Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2715002   **Date:17/05/2016**
Subject Name: CAD/CAM Systems
Time:02:30 pm to 05:00 pm   **Total Marks: 70**
Instructions:

  1. **Attempt all questions.**
  2. **Make suitable assumptions wherever necessary.**
  3. **Figures to the right indicate full marks.**
  4. **Notations have usual meaning.**

Q.1 **(a)** What is a product cycle? Explain the product cycle revised with CAD/CAM   **07**
              overlaid.
        (b) Brief about your understanding of the following solid representation schemes: **07**
              (1) sweeping, (2) parametric solid modeling, (3) primitive instancing, (4)
              feature-based modeling.

Q.2 **(a)** Brief about the role of computers in the following phases of the design process: **07**
              synthesis, analysis, evaluation and presentation.
        (b) Find the final concatenated matrix for reflection about a line L with slope m   **07**
              and y intercept (0, b).
                                         OR
        (b) Write the mathematics behind displaying a circle parametrically with radius 2   **07**
              and center located at (2, 2).

Q.3 **(a)** 1.   State any four properties of the Bezier curves.   **07**
              2.   Formulate the equation of the 2-D Bezier curve for which the control points
                   are: P_0 (1, 3), P_1 (3, 5), P_2 (5, 4), and P_3 (7, 1).
        (b) Explain the parametric representation of Hermite cubic spline with derivation.   **07**
                                         OR
Q.3 **(a)** Write a detailed note on *surface modeling* stating application and limitations.   **07**
        (b) Explain the parametric representation of any one of the following conic   **07**
              sections: circle, ellipse, parabola.

Q.4 **(a)** How do you create geometric models using 3D primitives and Boolean   **07**
              operations? Explain using figures.
        (b) You are given the task of making a solid model of the base plate shown in   **07**
              Figure 1. How would you create it using CSG method? Also tell if feature-
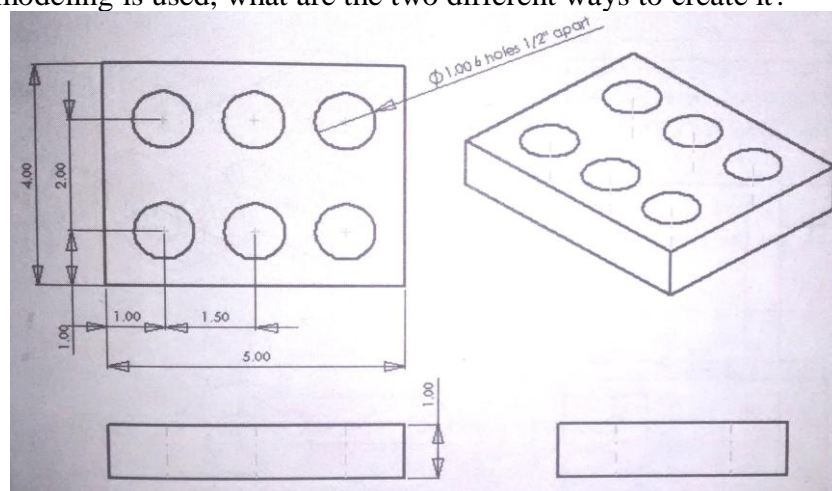   based modeling is used, what are the two different ways to create it?

Figure 1

Q.4 **(a)** Explain the following entities: plane surface, ruled surface, surface of revolution, Coon's surface, tabulated surface. **07**

(b) Write a detailed note on: Boundary representation (B-rep) approach for solid modeling. **07**

Q.5 **(a)** Briefly explain the two computer-assisted process planning systems. **07**

(b) Elaborate the concept of 'simultaneous engineering' stating its benefits and barriers against its implementation. **07**

OR

Q.5 **(a)** How can optimization be carried out using CAD? Give your views. **07**

(b) Write a note on: The NC code generation. **07**

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