2
Q 5	The main tie of a roof truss consists of ISA 150 x 115 x 8mm and is connected to a gusset plate by 18 mm diameter bolts. Find out the maximum tensile load it can carry.	10	CO2
SECTION-C			
Q 6	Design a beam 11 m in clear span and subjected to a system of loads as shown in figure. Yield strength may be assumed as 250 MPa.	20	CO3



OR

Design a lintel over an opening of 4m. the lintel is made a wall 300mm thick. The lintel has to support a uniform load of 60 kN in addition to masonry. The weight of the masonry may be assumed to 20 kN/m³ and the height of brickwork above the lintel is 3m.

Q 7	Design angle section purlins for a truss roof system to support sheeting weighing 135 N.m ² . The trusses are spaced 4 m c/c and the purlins are provided 2 m c/c. The building is situated in an area where the wind pressure is 1500 N/m ² . Use steel with yield stress 260 N/mm ² . Yield strength may be assumed as 250 MPa.	20	CO4
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