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

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

THIRD SEMESTERM.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022

MECHANICAL ENGINEERING (MACHINE DESIGN)

(2020 Scheme)

Course Code: **20MEMDT223**

Course Name: **Advanced Materials and Processes**

Max. Marks: **60** **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Cite the importance of Ti aluminides in modern manufacturing industry
2. Compare thermosets with thermoplastics with 2 examples each
3. Outline the functions of matrix material in composites
4. Explain briefly the steps involved in Powder metallurgy technique
5. Justify the need of micromachining in modern manufacturing industry
6. Explain the working principle of Ultrasonic machining
7. What are the salient features of magnetic abrasive finishing
8. Compare the effectiveness of Surface melting with that of Surface alloying

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. Explain the composition and functions of Metallic Glass (6)

OR

10. Identify any three metallic biomaterials and explain their medical applications (6)

MODULE II

11. Describe the processing techniques for fibers and foams (6)

OR

12. Explain any three Engineering applications of WC and Al_2O_3 (6)

MODULE III

13. Explain compression moulding process. Compare compression moulding using BMC and SMC (6)

OR

14. Explain filament winding process. Filament winding is a good choice for fabricating fiberglass reinforced pipe. Justify your answer (6)

MODULE IV

15. Combination of properties can be achieved in composites. Explain with reference to MMCs (6)

OR

16. Enumerate any 3 engineering components where Al matrix composites are used. (6)

MODULE V

17. Explain the working principle of Laser Beam machining. Also brief the process parameters (6)

OR

18. Explain any two material handling equipments with neat sketches (6)

MODULE VI

19. Describe the advantages and limitations of surface coatings in high temperature applications (6)

OR

20. Explain the salient features and applications of i) abrasive floor machining and ii) wire –EDM (6)

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