

Code No.: ME504PC

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**CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS**

**III-B.TECH-I-Semester End Examinations (Regular) - January- 2024
METROLOGY & MACHINE TOOLS
(MECH)**

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks.

PART-A

(20 Marks)

1. a) List and explain any two lathe accessories with sketches. [2M]
- b) Differentiate steady rest and follower rest. [2M]
- c) What is the difference between drilling and reaming? [2M]
- d) Differentiate planning and slotting machines. [2M]
- e) How do you specify a milling machine? [2M]
- f) What are the applications of broaching machines? [2M]
- g) Why hole-basis system of fit is generally employed? [2M]
- h) Explain interchangeability. [2M]
- i) Differentiate between roughness and waviness. [2M]
- j) Name the various instruments required for performing the alignment tests on machine tools. [2M]

PART-B

(50 Marks)

2. Classify various lathe machining processes and explain in brief with neat sketches. [10M]
- OR**
3. What are the different attachments used in lathe machine? Explain any five attachments? [10M]
4. Describe the operation of quick return motion in mechanical shaper? [10M]
- OR**
5. Elaborate with detailed illustrations on the working principle of horizontal boring machine. [10M]
6. a) Explain up-milling and down-milling. List the advantages of up-milling. [5M]
- b) What is indexing? Explain some common methods of indexing in milling machines. [5M]
- OR**
7. Describe briefly horizontal spindle reciprocating table surface grinding machine with a neat sketch. [10M]
8. a) Compare and contrast unilateral and bilateral tolerance system. [5M]
- b) What is a fit? Give the types of fits with their applications. [5M]
- OR**
9. Describe with a neat sketch the principle of working of an auto-collimator. Explain how flatness of the surface is determined with help of an auto-collimator? [10M]
10. Name the stylus methods of measuring surface finish and explain with neat sketch Talysurf surface measurement method. [10M]
- OR**
- 11.a) What are the applications of Coordinate measuring machine and explain its working in detail. [5M]
- b) Suggest and explain a method to check the root thickness of gear teeth. [5M]
