

Mechanical/Automobile

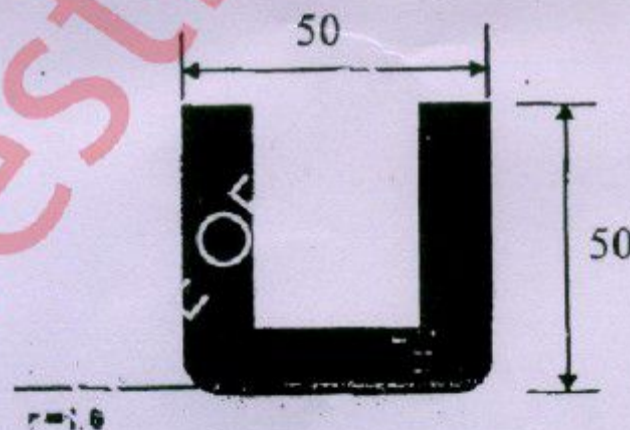
QP Code : 3265

(3 Hours)

[ Total Marks : 80

- N.B.: (1) Question no. 1 is compulsory.  
(2) Attempt any Three out of remaining five.  
(3) Draw neat and labeled diagrams wherever required.

1. Attempt any four questions. (5 marks each) 20
- (a) Explain the terms Fool proofing and swarf clearance
  - (b) Write note on: Flexible manufacturing systems
  - (c) Draw labelled diagram for compound die operation.
  - (d) Differentiate between blanking and piercing with diagram.
  - (e) What is HSM? Write applications and advantages of HSM.
  - (f) Write a note on 'Diamond Pin',
2. (a) Find the total pressure and dimensions of die & punch sets to produce a washer of 6cm outside diameter with 2.6cm diameter hole from material 3.7mm thick, having shear strength  $390 \text{ N/mm}^2$ . Take clearance 9% of stock thickness. 06
- (b) Explain working of progressive die with diagram. 06
- (c) Discuss all sheet metal operations with diagrams. 08
3. (a) A symmetrical cup work-piece as shown in figure, is to be made from cold rolled steel 1.2mm thick. Calculate the size of the blank, % reduction required, number of draws and drawing pressure. Take  $C=0.69$ ,  $\sigma_{yt} = 450 \text{ N/mm}^2$  08



- (b) State and explain 'the principle of 3 - 2 - 1 location' with diagram 06
- (c) Write a detail note on 'Ultrasonic Machining' 06
4. (a) Discuss in detail general arrangement of an injection mold with feeding, cooling, runner, gate and ejection system. Draw neat labelled diagram. 10
- (b) Write note on agile manufacturing and its integration into product-process development. Give suitable examples to elaborate your answer. 10

5. (a) What are various clamping principles? and also explain working of any three types of clamps used in jigs and fixtures with diagram. **10**
- (b) Write note on : **10**
- (i) angular Jig
  - (ii) Indexing Fixtures
6. Write note on
- (a) Locating Pins and Drill Bushes **7**
  - (b) Electrochemical Machining **7**
  - (c) Water Jet Machining **6**
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