UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Jan 2020

Programme Name: M.Tech. Structural Engineering   **Semester : I**
Course Name   : Stability of Structures   **Time   : 03 hrs**
Course Code   : CIVL 7009   **Max. Marks : 100**
Nos. of page(s)   : 2
Instructions: **Answer all questions of Section A, B & C**

| SECTION A			
S. No.		Marks	CO
Q 1	How do you apply Galerkin method in the evaluation of critical load.	5	CO2
Q 2	Differentiate between elastic instability and inelastic stability of columns.	5	CO1
Q 3	Write a brief account on the energy principles in the stability analysis of frames.	5	CO3
Q 4	Explain restraint of plates.	5	CO4
Q 5	Explain the difference between Rayleigh Ritz method and Galerkin Method.	5	CO1
Q 6	Explain application of euler's buckling column	5	CO1
SECTION B			
Q 7	Define fourth order elasica. Derive an expression for the critical load of a column fixed at one end and hinged at the other using this method	10	CO1
Q 8	Enumerate various modes of column failures using relevant sketches.	10	CO2
Q 9	Obtain the deection of a beam column of length, l carrying uniformly distributed load, q per unit run and subjected to an axial compressive force, P .	10	CO3
Q 10	Derive an expression for critical stress on rectangular plates under compressive stresses.	10	CO4
Q 11	Explain effect of axial load on bending stiffness Buckling of frames.	10	CO2
SECTION-C			
Q 12	Using matrix method analyze the stability of given frame.	20	CO3
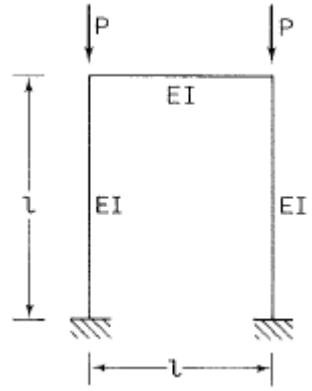
OR

Analyze the structural stability by numerical analysis.