Total No. of Questions : 8]

SEAT No. :

**PB3713**

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## S.E. (Automobile and Mechanical / Automation & Robotics)

## MANUFACTURING PROCESSES

## (2019 Pattern) (Semester- IV) (202050)

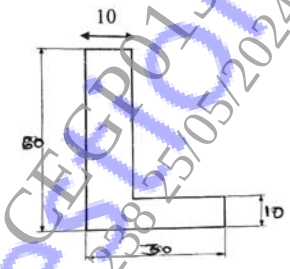
*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) ***All questions are compulsory i.e. Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume Suitable data if necessary.***

***Q1)*** a) what is forming Limit diagram? How to draw forming limit diagram? **[8]**

b) Find conter of pressure of the component as shown in fig. **[10]**




OR

***Q2)*** a) What is center of Pressure? Enumerate the procedure to calculate center of pressure. **[8]**

b) Washer with 10 mm internal hole and 25 mm outside diameter is to be made from a strip of 2 mm thickness. Considering elastic recovery of the material, find **[10]**

i) Clearance

ii) Blanking die opening size

iii) Blanking punch size

iv) Piercing punch size

v) Piercing die opening size.

Assume clearnace to be 5% of the stock thickness. Also calculate maximum cutting force if ultimate shear strength is 450 N/mm$^2$.

***P.T.O.***

***Q3)*** a) Discuss the factors on which selection of welding processes depends. **[5]**

b) Explain GTAW process with neat sketch. **[6]**

c) Explain SAW process with neat sketch. **[6]**

OR

***Q4)*** a) enumerate the function of coating in flux coated electrode? **[5]**

b) State and explain any three welding defects with their causes. **[6]**

c) Explain the seam welding process with neat sketch. **[6]**

***Q5)*** a) Compare Thermoplastics and Thermosetting plastics. **[6]**

b) What are the typical mold temperature for compression molding? What is the most common mold materials? **[6]**

c) What are some of the attractive features of transfer molding process? **[6]**

OR

***Q6)*** a) Write short note on Thermoforming process in plastics. **[6]**

b) Describe screw type injection molding with neat sketch. **[6]**

c) Explain Compression molding process in plastics with neat sketch. **[6]**

***Q7)*** a) Write short note on polymer matrix composites. **[5]**

b) Explain filament winding process in details with sketch. **[6]**

c) write short note on metal matrix composites. **[6]**

OR

***Q8)*** a) Write a note on “Nano-composites”. **[5]**

b) Discriminate between ceramic matrix, metal matrix and polymer matrix composites. **[6]**

c) Explain compression molding process of composite manufacturing. **[6]**