

Total No. of Questions : 8]

SEAT No. :

PA-1278

[Total No. of Pages : 3

[5925]-303

**S.E. (Mechanical/Automobile & Mechanical/ Mechanical-S.W/
Automation & Robotics)**

SOLID MODELING & DRAFTING

(2019 Pattern) (202042) (Semester - III)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Use of electronic scientific pocket calculator is allowed.
- 5) Assume suitable data, if necessary.

- Q1)** a) Using Euler-Poincaré Formula calculate and validate following geometric entities shown in Fig Q1 a - (i), (ii), (iii). [9]

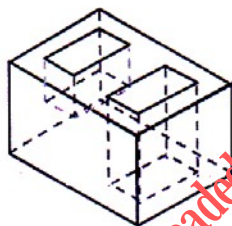


Fig. Q1a (i)

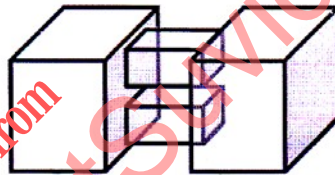


Fig. Q1a (ii)

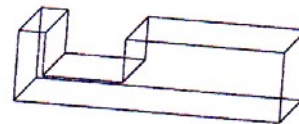


Fig. Q1a (iii)

- b) Enumerate various solid-modeling techniques and compare them. [9]

OR

- Q2)** a) Explain the concept of Feature Based Modeling. [6]
- b) How Euler's equations are used to validate 3D Solids? Explain. [6]
- c) Explain the Design for safety. [6]

P.T.O.

Q3) a) A triangle with vertices P(5, 0), Q(9, 0) and R(9, 5) has undergone reflection about line $y = x$. Find the concatenated transformation matrix and then find new coordinates of triangle PQR using transformation matrix. [11]

b) Compare Geometric Transformation with Geometric Mapping. [6]

OR

Q4) a) Explain how 3D View of a geometric model in MCS can be converted into Orthographic Views (2D Views). [7]

b) The coordinates of the center of the circle in WCS are [3, 4.5]. Find the coordinates of the center of the circle with respect to MCS. The orientation of WCS and MCS are shown below in Fig Q4b. [10]

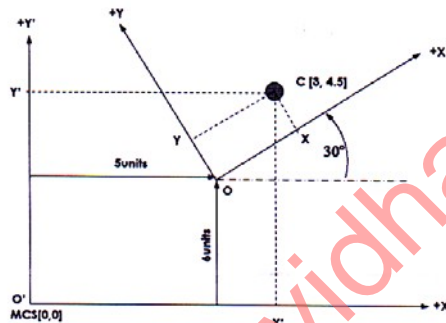


Fig. Q4b

Q5) a) Explain CAD Kernel in detail. [8]

b) Explain the requirement of CAD file format for different applications in detail. [10]

OR

Q6) a) Explain Direct Data Translators with neat sketch. [6]

b) What is Data interoperability? Explain in detail. [6]

c) Explain CAD Data file in detail. [6]

- Q7)** a) Explain Product and Manufacturing Information (PMI) and its importance in detail. [10]
b) Explain the problems associated with CAD Customization. [7]

OR

- Q8)** a) Explain the CAD API and Micro in detail. [8]
b) Explain the need, advantages and disadvantages of Customization. [9]

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