

**BENGAL ENGINEERING AND SCIENCE UNIVERSITY, SHIBPUR**

**B.E. 5th Semester (Aerospace Engineering) Final Examination, 2012**

**Sub. : Manufacturing Technology (AE-505)**

**Full Marks : 70**

**Time : 3 hrs.**

Use separate answer script for each half.

Answer six questions taking **THREE** from each half.

All the questions carry equal marks. Assume reasonable data, not supplied with the problems.

Two marks are reserved for neatness in each half.

**First Half**

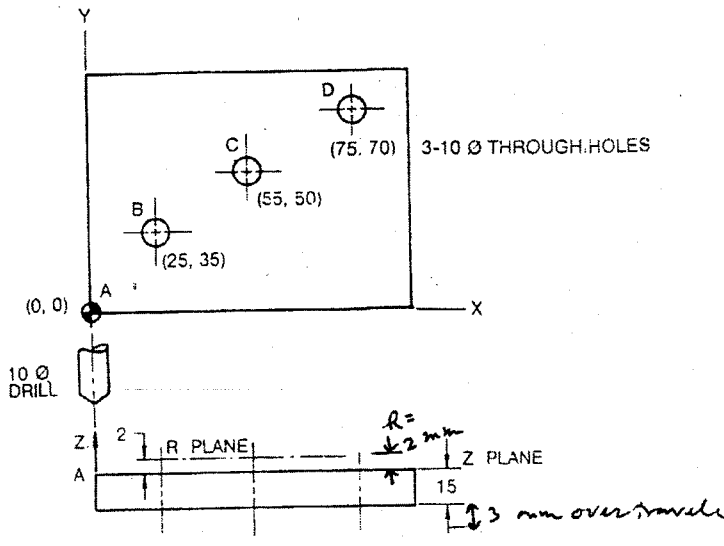
1. Discuss the different types of rolling processes. What is the problem of using uniform diameter rollers? How this problem is to be removed. What are the defects in rolling process?
2. Discuss the submerged arc welding process along with its advantages and limitations. Discuss spot resistance welding process.
3. Explain the functions of different components of sand molding process with neat sketch.
4. Draw the Merchant's circle diagram of orthogonal cutting process and determine the different forces.

**Second Half**

5. What are the suitability and limitations of NC technology? Describe in detail the advantages of CNC over NC. Under what conditions Adaptive Control is recommended? How can DNC benefit a CNC shop floor manufacturing.

**Or**

Write the important features of Point-to-Point control, Straight line control and Continuous position control. Write the manual part programme for the component shown in Fig. 1. All dimensions are in millimeter.



**Fig. 1**

6. What are Drive surface, Check surface and Part surface in connection with APT programming? For the component shown in Fig. 2, write the geometric, motion and post processor statements using the APT language.

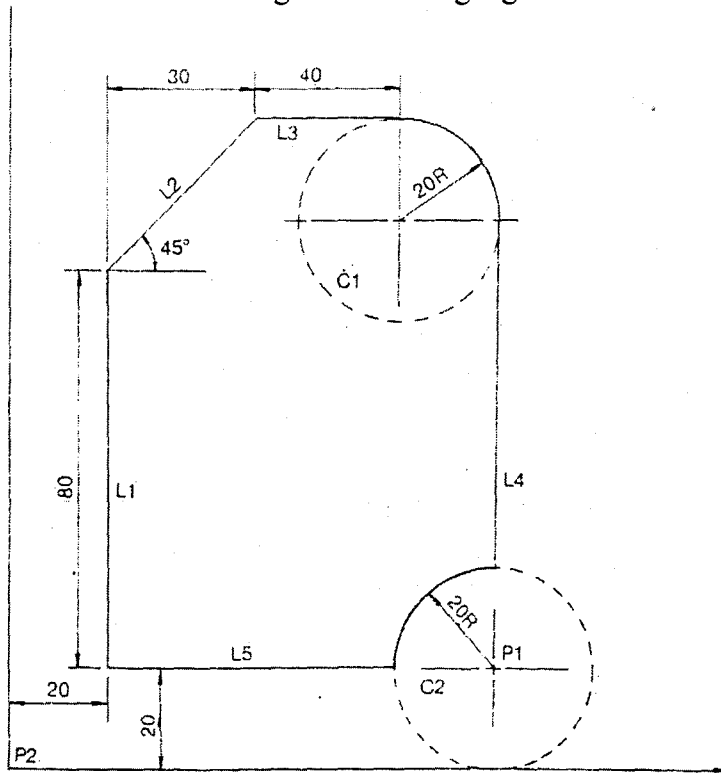


Fig. 2

Or

Write short notes on the following:

- i) Automatic Tool Changer (ATC)
- ii) Group Technology (GT)
- iii) Computer Aided Process Planning (CAPP)
- iv) FMS & CIM
- v) Automatic material handling, parts feeding and assembly devices
- vi) Recirculating ball screw

7. How the development in the area of materials are partly responsible for evolution of advanced machining techniques? Enlist the requirements that demand the use of Advanced Machining Processes (AMPs). Explain the working principle of Abrasive Jet Machining with the help of a neat sketch.

Or

Name the important factors that should be considered during the selection of unconventional machining process for a given job. With the help of a neat sketch, explain the mechanism of material removal in EDM. How the molten material ejects out of the machining zone in Plasma Arc Machining (PAM)?