Sample Question Paper

Course Name : Mechanical Engineering.

Course Code : ME

9156

Semester : Sixth

Subject : CAD-CAM & Automation

Marks : 80 **Time : 3 Hrs.**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. Use of psychometrics chart and steam tables are permitted.

Q.1 Attempt any four of the following: **16 Marks**

a) Describe the light pen input device used in CAD.

b) Draw the wireframe model and solid model of a rectangular block.

c) List four advantages of CNC machines.

d) List six NC words used in part programming.

e) Describe the material transfer application of a robot.

f) State four applications of PLC related to automation.

Q.2 Attempt any two of the following: **12 Marks**

a) Draw the product cycle in CAD/CAM environment.

b) What are the NC motion control systems? Describe any one of them.

c) Explain the sweep technique used in 3-D geometric construction with the help of an example.

Q.3 Attempt any three of the following: **12 Marks**

a) Explain the procedure to generate a cylinder placed on top of a rectangular block using any CAD software.

b) Describe the use of tactile and proximity sensors in robots.

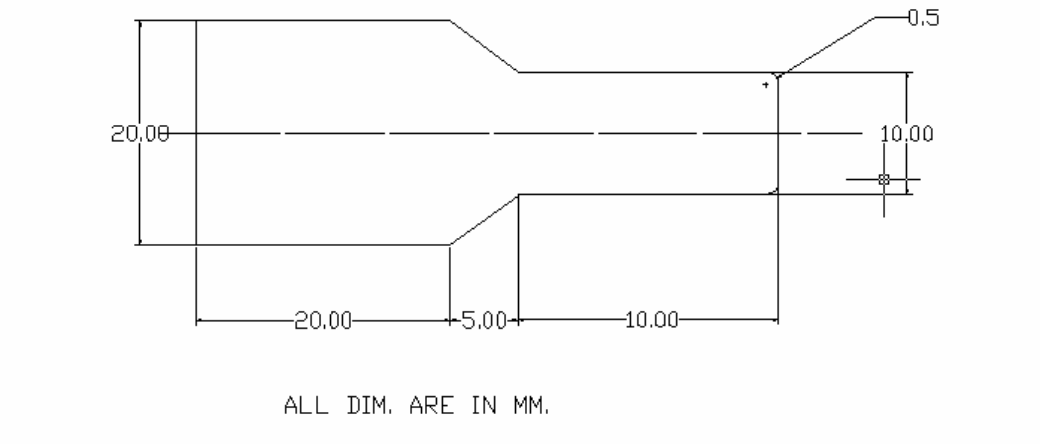
c) State the importance of material handling system in FMS.

d) List four advantages of PLC.

Q.4 Attempt any two of the following: **16 Marks**

a) Draw a cylindrical coordinate robot and describe the degrees of freedom for this configuration.

b) Write an NC part program for the following part. The raw material size is Φ25X40 mm long.



c) Explain the use of DO loops in NC part programming with the help of a suitable example.

Q.5 Attempt any three of the following: **12 Marks**

a) Explain the constructive solid geometry (CSG) technique used in solid modelling.

b) State with the help of an example the APT statements to generate points and lines.

c) Describe the work volume of a robot.

d) Write the G codes for the following with their syntax.

(i) Linear interpolation (ii) Incremental dimensioning

(iii) Dimensioning in metric units (iv) Feed rate in mm/min.

Q.6 Attempt any three of the following: **12 Marks**

a) Define CIM and list four benefits of CIM.

b) List the three types of surfaces used in geometric modelling giving example of each.

c) Draw the block diagram of the basic structure of CAD/CAM system with its meaning.

d) Draw configuration diagram of DNC system and give the function of each component.