R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Regular Examinations Feb-2021
MACHINE TOOLS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Define cutting ratio.	2M
	b	Classify types of cutting fluids.	2M
	c	Define the working principle of lathe.	2M
	d	Name the different types of the drilling machines.	2M
	e	Define the term Grinding.	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Explain basic elements in metal cutting with a neat sketch	5M
	b	Discuss about machining of metals.	5M

OR

3	Explain the formation of chip. Discuss the types of chips with neat sketches.	10M

UNIT-II

4	a	Explain the stress and strain acting on a chip.	5M
	b	In an orthogonal turning operation, cutting speed is 85mm/min, cutting force 25kg, feed force 9kg, rake angle 10°, feed 0.3mm/rev and chip thickness 0.3mm. Determine the shear angle and chip thickness ratio.	5M

OR

5	Discuss tool failure and wear mechanism in cutting tool.	10M

UNIT-III

6	a	Name the different types of lathe operations. Explain about facing and knurling with neat sketches.	5M
	b	What are the different types of taper turning methods? Discuss any one method with suitable diagram.	5M

OR

7	Briefly explain the Single spindle and multi spindle automatic lathes.	10M

UNIT-IV

8	Explain with neat sketches any one of the following i) Radial drilling machine ii) Sensitive drilling machine iii) Gang drilling machine	10M

OR

9	a	What is a shaper? What is the working principle and specification of a shaper?	5M
	b	How are shapers classified? State the advantages, limitations and applications of shaper.	5M

UNIT-V

10	a	What is a grinding wheel? What are the grinding wheel parameters that influence the grinding performance?	5M
	b	What is a bond"? Name and explain principal bonds.	5M

OR

11	Explain briefly the principles of jig and fixture design	10M

END