



# **DIPLOMA IN MECHANICAL ENGINEERING**

## **CENTRALIZED QUESTION BANK**

**4020651 - Industrial Robotics and 3D Printing  
Practical**

**DIRECTORATE OF TECHNICAL  
EDUCATION GOVERNMENT OF  
TAMILNADU**

## **DIPLOMA END SEMESTER / YEAR EXAMINATION – 2023**

**Course** : Mechanical Engineering

**Subject** : Industrial Robotics and 3D Printing Practical

**QP Code** : 4020651

**Time** : 3 Hours    **Date** :

**Session:**

**Max Marks:** 100

### **Answer the Following Question**

1. a) Create the Robot Program for Profile cutting practice - (Complicated profile – combination of lines and arcs) and Simulate the same (60 Marks)  
b) Create the model and produce the Geneva Gear & Ratchet mechanism in 3D printing. (30 Marks)
2. a) Create the Robot Program for Spot welding practice the objects – (No. of objects - 6) and simulate the same. (60 Marks)  
b) Create the model and produce the Slide-crank mechanism in 3D printing. (30 Marks)
3. a) Create the Robot Program for Pick and stack the objects - (No. of objects - 6) and simulate the same. (60 Marks)  
b) Create the model and produce the Gear Train in 3D printing. (30 Marks)
4. a) Create the Robot Program for Position recording using Polar co-ordinate system - (No. of positions - 9) and simulate the same. (60 Marks)  
b) Create the model and produce the Geneva Gear & Ratchet mechanism in 3D printing. (30 Marks)
5. a) Create the Robot Program for Arc welding practice – (Length of weld 50 mm) and simulate the same. (60 Marks)  
b) Create the model and produce the Slide-crank mechanism in 3D printing. (30 Marks)
6. a) Create the Robot Program for Pick and place the objects - No. of objects - 6) and simulate the same. (60 Marks)  
b) Create the model and produce the Gear Train in 3D printing. (30 Marks)
7. a) Create the Robot Program for Assembling practice - (Minimum 3 Components) and simulate the same. (60 Marks)  
b) Create the model and produce the Geneva Gear & Ratchet mechanism in 3D printing. (30 Marks)

8. a) Create the Robot Program for Position recording using Cartesian coordinate system - (No. of positions - 9) and simulate the same. (60 Marks)
- b) Create the model and produce the Slide-crank mechanism in 3D printing. (30 Marks)
9. a) Create the Robot Program for Spray painting practice - (Area - 300mm x 300mm) and simulate the same. (60 Marks)
- b) Create the model and produce the Gear Train in 3D printing. (30 Marks)