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EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

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24ME42

Fourth Semester B.E. Degree Examination, May 2026
MACHINING SCIENCE & METROLOGY

TIME:3 hrs. Max.Marks:100

Note: 1. Answer **any FIVE** full questions, choosing **ONE** question from **each MODULE.**
2. M: Marks, L: Bloom's level,C: Course outcomes.
3. Assume missing data suitably

		Module-1	M	L	C
Q.1	a	With a neat sketch explain the single point cutting tool geometry.	7	L2	CO1
	b	Sketch the merchant circle diagram. Write the assumptions made and derive the expression for chip thickness ratio.	7	L3	CO1
	c	Describe the orthogonal and oblique cutting.	6	L2	CO1
		OR			
Q.2	a	Draw the neat diagram of lathe and name the parts.	7	L2	CO1
	b	A 50mm bar of steel was turned at 28 rpm and tool failure occurred after 10mins. The speed was changed to 232 rpm and tool failed in 60min soft cutting time. Calculate the cutting speed to obtain 30min soft tool life.	7	L3	CO1
	c	Explain any three operations of the lathe.	6	L2	CO1
		Module–2			
Q.3	a	With a neat sketch explain column and knee type milling machine.	7	L2	CO2
	b	With a neat sketch explain the operation soft milling machines.	6	L2	CO2
	c	What is indexing and discuss the need of indexing.	7	L3	CO2
		OR			
Q.4	a	Explain the driving mechanism of shaper.	7	L2	CO2
	b	With a neat sketch, explain the radial drilling machine.	6	L2	CO2
	c	Explain any three operations of drilling.	7	L3	CO2
		Module–3			
Q.5	a	With a neat sketch, explain the heat generation zone in metal cutting.	7	L2	CO3
	b	Define tool life. Discuss the parameters which in fluence the tool life.	6	L2	CO3
	c	Discuss the different wear mechanisms.	7	L2	CO3
		OR			
Q.6	a	Explain the properties of cutting fluids.	7	L2	CO3
	b	List the different types of tool materials and explain them.	6	L2	CO3
	c	Define machine ability and discus the factors affecting Machine ability.	7	L2	CO3

		Module–4			
Q.7	**a**	Define standards. List and explain the different standards.	**7**	**L2**	**CO4**
	b	With a neat sketch, explain international prototypemeter.	**5**	**L2**	**CO4**
	c	What is line and end standard? Explain wringing phenomenon.	**8**	**L3**	**CO4**
		OR			
Q.8	**a**	Define fit. Describe the types of fit and their designation.	**7**	**L2**	**CO4**
	b	Discuss shaft based and hole based system of fit.	**5**	**L2**	**CO4**
	c	What is the purpose of limit system?	**8**	**L3**	**CO4**
		Module–5			
Q.9	**a**	With a neat sketch, explain Taylors principle in the design of Limit gauges.	**7**	**L2**	**CO5**
	b	With a neat sketch, explain double end and single end plug gauges.	**7**	**L2**	**CO5**
	c	With a neat sketch, explain snap gauges.	**6**	**L2**	**CO5**
		OR			
Q.10	**a**	Define comparator. Explain reed type comparator.	**7**	**L2**	**CO5**
	b	With a neat sketch, explain sigma comparator.	**7**	**L2**	**CO5**
	c	With a neat sketch explain sin bar.	**6**	**L2**	**CO5**

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