



**B.Tech III Year I Semester Supplementary Examinations, July 2022**  
**METROLOGY AND MACHINE TOOLS**  
**(MECHANICAL ENGINEERING)**

Maximum Marks: 70

Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.  
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.  
3. Part B consists of 5 Units. Answer any one full question from each unit.  
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

**Part-A**

- All the following questions carry equal marks (10x2M=20 Marks)
- 1 Describe single point cutting tool geometry with diagram.
  - 2 what are the elements of cutting process?
  - 3 What is drilling & boring?
  - 4 Mention working principle of drilling & boring.
  - 5 Write working principle of milling machine with neat sketch
  - 6 Mention specification of milling machine.
  - 7 What are types of fits?
  - 8 Discuss about the Bevel protractor. Where it is used?
  - 9 Describe the importance of surface roughness?
  - 10 What is Coordinate measuring machine?

**Part-B**

Answer All the following questions.

(10M X 5=50Marks)

- 11 Explain brief about-
  - a). Elements of cutting process
  - b). Methods of metal cutting
  - c). classifications of cutting tools
  - d). Single point cutting tool geometry10
- OR
- 12 What is a chip? Explain its formation, chip Types and chip breakers 10
- 13 Explain briefly about quick return motion mechanism and types of mechanisms used in shaper 10
- OR
- 14 Explain shaper machine briefly. Working principle, its specifications, and operations performed on shaper. 10
- 15 What is a MILLING? Mention types of Milling machine and its working principle, specifications and classifications of milling machines.
- OR
- 16 Briefly discuss about work holding and supporting devices of milling machine. 10

- 17 A) Explain the Taylor's principle applied in limits. 5  
B) Explain the principle of optical flat and auto collimator. 5  
OR
- 18 A) Describe the measuring method by using sine bar. 5  
B) Explain Hole basis system and shaft basis system. 5
- 19 A) What are the types and applications of CMM? 5  
B) Describe the screw thread measurement with sketch. 5  
OR
- 20 A) Explain the machine tool alignment test on drilling machine. 5  
B) Explain the Roughness parameters and Roughness profiles. 5