

**B.TECH. SEM -V MECHANICAL 2014 COURSE (CBCS) :**  
**SUMMER - 2018**  
**SUBJECT: ADVANCED MANUFACTURING PROCESSES**

Day: **Friday**  
 Date: **25/05/2018**

**S-2018-2369**

Time: **10.00 AM TO 01.00 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 is a die? What are its uses? Describe with a sketch the working of commonly used dies. (05)
- b)** Find the total pressure, dimensions of tools to produce a washer 7 cm. Outside diameter with a 2.6 cm diameter hole, from material 5 mm thick, having a shear strength of 370 N/mm<sup>2</sup>. (05)

**OR**

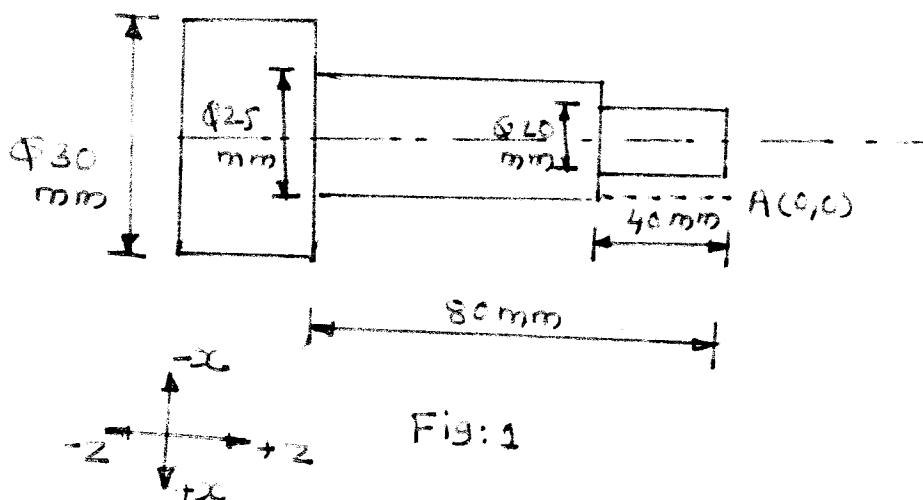
- Q.1** Name and explain the various sheet metal cutting operations. What are the various ways in which presses can be classified? (10)
- Q.2** Outline the design considerations of a milling fixture. Explain the working of any one milling fixture. (10)

**OR**

- Q.2** What is meant by Jigs and fixture? Describe the various types of bushes used in Jigs. Enumerate the advantages of slip or renewable bushes over fixed bushes. (10)
- Q.3** What is electro discharge machining? Explain the disadvantages of relaxation circuit. (10)

**OR**

- Q.3** Calculate the material removal rate and electrode feed rate in the electro chemical machining of an iron surface that is 30 mm x 30 mm in cross section. Using NaCl in water as electrolyte. The gap between the tool and the workpiece is 0.30 mm. the supply voltage is 13V DC. The specific resistance of the electrolyte is 4 Ω cm. (10)
- Q.4** Fig. 1 shows the finished size of a round bar. The original diameter of the bar was 30 mm. Make a part program for facing, parting and reduction of diameter. Assume Feed = 200 mm / min, spindle speed = 740 rpm a depth of cut = 2 mm per cut. (10)



OR

- Q.4 Write a program for the given profile on a CNC vertical milling machine (fig. 2) (10)

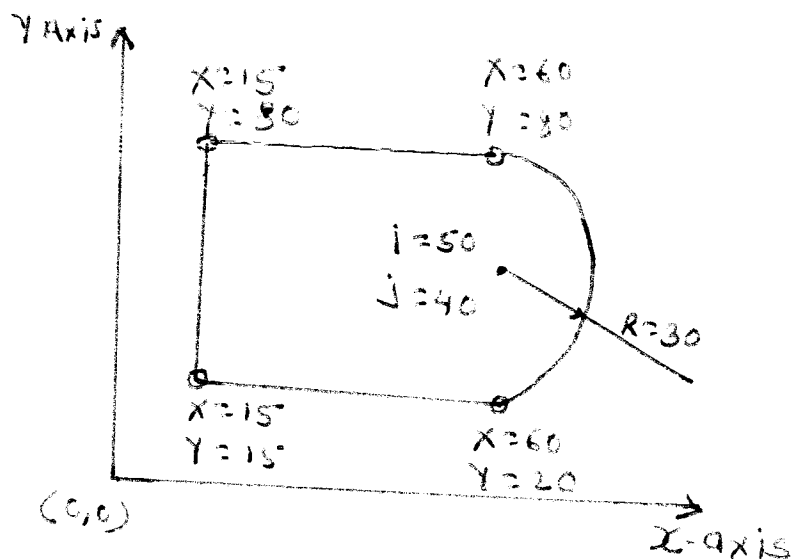


Fig: 2

- Q.5 a) Explain the transformation of austenite phase to martensite, bainite and perlite phases in detail. (05)  
b) Describe the liquid carburizing heat treatment process. Give its advantages, limitations and applications. (05)

OR

- Q.5 a) What is meant by hardenability and how is it measured and on what factors it depends? (05)  
b) Describe the following heat treatment process on T.T.T. diagrams and give their purpose:  
i) Annealing ii) Martempering

- Q.6 a) Write down the advantages and limitations of hot compacting method in powder metallurgy. (05)  
b) Give the classification of ceramic material. (05)

OR

- Q.6 a) Describe the different methods of manufacturing of metal powders. (05)  
b) How are ceramic components manufactured? Explain any one method. (05)

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