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	B.Tech. V- Sem. (Main & Back) Examination, November/December -2025 Automobile Engineering 5AE4-03 Manufacturing Technology AE, ME	

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

*Attempt **all Ten** questions from **Part A**, **five** questions out of **Seven** questions from **Part B** and **Three** questions out of **Five** questions from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205).*

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory.

(10×2=20)

- ✓ 1. Define orthogonal and oblique cutting.
- ✓ 2. Define rake angle and clearance angle.
- ✓ 3. Define Machinability index.
- ✓ 4. State and explain Taylor's tool life equation.
- ✓ 5. Define the gear hobbing.
- ✓ 6. Write the formula for machining time in Shaper.
7. Define honing and lapping.
- ✓ 8. Name two natural and two synthetic abrasives?
9. Define high velocity forming.
10. Define magnetic pulse forming.

PART - B

(Analytical/Problem Solving questions)

Attempt any Five questions.

(5×4=20)

1. Differentiate between traditional and non-traditional machining processes.
2. Explain different types of chips produced in metal cutting with sketches.
3. Classify cutting fluids and discuss their desirable properties.
4. Explain the mechanism of crater wear and flank wear in cutting tools.
5. Describe the procedure of gear cutting on a milling machine using indexing head.
6. Describe the process of superfinishing. Compare it with conventional grinding.
7. Explain the principle and working of hydraulic forming with a neat sketch.

PART - C

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any Three questions.

(3×10=30)

1. Discuss the geometry of a single-point cutting tool with neat sketch and explain function/importance of each element and angle. Explain ASA and ORS tool nomenclature systems.
2. Write a note on :
 - a) Effect of cutting variables on tool life
 - b) Use of cutting fluids in improving tool life and surface finish.
3. A cylindrical mild steel shaft of 500 mm length and initial diameter of 80 mm is to be turned down to 60 mm diameter using a single-point cutting tool on a lathe in 4 equal passes. The cutting parameters are:
Cutting speed (V) = 50 m/min
Feed(f) = 0.3 mm/rev
Tool approach and retraction = 5 mm each
Return time per pass = 6 seconds
Setup time = 2 minutes
Calculate the total machining time required to complete the job.
4. Explain the grinding process and classify the different types of grinding methods.
5. Explain Explosive Forming and Electro-Hydraulic Forming with neat sketches.