

Code No: 155CE

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, August - 2022

METROLOGY AND MACHINE TOOLS

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

- 1.a) Explain the mechanism of chip formation with neat sketches.
b) Explain various types of chips with neat sketches. [8+7]
- 2.a) How does a turret lathe differ from an engine lathe in detail?
b) In a production turning operation, the cylindrical workpiece is 375 mm long and 150 mm in diameter. Feed 0.30 mm/rev, and depth of cut 4.0 mm. What cutting speed must be used to achieve a machining time of 5.0 min? [7+8]
- 3.a) With a neat sketch, explain a twist drill and name its different parts.
b) What do you understand by the term boring? How are boring machines classified? [7+8]
- 4.a) Differentiate between shaper, planer and slotter.
b) Show by neat sketches various types of planer tools. [7+8]
- 5.a) Describe indexing. Give an example of direct indexing.
b) Explain the principle of differential indexing in detail. [7+8]
6. Write short notes on the following:
a) Abrasive materials used in grinding wheels
b) Lapping
c) Honing. [5+5+5]
- 7.a) Define fit. Explain various types of fits with neat sketches in detail.
b) Explain the measurement of angle with the help of sine bar with a neat sketch? Why sine bar is not preferred more than 45° ? [8+7]
- 8.a) Explain the following methods of quantifying surface roughness: (i) Rz value, (ii) RMS value, and (iii) Ra value (iv) CLA.
b) What do you mean by alignment tests? Explain atleast four types of alignment test on a lathe in detail. [8+7]

---oo0oo---