

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER-1 (NEW) EXAMINATION – WINTER 2018

Subject Code: 3710802**Date: 02/01/2019****Subject Name: Computer Aided Design****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 mark.

- Q.1** (a) Define homogeneous coordinate system also plot translation and rotational matrix in form of it. List various application of cad. **07**
- (b) A rectangle is formed by four points whose coordinates are: A (50, 50), B (100, 50), C (100, 80) & D (50, 80). Calculate the new coordinate of the rectangle in reduced size using the scaling factor $S_x = 0.5$ & $S_y = 0.6$. **07**

- Q.2** (a) Explain B-Spline curve. Also state its major advantages. **07**
- (b) How to represent NURBS? Also represent conic section with NURBS. **07**

OR

- (b) Briefly explain Bézier Curves **07**

- Q.3** (a) Briefly explain coons surface. **07**
- (b) Explain surface of revolution with neat sketch. **07**

OR

- Q.3** (a) The parametric equation of a sphere with radius R and center at point $P_0 (x_0, y_0, z_0)$ is given by: **07**

$$x = x_0 + R \cos u \cos v$$

$$y = y_0 + R \cos u \sin v$$

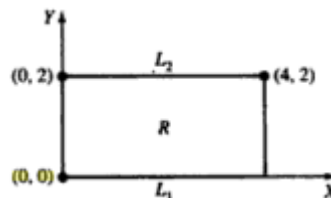
$$z = z_0 + R \sin u$$

$$-\pi/2 \leq u \leq \pi/2$$

$$0 \leq v \leq 2\pi$$

Find the implicit equation of the sphere.

- (b) Find the equation of the ruled surface that covers the region R. **07**



- Q.4** (a) Briefly explain three dimensional sketching. **07**
- (b) Draw 2D & 3D figure for given basic feature **07**

- (a) Extrusion
- (b) Sweep
- (c) Rib
- (d) Helix

OR

- Q.4** (a) Briefly explain Top-down & bottom up assembly approach **07**
- (b) Briefly explain WCS and MCS. **07**

- Q.5** (a) Briefly explain boundary representation model of solid. **07**
- (b) Which level of continuity is required for curves having same torsion, same tangent, & same curvature? Define and explain point continuity. **07**

OR

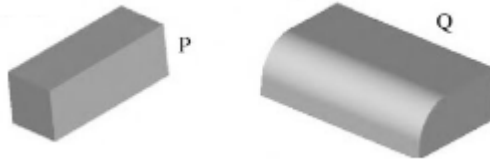
Q.5 (a) Draw & state Boolean operation for part P & Q

07

(a) $P \cup Q$

(b) $Q - P$

(c) $P \cap Q$



(b) Also explain IGES file general structure.

07

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