

**Registration No.**

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**M.E./M.Tech. Degree Examinations, January 2017**

**First Semester**

**COMPUTER AIDED DESIGN**

**CD16102 – COMPUTER APPLICATIONS IN DESIGN**

**(Regulation 2016)**

**QP Code:517828**

**Time: Three hours**

**Maximum : 100 marks**

Answer **ALL** questions

**PART A - (10 X 2 = 20 Marks)**

1. Define the term aspect ratio.
2. Write the rotation matrix which rotates a 2D object by  $30^\circ$  in counter clockwise direction.
3. Give some examples for analytical and synthetic curves.
4. Define segmentation.
5. Define NURBS
6. State the term Constructive Solid Geometry (CSG).
7. Lists the algorithms used for hidden surface removal.
8. Define Silhouette edges.
9. Expand IGES and STEP.
10. How to test the mating conditions in an assembly.

**PART B - (5 X16 = 80 Marks)**

11. (a) (i) The coordinates of square ABCD are A (0,0); B (0,4); C (4,4); D (4,0). **(10)**  
The square is reduced to half of its size, with the centre remaining the same. Find the new coordinates of the square and the transformation matrix that transforms the square ABCD.
- (ii) Explain the concept of clipping transformation **(6)**

**(OR)**

- (b) (i) Explain midpoint circle algorithm and demonstrate the same for a circle of radius,  $r = 10$  positioned at an origin  $(0, 0)$  (10)  
(ii) What is a 2½D model? Sketch some examples. (6)

12. (a) Explain about Bezier curve and summarize the characteristics of Bezier curve. (16)

(OR)

- (b) Briefly explain Surface Manipulation with suitable neat diagram. (16)

13. (a) Summarize the steps involved to develop the NURBS equation of any curve. (16)

(OR)

- (b) Sketch and explain the following feature operations used in Solid Modelling. (16)  
(i) Extruded feature, (ii) Revolve feature, (iii) Sweep feature, (iv) Loft feature

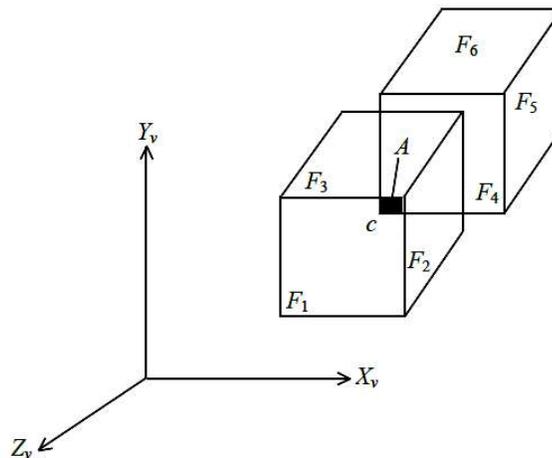
14. (a) Explain briefly with neat sketches.

- (i) Minimax test (8)

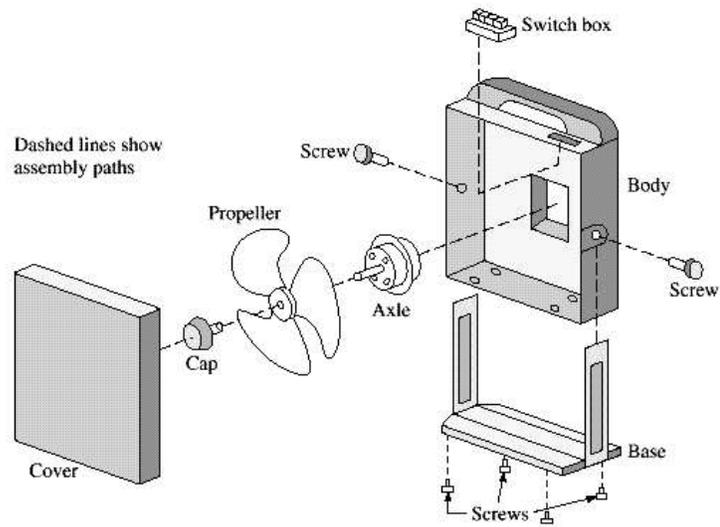
- (ii) Containment test (8)

(OR)

- (b) Apply priority algorithm in steps for the figure shown below to remove the hidden lines. (16)



15. (a) Explain about Assembly tree and generate the assembly tree for the house hold fan shown below. (16)



(OR)

- (b) Explain IGES file structure and STEP architecture with examples. (16)