Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations August-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 the term Metal cutting.	2M
	b	Define cutting speed.	2M
	c	What are the different types of lathe?	2M
	d	What is a milling machine?	2M
	e	What are the differences between jigs and fixture?	2M

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

UNIT-I

2	Distinguish the cutting process with neat sketches.	10M

OR

3	a	What are the conditions for producing continuous chips?	5M
	b	During orthogonal cutting a bar of 90mm diameter is reduced to 87.6mm. If the mean length of the cut is 88.2mm and rake angle is 15° calculate: (i) Cutting ratio (ii) Shear angle.	5M

UNIT-II

4	a	Draw a Merchant"s circle diagram and derive expressions to show relationships among the different forces acting on the cutting tool and coefficient of friction.	5M
	b	Discuss about Merchant theory and derive the equation for minimum cutting force.	5M

OR

5	a	What are the characteristics of an ideal cutting tool material?	5M
	b	List out the types of cutting tool material and explain (i) Coronite (ii) Ucon.	5M

UNIT-III

6	Explain lathe machine accessories with neat sketches.	10M

OR

7	a	List the common tools and attachments used on Turret and Capstan lathes.	5M
	b	List the Turret lathe operations and explain any one operation with neat sketch.	5M

UNIT-IV

8	a	Name the types of cutters, work holding and tool holding devices used in drilling machine.	5M
	b	Explain briefly with sketches any four of the drilling operations.	5M

OR

9	Draw the block diagram of a horizontal milling machine and explain its various parts.	10M

UNIT-V

10	How grinding machines are classified? Explain plain cylindrical grinding machine with neat sketch.	5M 5M

OR

11	a	Define and explain the terms i) Jig and ii) Fixture with its uses.	5M
	b	Describe briefly "Principles of jig and fixture design".	5M

END