Total No. of Questions : 6]

SEAT No. :

P4189

[Total No. of Pages : 2

[4960]-49

M.E. (Civil Structure) (Semester - II)

STRUCTURAL STABILITY

(2008 Pattern) (Elective - III)

Time : 4 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any two questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of nonprogrammable pocket Calculator is allowed.***
6) ***Assume Suitable data if necessary.***

SECTION - I

Q1) a) Explain elastic stability and instability. **[12]**

b) Explain energy method for analysis of stability of structure. **[13]**

Q2) a) Explain column with geometric imperfections, write its governing equations of equilibrium. **[12]**

b) Analyze the column with one end clamped and other hinged boundary condition. **[13]**

Q3) a) Stability of structure is an eigen value problem. Discuss. **[10]**

b) Diffentiate structural stability of elastic buckling and Inelastic buckling of columns. **[15]**

SECTION - II

Q4) a) A beam column subjected to a uniformly distributed load through out its span. Obtain the expression for maximum deflection and maximum moment. **[13]**

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b) What are approximate methods of analysis Compute the critical load of the frame shown in figure 1. All the members have the same El. **[12]**

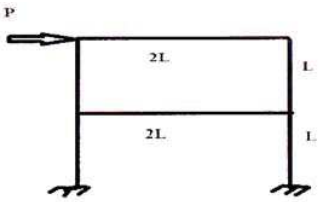

Fig 1

Q5) a) Explain Galarkin's large deformation theory for thin plates. **[10]**

b) Sketch the different modes of buckling of portal frames. **[5]**

c) Draw free body diagram for elastic plate loaded in one of the directions axially. Show the elastic deformation along with boundary conditions. **[10]**

Q6) a) Explain the role of finite element method in structural stability analysis. What is stress stiffness matrix? **[10]**

b) Explain discreet and continuous system. What are the governing equations for stability of each system, explain at least one. **[15]**