42712

May, 2019

M.Tech. (Mechanical Engineering) - 1st Semester

(Reappear)

Computer Aided Design & Manufacturing (MME-103)

Time : 3 Hours]   [Max. Marks : 75

Instruction :

1. *It is compulsory to answer the questions of Part-A.*

2. *Answer any four questions from Part-B in detail.*

3. *Different parts of the same question are to be attempted adjacent to each other.*

PART-A

1. (a) What is CAD/CAM?   (1.5)

    (b) Discuss Blending in curve development.   (1.5)

    (c) What is direct numeric control?   (1.5)

    (d) Differentiate between NC & CNC systems.   (1.5)

    (e) Mention a few advantages & disadvantages of surface modelling.   (1.5)

    (f) What are analysis methods for FMS?   (1.5)

    (g) What is perspective transformation in 3D?   (1.5)

(h) What is Automated Material handling? (1.5)

(i) Differentiate between open loop & closed loop system. (1.5)

(j) What are benefits of CAPP? (1.5)

PART–B

2. (a) What are the roles played by the designer and computer in CAD/CAM process & What is role of CAD/CAM in improving the product cycle? (7)

(b) A triangle ABC having position vectors [2 4 1], [4 6 1] & [2 6 1] is to be reflected through a line having equation, $y = 0.5 (x + 4)$. Determine the transformed position vectors of the triangle. (8)

3. (a) The coordinates of four data points P_0, P_1, P_2, & P_3 are (2, 2, 0) (2, 3, 0) (3, 3, 0) & (3, 2, 0) respectively. Find the equation of the bazier curve and determine the coordinates of points on curve for $u = 0, 0.25, 0.5, 0.75$ & 1.0. (10)

(b) Derive an expression for B-Spline surface fitting. (5)

4. (a) What are basic components of NC system? Explain advantages & disadvantages of NC systems? (7)

(b) Discuss in detail about manual and computer assisted part programming. Write any *one* program in APT language. (8)

5. What are different components of FMS? Explain in detail various material handling equipments & FMS work stations. (15)

6. Explain the applications of CNC machine tools. Write any *five* G-codes & five M-codes with their command outcome. (15)

7. Write short notes on any *two* : (15)

(a) Direct Numeric Control (DNC) System.

(b) Automatic Guided Vehicle (AGV's).

(c) Computer Aided Process Planning (CAPP).

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