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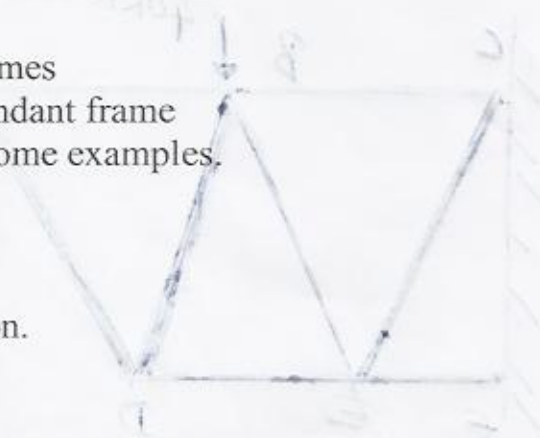
JAYA GROUP OF INSTITUTIONS-THIRUNINRAVUR
4th SEM- B.E. / B.Tech
INTERNAL ASSESSMENT-1(MODEL EXAM-1)

Sub. Name: Aircraft Structures -I
 Sub. Code: AE 6403
 Duration: 180 minutes

Date: 31-01-2015
 Branch: Aeronautical
 Max.Marks: 100

PART-A (10 x 2 =20)

1. Explain with examples the statically determinate structures.
2. Differentiate truss and frame
3. Differentiate the perfect and imperfect frames
4. Differentiate the deficient frame and redundant frame
5. Define plane truss and space truss. Give some examples.
6. Draw stress – strain curve.
7. Explain classification of failures.
8. Write limitation of Frankle theory.
9. Draw symbol for pure shear & pure tension.
10. What is maximum stress theory?



PART-B (5 x 16 = 80)

- 11.a) Determine all forces in member (fig-1)
 Or
 b) Determine all forces in member (fig-2)
- 12.a) Draw BMD & SFD ref fig-3
 Or
 b) Draw BMD & SFD ref fig-4
- 13.a) Derive 3-moment clapeyron's equation
 Or
 b) i) Explain principal strain theory (8)
 ii) Explain shear stress theory (8)
- 14.a) Explain maximum strain energy theory
 Or
 b) Explain distortion theory



15.a) When shaft is subjected to a max torque of 10 KN.m and maximum B.M of 7.5 KNm. At a particular section. If the allowable equivalent stress tension test is 160 MN/m^2 , find the diameter of the shaft using i) max shear stress theory, ii) max strain energy theory, iii) shear strain energy theory. Take Poisson ratio as 0.24

Or

b) When a shaft is subject to max bending stress of 105 N/mm^2 and shear stress of 84 N/mm^2 it is subjected to a simple tensile test with the value of 145 MN/m^2 and find suitable diameter by i) maximum principal strain theory, ii) maximum strain energy. Take Poisson ratio as 0.28. B.M is 1.2 times than the twisting moment.

