VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. (Mech. Engg.: CBCS) I-Semester Main Examinations, January-2019
(Advanced Design & Manufacturing)
Metal Cutting and Forming

Time: **3 hours**   Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Compare HSS and ceramic cutting tools used in metal cutting.	2	2	1	1
2.	Model the relation proposed by Lee and Shaffer.	2	3	1	1
3.	Illustrate the force system in turning.	2	2	2	1
4.	Explain the principle of work tool thermocouple.	2	2	2	1
5.	Recall Taylor's tool life equation.	2	1	3	1
6.	Explain the influence of Carbon tetra chloride on copper machining.	2	2	3	1
7.	Compare cold working and hot working.	2	2	4	1
8.	Identify the factors that influence plastic deformation.	2	3	4	1
9.	Summarize the merits of Electromagnetic forming.	2	2	5	1
10.	Explain the principle of high velocity forming.	2	2	5	1
	Part-B (5 ×8 = 40 Marks)				
11. a)	Sketch and explain ORS tool nomenclature during turning operation.	4	2	1	1
b)	Deduce a relation for shear angle in orthogonal machining.	4	5	1	1
12. a)	Illustrate the forces acting on a milling cutter and use them to estimate the motor power.	4	2	2	1
b)	Illustrate temperature distribution in orthogonal machining, suggest an explain the best method to obtain temperature distribution	4	2	2	1
13. a)	Judge on machinability and its index, usability for steel industry.	4	5	3	1
b)	Discuss why hot machining is suggested for machining alloy steels?	4	6	3	1
14. a)	Contrast between recovery, recrystallisation and grain growth phenomena.	4	4	4	1
b)	Distinguish ring rolling and conventional rolling.	4	4	4	1
15. a)	Explain the principle, working and applications of Guerin rubber forming.	4	2	5	1
b)	Explain why Wheelon rubber forming is chosen for making aircraft components.	4	3	5	1
16. a)	Interpret the rules for dry sliding friction?	4	5	1	1
b)	Explain the working of a Lathe tool dynamometer.	4	2	2	1

17. Answer any *two* of the following:				
a) Explain tool life criteria and elaborate on wear versus time curve.	4	6	3	1
b) Differentiate and explain stress-strain curves between engineering and true stresses and strains.	4	2	4	1
c) What are the conditions favourable for HVF application?	4	1	5	1

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

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	55%
2	Knowledge on application and analysis (Level-3 & 4)	20%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	25%

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