Code No.: 6344

FACULTY OF ENGINEERING

B.E. 3/4 (Mech.) II Semester (Main) Examination, June 2010

METAL CUTTING AND MACHINE TOOL ENGINEERING

Time : 3 Hours] [Max. Marks : 75

Answer **all** *questions from* Part A.
Answer any **five** *Questions from* Part B.

Part A – (Marks : $2.5 \times 10 = 25$)

1. What are the desirable properties of a cutting tool material?
2. Distinguish between orthogonal and oblique cutting.
3. How cutting fluids contribute for effective machining?
4. Explain the various tools wear mechanisms.
5. Sketch and explain quick return mechanism of a shaper.
6. How grinding wheels are specified?
7. Differentiate between Buffing and roller Burnishing.
8. Explain the principle of gear grinding.
9. What are the advantages of unconventional machining over conventional machining?
10. Sketch the working principle of ECM process.

Part B – (Marks : $5 \times 10 = 50$)

11. (a) Explain the nomenclature of a single point cutting tool geometry as per ASA system. 5

    (b) Explain the types of chips produced in a metal cutting. 5

12. (a) Explain the Taylor's tool life equation. What are the variables affecting tool life? 5

    (b) Explain the effect of cutting speed and feed on the temperature of the tool. 5

13. (a) List out various operations performed on lathe. 5

    (b) Distinguish between shaper and planer. 5

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14. (a) Explain the working of a Gear hobbing process. 5

    (b) Explain the jig boring machine with a neat sketch. 5

15. (a) Briefly explain the design principles of location and clamping devices. 5

    (b) With the help of a neat sketch, explain the principle of EDM process. 5

16. (a) Derive the shear angle solution by merchant's theory. 5

    (b) Explain the types of chip breakers used in a metal cutting. 5

17. Write shoirt notes on any **two** of the following:

    (a) Abrasive Jet Machine (AJM) process

    (b) Thread rolling and thread milling

    (c) Honing and Lapping

    (d) Indexing methods.
