

Total No. of Questions : 8]

SEAT No. :

PE-4343

[Total No. of Pages : 2

[6582]-117

S. E. (Robotics and Automation Engineering)

MANUFACTURING TECHNOLOGY

(2019 Pattern) (Semester - III) (211502)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) *Figure to the right indicates full marks.*
- 3) *Neat Diagram must be drawn wherever necessary.*
- 4) *Electronic pocket calculator is allowed.*

Q1) a) Explain the methods of Tube Drawing. Write the different forces acting in tube drawing operation. Also explain why lubrication is necessary in Tube drawing [8]

b) What are the different types of extrusion dies used in industry? Explain with application [9]

OR

Q2) a) Explain Analysis of wire drawing operation [8]

b) How the forces are acted in drawing operation. Which parameters are responsible for force generation? What impact is observed when material passes through maximum reduction in one pass? [9]

Q3) a) Explain the significance of proper electrode selection in shielded metal arc welding (SMAW). How does the type of electrode affect the welding outcome? [9]

b) Describe the challenges and considerations involved in welding dissimilar metals. Provide solutions or strategies to overcome these challenges. [8]

OR

Q4) a) Discuss the importance of selecting the right welding process for a specific material and application. Provide examples to support your explanation. [9]

b) Explain the purpose and benefits of using a shielding gas in certain welding processes. [8]

P.T.O.

- Q5) a)** Discuss the working principles of Laser Beam Machining (LBM). How does the focused laser beam facilitate material removal, and what are the advantages and challenges associated with LBM? [9]
- b)** Explain the concept of Electro-Discharge Machining (EDM). What role does electrical discharge play in material removal, and how does the process vary for conductive and non-conductive materials? [9]

OR

- Q6) a)** Examine the concept of Abrasive Water Jet Machining (AWJM). How does the addition of abrasive particles enhance the cutting capabilities of water jets, and what materials are suitable for AWJM? [9]
- b)** Describe the key aspects of Electron Beam Machining (EBM). How does the concentration of high-energy electrons contribute to the material removal process, and what types of materials are suitable for EBM? [9]

- Q7) a)** Describe the impact of Industry 4.0 on robotic applications in manufacturing. How do technologies like the Internet of Things (IoT) and Artificial Intelligence (AI) enhance the capabilities of manufacturing robots, and what is the concept of a “smart factory”? [9]
- b)** Discuss the role of robotic vision systems in manufacturing. How do vision-guided robots contribute to tasks such as pick-and-place, quality control, and inspection, and what are the challenges associated with implementing vision systems? [9]

OR

- Q8) a)** What are the key criteria for selecting suitable tasks or processes for robot applications, and how does this decision impact overall production? [9]
- b)** Examine the challenges and benefits of integrating collaborative robots (cobots) in manufacturing environments. [9]

