

**M.E. DEGREE EXAMINATIONS: NOV/DEC 2010**

Third Semester

**APPLIED ELECTRONICS**

ANE522: Real Time & Embedded Systems

**Time: Three Hours**

**Maximum Marks: 100**

**Answer ALL Questions:-**

**PART A (10 x 2 = 20 Marks)**

1. State any two approximate methods of stability analysis.
2. What are the three different states of equilibrium?
3. Why Euler column theory is called as an Eigen value problem?
4. What is stable equilibrium?
5. Write down the strain energy equation for a beam column subjected to UDL.
6. Name the analytical approaches available for stability analysis based on static concept.
7. Write down the expression for critical load of a simply supported plate uniformly compressed in one direction.
8. What are the two assumptions made in eccentrically loaded inelastic columns?
9. Write the expression for the potential energy of bending of plates with simply supported ends.
10. What is meant by beam column?

**PART B (5 x 16 = 80)**

11. a) Find the Euler critical load for the column fixed at both ends.

**(OR)**

- b) Using higher order differential equation find the Euler's critical load for a column with both ends hinged.

12. a) Find the critical load of the column with one end fixed and other free using Rayleigh ritz method.

**(OR)**

- b) Briefly write a note on tangent modulus theory.

13. a) Derive the critical load for the knee frame shown in figure 1.  $EI = \text{constant}$ .

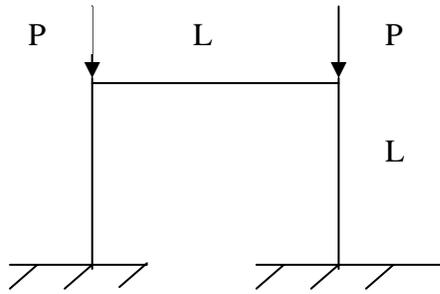


Figure: 1

**(OR)**

b) Derive the expression for deflection of a beam column with an UDL through out the length.

14. a) Derive the expression for critical load of a plate uniformly compressed in one direction. The plate is simply supported with sides a and b and loaded with compressive force  $N_x$ .

**(OR)**

b) Derive the expression for Strain energy due to bending in a fixed plate subjected to uniaxial compression.

15. a) Explain in detail torsional flexural buckling.

**(OR)**

b) Write in detail about lateral buckling of beams.

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