

Register No.: ..... Name: .....

## SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SIXTH SEMESTER B.TECH DEGREE EXAMINATION (S), AUGUST 2023**

**MECHANICAL ENGINEERING**

**(2020 SCHEME)**

**Course Code : 20MET306**

**Course Name: Advanced Manufacturing Engineering**

**Max. Marks : 100**

**Duration: 3 Hours**

### PART A

*(Answer all questions. Each question carries 3 marks)*

1. Describe the formation of discontinuous chips in metal cutting.
2. Explain impregnation in powder metallurgy.
3. Illustrate any three methods to define a point in APT language.
4. Write any three M codes with their application in CNC programming.
5. List the applications of USM.
6. Explain the functions of dielectric fluid in EDM?
7. Differentiate P waves and S waves.
8. List the advantages of High Energy Forming.
9. Explain the advantages of Selective Laser Sintering.
10. List the various applications of 3D printing process?

### PART B

*(Answer one full question from each module, each question carries 14 marks)*

#### MODULE I

11. a) Explain Merchant's theory with neat sketches. (7)  
b) Differentiate hot isostatic pressing and cold isostatic pressing in powder metallurgy. (7)

#### OR

12. a) Explain with neat sketches any one method to produce metallic powders in powder metallurgy. (7)  
b) Differentiate orthogonal and oblique cutting using appropriate diagrams. (7)

**MODULE II**

13. Write a Manual Part Program for milling the part shown in figure (Fig. 1) (14)  
Thickness of workpiece is 20 mm. (Use absolute positioning, Feed = 120 mm/min)

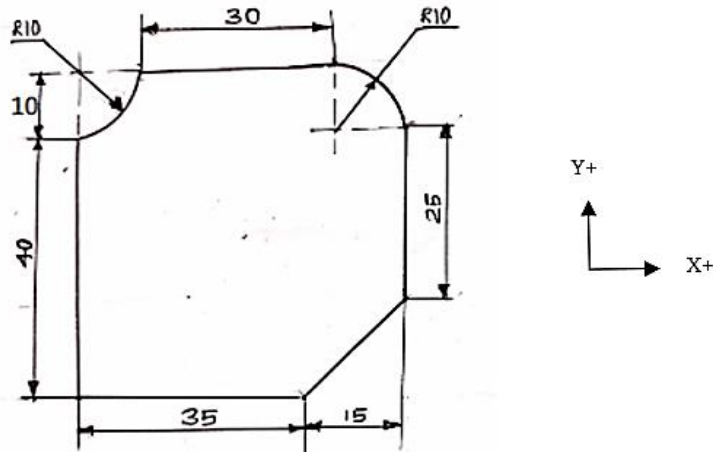


Fig.1

**OR**

14. a) Mention the purpose of preparatory functions in manual part programming. Write any five G codes with their applications. (7)  
b) What are the features of PLC? Draw the logic ladder diagram for AND gate and OR gate. (7)

**MODULE III**

15. With a neat sketch explain Laser Beam Machining process. (14)

**OR**

16. With a neat sketch explain the working of Plasma Arc Machining. (14)

**MODULE IV**

17. With the help of a neat sketch explain Electro Hydraulic Forming. Write short note on any one technique in Explosive Forming process (14)

**OR**

18. Describe Electro Magnetic Forming with the help of schematic diagram. (14)

**MODULE V**

19. a) Describe the process of Abrasive Flow Machining with a neat sketch. (7)
- b) Explain the working process of stereo-lithography with a neat sketch. (7)

**OR**

20. a) Describe the process of Magnetic Abrasive Finishing with a neat sketch. (7)
- b) With the help of a neat sketch explain Fused Deposition Modeling (7)

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