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

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FOURTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023
ROBOTICS AND AUTOMATION
(2020 SCHEME)

Course Code : 20RBT204

Course Name: Manufacturing Processes

Max. Marks : 100 **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Write six basic steps in making sand casting.
2. With neat sketch explain direct and indirect extrusion.
3. Define weldability. What are the factors affecting weldability?
4. What is soldering? Which solder is used for general purpose applications?
5. Name three work holding devices used on milling machine.
6. What are the different types of standard milling cutters?
7. What is meant by Canned Cycle?
8. What is absolute and incremental Coordinate programming?
9. What is rapid prototyping? Explain.
10. What is powder metallurgy (PM) process? What is the advantage of PM process compared to other manufacturing process?

PART B

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

MODULE I

11. a) With neat sketch explain open die forging, impression die forging and precision forging. (9)

    b) Explain the forging operations (a) Edging; (b) Fullering; (c) Swaging; (d) Coining; (e) Heading. (5)

OR

12. a) With neat sketch explain Two high mill, Three high mill, Four high mill, Cluster mill and Tandem mill. (10)

    b) Explain four rolling defects. (4)

MODULE II

13. With neat sketch explain Ultrasonic welding process. Explain its advantages, disadvantages and applications. (14)

OR

14. With neat sketch explain Gas tungsten arc welding process. Explain its advantages, disadvantages and applications. (14)

MODULE III

15. With neat sketch explain the difference between horizontal and vertical milling machine. Name the principal parts of horizontal and vertical milling machine. (14)

OR

16. With neat sketch explain seven milling machine operations. (14)

MODULE IV

17. Explain different part programming codes in Computer Numerical Control (CNC). (14)

OR

18. Write the part program to get the finished components as shown in the figure from a raw material of 50 mm diameter. Take speed 900 rpm. Feed 150 mm/min. Use incremental dimensioning system. (14)

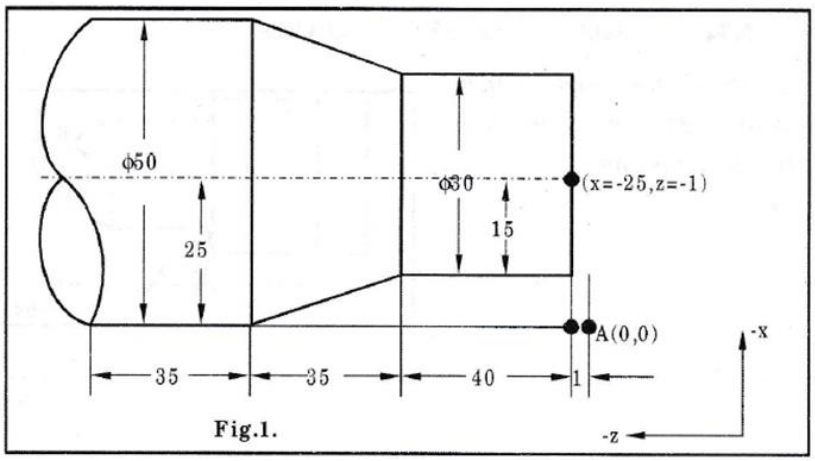

Fig.1.

MODULE V

19. With neat sketch explain Electrical discharge machining (EDM). Write four applications of EDM. (14)

OR

20. With neat sketch explain Laser beam machining (LBM). Write four applications of LBM. (14)

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