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BIME-018

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

Term-End Examination

00350

June, 2016

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 output devices used in CAD systems ? Explain any two with neat sketches. 7

2. (a) What are the functions of an operating system ? Explain. 7

(b) Differentiate between random scan display and raster scan display with suitable examples. 7

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

(b) Discuss the following with suitable illustrations : 7

(i) Graphic Standards

(ii) Clipping

4. (a) List the various types of geometric transformations and explain any one with suitable examples. 7

(b) Explain the Constructive Solid Geometry (CSG) and Boundary representations with suitable examples. 7

5. (a) Describe, in brief, the bicubic surface method of a surface modelling. 7

(b) Explain, in detail, the Cubic Bezier and B-spline surface with their important properties. 7

6. A line is defined by its end points (0, 0) and (2, 3) in a two-dimensional graphic system. Express the line in matrix notation and perform the following transformations on this line : $4 \times 3\frac{1}{2} = 14$

(a) Scale the line by a factor of 2·0.

(b) Scale the original line by a factor of 3·0 in the x direction and 2·0 in the y direction.

(c) Translate the original line by 2·0 units in the x direction and 2·0 units in the y direction.

(d) Rotate the original line by 45° about the origin.

7. (a) Find the real roots of the following equation by using Newton-Raphson method : 7

$$x^4 + x^2 - 80 = 0$$

(b) Describe the step-by-step finite element procedure of solving a design problem. 7