Code No. : 16535

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A++ Grade

B.E. (Mech. Engg.) VI-Semester Main & Backlog Examinations, June-2022

Metal Cutting and Machine Tools

Time: **3 hours**

Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	What are the various constructional features of machine tools?	2	1	1	1
2.	Differentiate between capstan and turret lathes.	2	2	1	1
3.	What are the salient features of quick return mechanisms?	2	2	2	3
4.	Write a brief note on gear hobbing.	2	2	2	1
5.	Define surface finish and mention its units.	2	1	3	1
6.	What are the different quick clamping devices?	2	2	3	1
7.	Mention the properties of coated carbides.	2	2	4	1
8.	Define chip breaker and mention its need.	2	1	4	1
9.	What are the various heat generation sources in metal cutting?	2	2	5	6
10.	Define tool life and tool wear.	2	1	5	1

Part-B (5 × 8 = 40 Marks)

11. a)	What is the need for tool and work holding devices? Narrate with few applications.	4	3	1	1
b)	Define drilling and explain different operations of drilling.	4	1	1	1
12. a)	Describe and mention significant aspects of Kinematic structure of milling.	4	3	2	1
b)	What is form cutting? and mention various generation methods	4	2	2	3
13. a)	What are abrasives and bonds and why they are used in grinding wheels?	4	3	3	1
b)	How jigs and fixtures are designed? Mention its few significant design principles.	4	4	3	1

			M	L	CO	PO
14.	a)	Explain the working principle of USM with a neat sketch along with its applications.	5	3	4	6
	b)	Differentiate between orthogonal and oblique cutting.	3	2	4	1
15.	a)	Define and describe nomenclature of a single point cutting tool with a neat sketch.	4	1	5	3
	b)	Give the significance of temperature measurement in metal cutting and explain any one method.	4	3	5	1
16.	a)	List various operations performed on lathe machine? Explain any two of them.	4	2	1	1
	b)	Calculate the time taken for one complete cut on a work piece of 500mm long and 50mm diameter. The cutting speed is 30m/min and the feed rate is 0.5mm/rev.	4	4	2	2
17.		Answer any *two* of the following:				
	a)	Explain about super finishing operations.	4	2	3	1
	b)	What is a chip? Describe different types of chips produced during metal machining.	4	2	4	1
	c)	Write detailed note on Taylors tool life equation with a sample calculation.	4	3	5	3

M : Marks;　　L: Bloom's Taxonomy Level;　　CO; Course Outcome;　　PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	38.75%
iii)	Blooms Taxonomy Level – 3 & 4	41.25%

*****