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BIME-018

B.Tech. – VIEP – MECHANICAL ENGINEERING (BTMEVI)

Term-End Examination

June, 2015

00026

BIME-018 : COMPUTER AIDED DESIGN

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. use of scientific calculator is permitted.*

1. (a) Explain the working of Cathode Ray Tube (CRT) Graphic display device with a neat sketch. 7

(b) What are the basic techniques for generation of graphic image ? Explain with suitable examples. 7

2. (a) What are the input devices applied in CAD system ? Explain any two with neat sketches. 7

(b) Explain the functions of graphic software with suitable examples. 7

3. (a) What is solid modelling ? Explain the various methods of solid modelling with suitable examples. 7

(b) What is the function of frame buffer ? Compute the frame buffer size for a CRT display terminal of 640 × 480 resolution with 96 pixels per inch. 7

4. (a) Consider a line AB whose position vectors of end points are [A] = [1, 2], B = [3, 4]. The translations in X and Y directions

$$[T_x, T_y] = [2, 3].$$

Calculate the end points of the translated line. Draw neat sketches of the original line and translated line. 7

(b) Discuss the following terms with suitable examples : 7

(i) Windows and Clipping

(ii) 3D Transformations

5. What are Bezier curves ? Write their important properties. Fit a Bezier curve having the following control points : $P_0(1, 1)$, $P_1(3, 6)$, $P_3(3, 7)$ and $P_4(8, 5)$. Find out the points at $t = 0{\cdot}5$. 14

6. (a) Why is parametric representation of curves better as compared to analytic representation ? Explain. 7

(b) What is wireframe model ? Enlist the limitations of wireframe model when compared to a corresponding solid model. 7

7. (a) What are the various types of Graphic standards in CAD system ? Explain any one Graphic standard with a neat sketch. 7

(b) Explain the Constructive solid geometry (C-rep) and Boundary representation (B-rep) with suitable examples. 7

8. (a) Find a real root of the equation by using bisection method.

$$x^3 - 4x - 9 = 0$$ 7

(b) What do you understand by the finite element method ? Give an example of modelling a mechanical component. 7