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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SECOND SEMESTER M.TECH DEGREE EXAMINATION, MAY 2016

Mechanical Engineering
(Machine Design)

04 ME 6512 COMPUTER AIDED DESIGN IN MANUFACTURING

Max. Marks: 60

Duration: 3 Hours

Part A: (8x3=24 marks)

1. Explain a typical design workstation?
2. Explain the functions of a graphic package.
3. Explain Boundary Representation
4. Write short note on assembly modeling.
5. Explain the terms, a) Truss elements b) aspect ratio.
6. Give the classification of elements based on shape.
7. What is shape function?
8. What are axi-symmetric elements? Give example

Part B: (6x6=36 marks)

9. Compare the conventional & CAD design process and their advantages and disadvantages.

OR

10. Discuss about networking of CAD systems.
11. What is the importance of graphic standards in CAD/CAM? Explain about GKS?

OR

12. Write short note on DXF, PHIGS and GKS.

13. Explain the features of wireframe and solid models. List out their capabilities in geometric modeling.

OR

14. List the Boolean operations and explain their use in the construction of a model with example.

15. Define parametric representation. Give the parametric representation and characteristics of

- a) Bezier curve
- b) B-Spline surface

OR

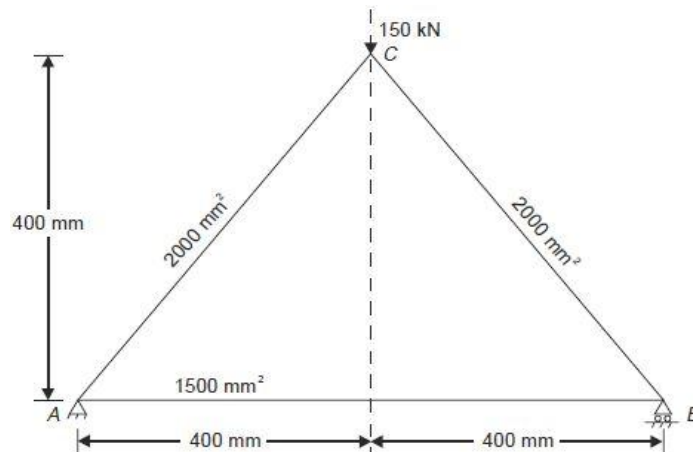
16. What is parametric design? Mention its advantages & applications.

17. Describe the general steps involved in FEA. What are capabilities of a typical general purpose FEA package?

OR

18. Determine the shape functions for the Constant Strain Triangle (CST). Use polynomial functions.

19. For the three – bar truss shown in Fig., determine the nodal displacements and the stress in each member. Find the support reactions also. Take modulus of elasticity as 200 GPa.



OR

20. Derive the stiffness matrix of a beam element using direct stiffness method.