

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

## SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIFTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2023**

**MECHANICAL ENGINEERING**

**(2020 SCHEME)**

**Course Code : 20MET307**

**Course Name: Machine Tools and Metrology**

**Max. Marks : 100**

**Duration: 3 Hours**

### PART A

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

1. Name and explain any three cutting tool materials
2. Define counter sinking process in drilling.
3. Differentiate between up milling and down milling.
4. What are the different grades of grinding wheel?
5. Briefly explain about gear honing process.
6. What is the principle of Gear hobbing?
7. Explain the different type of fits.
8. How precision differs from accuracy?
9. List any three applications of interferometers.
10. Write short notes on the various uses of comparators.

### PART B

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

#### MODULE I

11. List the various Lathe accessories. Write short notes on any three with its applications. (14)

**OR**

12. Explain any four operations that can be carried out on a drilling machine. (14)

#### MODULE II

13. Name any three super-finishing operations. With neat diagrams, explain the lapping process. (14)

**OR**

14. What is the significance of indexing in gear cutting? (14)  
Explain simple indexing in milling with the help of an example.

#### MODULE III

15. List any two gear manufacturing processes. (14)  
With a neat diagram, describe how a gear is manufactured by gear shaping process.

**OR**

16. Why gear finishing is important? Explain any two gear finishing techniques with the help of schematic diagrams (14)

**MODULE IV**

17. Explain the different types of gauges. Define Taylor's principle of gauging. (14)

**OR**

18. Define Limits, fits and tolerances. What are the different types of fits (Neat diagrams are mandatory). (14)

**MODULE V**

19. What are the different terms used in surface roughness measurement? (14)

**OR**

20. List any four optical measurement instruments.  
With neat diagram, explain the working of auto collimator and list its uses. (14)

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