

**B.TECH. SEM -V MECHANICAL 2014 COURSE (CBCS) : WINTER -
2017**

SUBJECT: ADVANCED MANUFACTURING PROCESSES

Day: **Saturday**
Date: **20/01/2018**

W-2017-2161

Time: **02.30 PM TO 05.30 PM**
Max. Marks: **60**

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Draw the diagrams **WHEREVER** necessary.

Q.1 a) What do you understand by clearance? How it is provided on dies? **(05)**

b) Calculate the bending force for a 45° bend in aluminum blank. The following data is given: **(05)**

- i) Blank thickness = 1.8 mm
- ii) Bend length = 1300 mm
- iii) Die opening = 7x metal thickness

Ultimate tensile strength = 455 N/mm^2 .

OR

Q.1 Sketch the various mechanical press drives. How do hydraulic drives compare with mechanical drives for presses? **(10)**

Q.2 a) Give any four points to be kept in mind to decide the clamping system in Jigs and Fixtures. **(05)**

b) With neat sketches explain different types of strap clamps used in fixtures. **(05)**

OR

Q.2 Describe briefly the underlying principles for designing Jigs and fixtures. Why fool proofing is done in jig and fixture? Give an examples. **(10)**

Q.3 What are the principle features of ECM process? Briefly explain the various process parameters that affect the material removal rate and surface quality in ECM. **(10)**

OR

Q.3 What is plasma arc machining? What are the requirements of plasma arc machining? What are its advantages and applications? **(10)**

- Q.4** Three holes are to be drilled in a part as shown in fig. 1. Prepare the part program of the same. Complete the sequence and co-ordinates to represent the movement of an NC drilling machine table. The drill diameter is 10 mm and 2 position is zero at 90 mm above the table surface. (10)

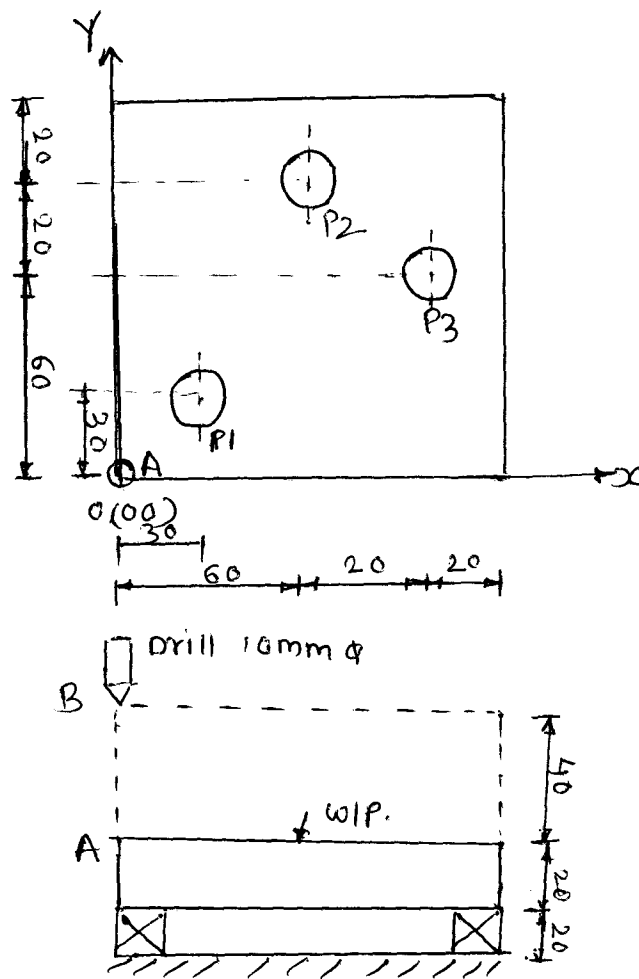


Fig-1 (All dimensions are in mm)

OR

- Q.4** Discuss the various methods of programming a robot. Write about the various types of flexible manufacturing systems. (10)
- Q.5** a) Define the term Hardenability. Explain the process of measuring hardenability. (05)
 b) Explain induction hardening and flame hardening of surface hardening. (05)

OR

- Q.5** Draw the T.T.T. diagram of eutectoid steel and show the normalizing heat treatment curve and also explain purpose of normalizing. (10)
- Q.6** a) What do you about sintering process for powder metallurgy? (05)
 b) List out the properties of ceramics? Explain ferrite as soft magnetic ceramic manufacturing in detail. (05)

OR

- Q.6** a) Write short note on 'Cermet'. (05)
 b) Write short note on 'Composite materials and its applications'. (05)