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**Question Paper Code: U2604**

M.E. DEGREE EXAMINATION, NOV 2024

Second Semester

Civil Engineering

21PSE204 - STABILITY OF STRUCTURES

(Regulations 2021)

Duration: Three hours

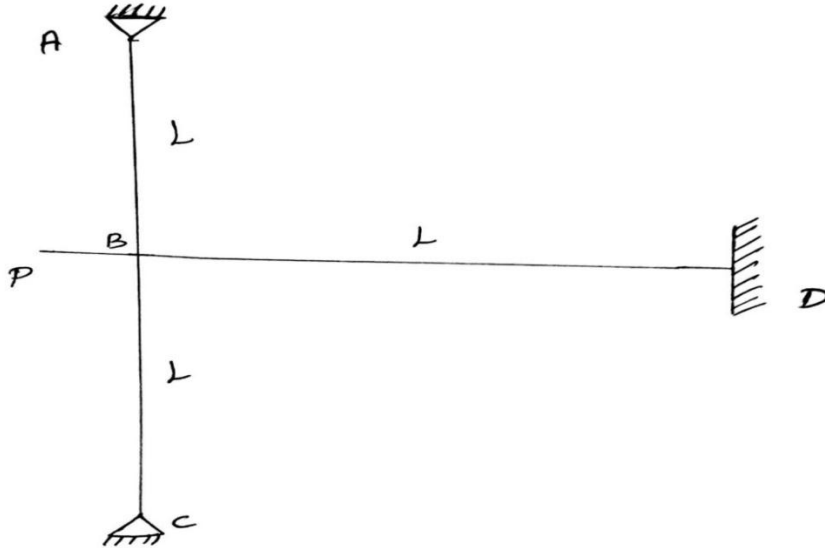
Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 20 = 100 Marks)

1. (a) Determine the critical load of a column which is hinged at both the ends using equilibrium approach CO1- App (20)  
Or  
(b) With a load deflection curve diagram , obtain the formula for deflection in Eccentrically loaded column CO1- App (20)
2. (a) Derive the Rayleigh's quotient for fundamental frequency. CO2- App (20)  
Or  
(b) Using finite difference method determine the critical load of a column whose bottom support is fixed and top support is hinged. Divide the column into two equal parts and three equal parts. Apply Richard extrapolation scheme CO2- App (20)
3. (a) Illustrate how Rayleigh reitz method is used in stability analysis of beam column with an example CO3- App (20)  
Or  
(b) Illustrate in detail how failure is analysis of beam column with an example CO3- App (20)

4. (a) Compute critical load of the frame as shown in figure by stiffness matrix.  $K, EI$  and  $L$  are same for all the members. CO4- App (20)



Or

- (b) Illustrate Matrix approach for buckling of frames with real-time examples CO4- App (20)
5. (a) Determine the critical load of biaxially compressed SS square plate using finite difference method. CO5- Ana (20)
- Or
- (b) Explain the classification of plates along with assumptions in buckling of plates CO5- U (20)