Sem-VII / CAD/CAM/CAE / MECH (CBGS) / 19-05-

QP Code : 31287

(CBSGS)(R-2012)

(3 hours) [Total marks: 80]

N.B.: 1) Q. No. **1** is **compulsory.**
2) Attempt any **three** questions out of remaining five questions.
3) Assume suitable data if required.

Q1 a) Explain wire frame modeling, surface modeling and solid modeling. **10**

b) Write a manual part program for finishing a forged component as shown in **Fig. 1**. Assume the spindle speed and feed for machining as 500 rpm and 0.3 mm/rev respectively. **10**

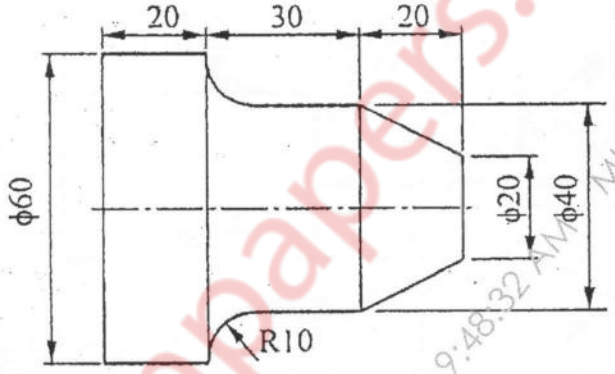

Fig. 1

Q2 a) A Hermite cubic spline is defined by points (1, 1) and (6, 5), having tangent vectors as (0, 4) and (4, 0) respectively. Find the co-ordinates of parametric mid-point and slope at the same point. **10**

b) Explain AS/RS and their types. **10**

Q3 a) Find the transformed co-ordinates of a triangle A (50, 20), B (110, 20) and C (80, 60), if it is reflected about; i) X-axis and ii) Line y = x. **10**

b) Explain the nature and role of CIM elements. **10**

Q4 a) Find the transformation matrix which aligns vector **K** along positive z-axis with vector **V** = a**I** + b**J** + c**K**. **10**

b) Explain the major steps involved in rapid prototyping, list the various rapid prototyping technologies and explain Stereo-lithography in detail. **10**

[P.T.O.]

FW-Con. 10597-16.

Q5 a) Write a complete APT part program to machine the outline of the geometry and drill a hole as shown in **Fig. 2.** The component is 5 mm thick. The end mill used is 10 mm in diameter and suitable drill. Assume suitable speed and feed for machining. **12**

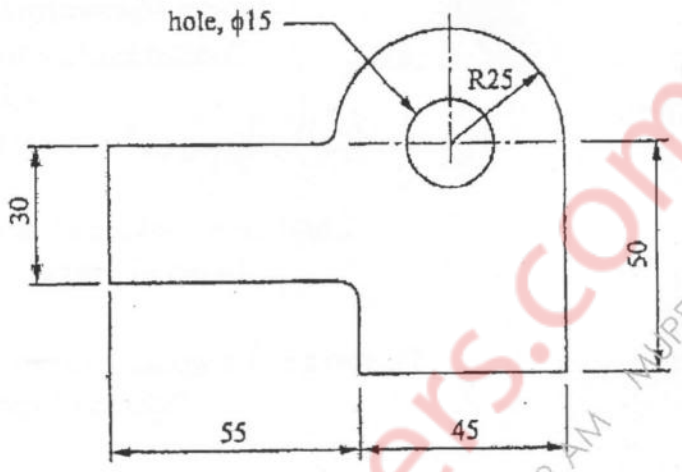

Fig. 2

b) Find the general transformation matrix N for window to viewport mapping. **8**

Q6 Write short notes on; **20**

a) Knowledge based Engineering
b) Computer Aided Engineering
c) CIM Hardware and Software
d) Rapid Prototyping Applications
