**BME-002**

# B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00905    **Term-End Examination**

## December, 2014

## BME-002 : COMPUTER AIDED DESIGN

*Time : 3 hours*                     *Maximum Marks : 70*

*Note :* *Answer any* ***seven*** *questions. Use of scientific calculator is allowed. Assume any data if missing/required.*

1.  (a)  How is the scanning carried out in interlaced and non-interlaced displays ? Which is more efficient ?    *5*

    (b)  Explain the differences between mouse and trackball.    *5*

2.  (a)  Find the transformation that rotates an object point P(x, y), $\theta°$ about a fixed centre of rotation (*l*, m).    *5*

    (b)  Scale the triangle with vertices x(0, 0), y(2, 2) and z(5, 0) to twice its size while keeping the point fixed at z (5, 0).    *5*

**3.** With a neat sketch differentiate between RGB (Red, Green, Blue) Model and CMY (Cyan, Magenta, Yellow) Model. *10*

**4.** (a) Explain Parametric and Non-Parametric representation of curves. Why is parametric representation of curves better ? *5*

   (b) What is a spline function ? Discuss its characteristics. *5*

**5.** (a) Discuss the convex hull property. *5*

   (b) Discuss the construction and characteristics of B-Splines. *5*

**6.** Explain Sweep representation. Also discuss different types of sweep with the help of neat sketches. *5+5*

**7.** Show that if the boundary curves of a bilinear Coons patch are coplanar, the resulting patch is also planar. *10*

**8.** (a) Why is solid modeling necessary ? Discuss the merits and demerits of surface modeling. *5*

   (b) Discuss how to compute a point on a B-Spline surface. *5*

**9.** (a) Explain constructive solid geometry for representation of solids. *5*

     (b) Compare b-rep and c-rep modeling techniques. *5*

**10.** Explain the salient features of SET and CAD*I interface. *10*

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