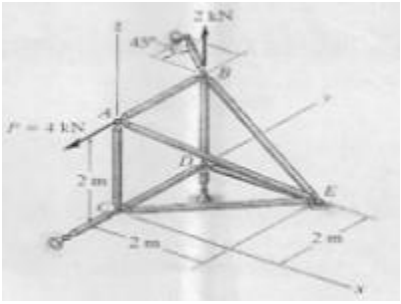
AE 8403 Aircraft Structures- I

Important 13mark questions

Unit I

1. Determine the forces in members AB, AC and AE of the space truss given in fig.



2. Write a procedure which provides a general method for determining the end moments on beam spans using moment distribution method.

Unit II

1. A propped cantilever beam of length L and uniform section is subjected to uniformly distributed load of intensity q over the entire span. Compute the support reactions using energy method.
2. State and Prove Castigliano's theorems.

Unit III

1. Compare the critical loads, effective lengths, and effective length factors for ideal columns with different end conditions. Use a tabular chart. Neatly sketch the first buckled mode shape for each end condition.
2. A column of length 'L' and flexural rigidity 'EI' is hinged at both the ends subjected to a uniformly distributed lateral load over its entire length in addition to its axial compressive load. Derive the expression for maximum deflection.

Unit IV

1. Explain the maximum shear stress failure theory and indicate the failure envelope.
2. Indicate all the salient points on stress-strain diagram for ductile materials and explain it in detail.

Unit V

1. Explain in detail about the various phases of fatigue life.
2. Explain in detail about various stages of creep. Also explain the effect of stress and temperature on steady-state creep.