SEAT No. :

[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 daa, if necessary.*

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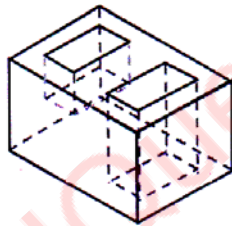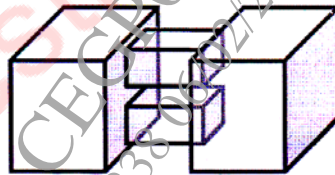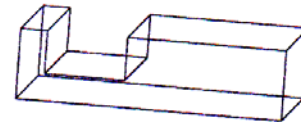

Fig. Q1a (i)   Fig. Q1a (ii)   Fig. Q1a (iii)

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 Vies (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]**
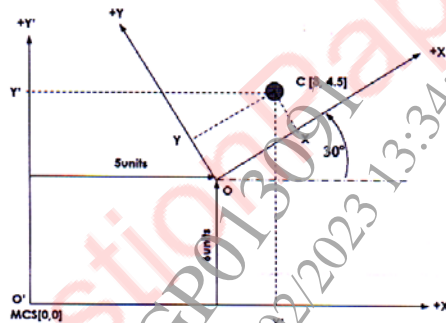

Fig. Q4b

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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