
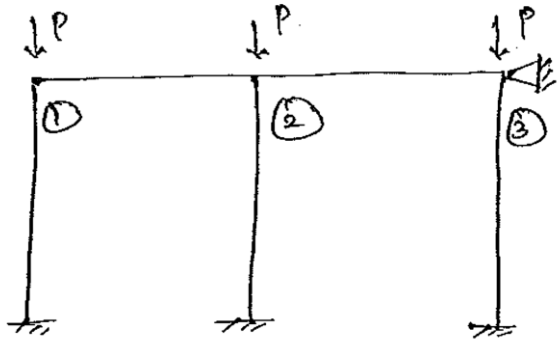


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022			
Course: Stability of Structure		Semester : VII	
Program: M.Tech. Structural Engineering		Time : 03 hrs.	
Course Code: CIVL 7009		Max. Marks: 100	
Instructions:			
SECTION A			
S. No.		Marks	CO
Q 1	A Draw the load vs deflection curves of eccentrically loaded columns.	5 x 4 = 20	CO1
	B Why energy approach in structural analysis is considered superior to other methods?		CO1
	C What are the assumptions made in the Euler theory of long column?		CO2
	D Brief the Galerkins method of finding the critical load of a thin plate.		CO4
	E Draw the mode shape of buckling.		CO3
SECTION B			
Q 2	Define fourth order elasticity; Derive an expression for the critical load of a column fixed at one end and hinged at the other using this method	20	CO1
Q 3	Find the critical load of a hinged-hinged column of length 2.5 m. The column is made with a thin walled channel section having flange with of 100 mm, mean depth of 220mm and uniform thickness of 2mm. The load is applied axially at the centroid. Take modulus of elasticity as 200Gpa and Modulus of rigidity as 80 Gpa.	20	CO2
SECTION-C			
Q 4	Determine the critical load of the frame	20	CO3



Q 5	Derive the critical value of the compressive force for buckling of simply supported rectangular plates uniformly compressed in one direction.	20	CO4
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