

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Mechanical Engineering Semester : IV

Subject Code & Name: BTMPE405B - Elective I: Sheet Metal Engineering

Max Marks: 60

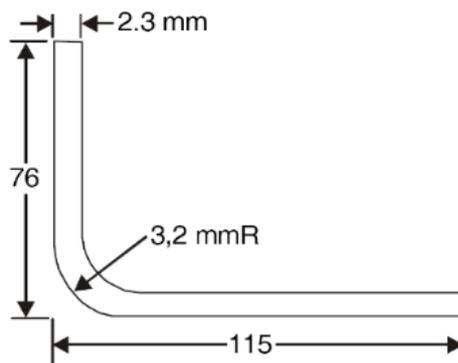
Date: 27/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(CO)	Marks
<b>Q. 1 Solve Any Two of the following.</b>		
A) What are the desirable properties of materials in sheet metal forming?	(CO2)	6
B) Enlist the materials used in automotive sheet metal part manufacturing and explain any two of them.	(CO2)	6
C) Write the advantages of products made from sheet metal.	(CO2)	6
<b>Q.2 Solve Any Two of the following.</b>		
A) Explain the concept of Piercing and blanking with neat sketches.	(CO1)	6
B) List out different sheet metal operations and explain perforating and lancing operation in details	(CO2)	6
C) Determine the punch and blank sizes for blanking a circular disc of 20 mm diameter from a C20 steel sheet whose thickness is 1.5 mm. Shear strength of annealed C20 steel is 294 MPa. Also determine the required punching force.	(CO2)	6
<b>Q. 3 Solve Any Two of the following.</b>		
A) Distinguish between bending and drawing in sheet metal operation.	(CO3)	6
B) Describe with neat sketches the V-Bending and Wipe (Edge) bending operations.	(CO3)	6
C) Estimate the length of sheet necessary to manufacture the component as shown in the fig. The thickness of the sheet is 2.3mm and it is made of C10 material.	(CO2)	6



(All dimensions are in mm)

**Q.4 Solve Any Two of the following.**

- A) Explain Progressive die with neat sketch. (CO4) **6**
- B) Explain the process of spinning for manufacturing of Axi-Symmetric components. (CO1) **6**
- C) Compare the Mechanical press with Hydraulic press used in sheet metal stating their advantages and disadvantages. (CO5) **6**

**Q. 5 Solve Any Two of the following.**

- A) Give any two applications of each of the following operations. (CO3) **6**  
1. Perforating 2. Lancing 3. Notching and 4. Bending operations.
- B) Suggest which sheet metal operations are used to manufacture the following parts. (CO3) **6**  
1. Cup 2. Washbasin 3. Part which contains array of holes 4. Coin
- C) Describe in brief any one case study of sheet metal manufacturing of a product highlighting the following. (CO1) **6**
  - a) Generic name of the product b) Material Used c) Types of Sheet Metal operations involved d) Sequence of Operations.

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