



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

SUMMER-2024	
Exam Seat No.:	
Academic Year:2023-2024	Semester:III
Class:SY	Program:B.Tech
Branch Code:MEC	Pattern:2022
Name of Course:Manufacturing Processes	Course Code:MEC222005
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 03 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Question No. 1 Attempt following Question

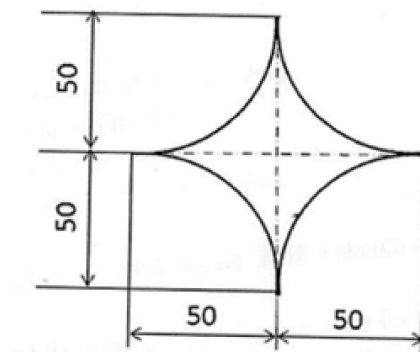
- 1 Discuss patterns and classify its allowances with a neat sketch (6) CO1

Question No. 2 Attempt following Question

- 2 Identify and discuss the process required for manufacturing the components using rollers. (6) CO1

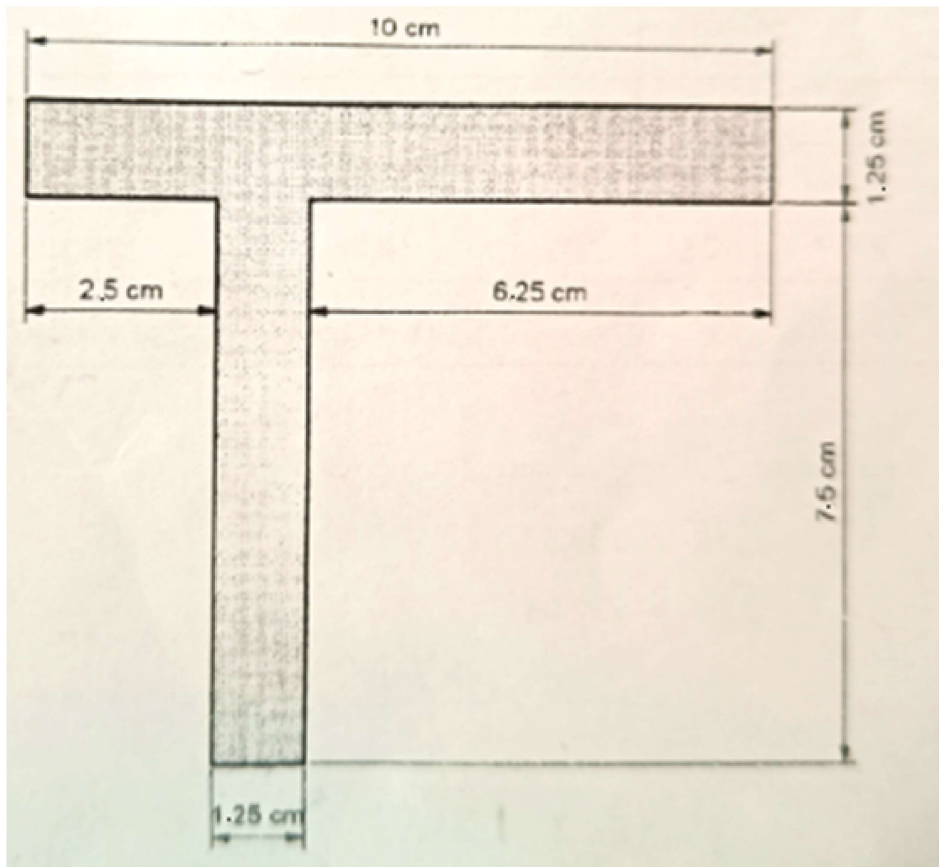
Question No. 3 Attempt following Question

- 3.a) Design a strip layout for producing the component shown in the figure, considering a material thickness of 1mm and an ultimate shear stress value of 200N/mm². Calculate the percentage utilization of the material. (6) C02



OR

- 3.b) Find center of pressure of component shown in fig. is to be made from mild steel sheet of 1.7 mm thick. (6) C02



- 3.c) Discuss with neat sketches various methods that are used to reduce the cutting forces in sheet metal working. (6) CO2

OR

- 3.d) Explain the strip layout design process with a neat sketch. (6) CO2

- 3.e) Explain compound dies with schematic sketch. (4) CO2

OR

- 3.f) Explain with neat sketch any two sheet metal bending operations. (4) CO2

Question No. 4 Attempt following Question

- 4.a) Describe the gas welding process, illustrating it with a clear and well labelled sketch. Explain the advantages, disadvantages. (6) CO3

OR

- 4.b) Explain any three welding defects with their causes and remedies. (6) CO3

- 4.c) A sheet of steel 1.0 mm thick is to be spot welded. In an ordinary spot welding machine, labelled process 1, a current of 10,000 A is applied in 0.1 second, while with a capacitor discharge power source, labelled process 2, a current of 30,000 A is applied for 0.005 seconds. Assume that the fusion zone of the weld is a cylinder of 7 mm diameter and 1.5 mm height. Assume an effective resistance of 100 μ . Take $8.36 \times 10 \text{ g/mm}^3$ as the density of steel and suppose that 1380 J is necessary to melt 1 g of this metal. Comment on which process will supply enough heat to weld sheet. (6) CO3

OR

- 4.d) Spot welding of two 1 mm thick sheets of steel (density = 8000 kg/m³) is carried out successfully (6) CO3

nugget formed is 5 mm in diameter and 1.5 mm thick. If the latent heat of fusion of steel is 1400 kJ/kg and the effective resistance in the welding operation is 200 micro Ω , Calculate the current passing through the electrodes.

- 4.e) Describe the principle and working of soldering. (4) CO3

OR

- 4.f) Describe the principle and working of Brazing. (4) CO3

Question No. 5 Attempt following Question

- 5.a) Describe the rotational moulding process using a clear and well labelled diagram to illustrate its stages. (6) CO4

OR

- 5.b) Describe the Transfer moulding using a well labelled diagram and give its applications. (6) CO4

- 5.c) Explain Pressure forming in Plastics Discuss applications of it. (6) CO4

OR

- 5.d) List and explain the types of extruder used in injection moulding with a neat sketch. (6) CO4

- 5.e) Explain cross linked polymers and its applications (4) CO4

OR

- 5.f) Explain the thermoplastic polymer with the applications. (4) CO4

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