DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

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

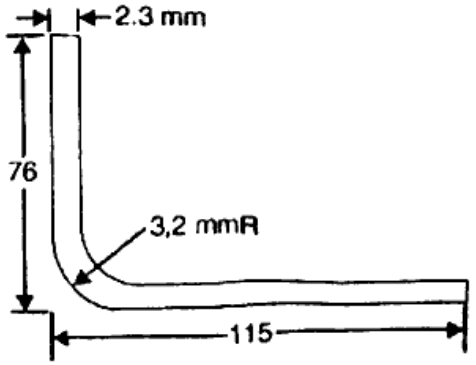
Subject Code & Name: BTMPE405B - Elective I: Sheet Metal Engineering

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
Q. 1	**Solve Any Two of the following.**		
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**
Q.2	**Solve Any Two of the following.**		
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. https://www.batuonline.com	(CO2)	**6**
Q. 3	**Solve Any Two of the following.**		
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. 1. Perforating 2. Lancing 3. Notching and 4. Bending operations.	(CO3)	**6**
B)	Suggest which sheet metal operations are used to manufacture the following parts. 1. Cup 2. Washbasin 3. Part which contains array of holes 4. Coin	(CO3)	**6**
C)	Describe in brief any one case study of sheet metal manufacturing of a product highlighting the following. a) Generic name of the product b) Material Used c) Types of Sheet Metal operations involved d) Sequence of Operations.	(CO1)	**6**

*** End of paper***