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B.E/B.Tech DEGREE END SEMESTER EXAMINATIONS, APR/MAY 2013

Manufacturing Engineering

Second Semester

MF8201–MACHINE TOOLS AND PROCESSES

(REGULATIONS 2012)

Time:3hr

Max.Mark:100

Answer ALL Questions

Part A (10 x 2 =20 Marks)

1. Write short notes on any two modern tool materials.
2. The cutting forces increases with depth of cut and decreasing rake angle. Why?
3. What is meant by "swing of the lathe"?
4. Make a short note on tapping.
5. Differentiate between up milling and down milling.
6. What do you meant by differential indexing?
7. What is meant by G-ratio?
8. What is meant by 'grade' and 'structure' of grinding wheel?
9. What is the need for unconventional machining processes?
10. Why vacuum is needed in Electron beam machining?

Part B (5 x 16=80 Marks)

- 11 i) Prove that in orthogonal cutting , the kinetic coefficient of friction (μ) is given by 8

$$\mu = \frac{F_c \sin \alpha + F_t \cos \alpha}{F_c \cos \alpha - F_t \sin \alpha}$$

- ii) Tool life tests in turning yield the following data:(1) $V = 110\text{m/min}$, $T = 11$ 8
min;(2) $V = 78 \text{ m/min}$, $T = 26$ min. (a) Determine the n and C values in the Taylor tool life equation. Based on the equation, compute (b) the tool life for a speed of 95 m/min and (c) the speed corresponding to a tool life of 18 min.
- 12 a:i) Enumerate the purpose of various attachments used on a centre lathe. 8
- ii) Explain various elements of a Jig Boring Machine. 8

Or

- b.i) Explain the salient features of an automatic screw machines. 8
- ii) What are the various kinds of reamers? Explain their utility and uses in Industry. 8
13. a.i) Explain with neat sketches the different types of planer table drive mechanisms. 8
- ii) Discuss with neat sketch Vertical Broaching machine. 8

Or

- b.i) Compare Plain and Universal milling machine. 8
- ii) Explain with neat sketches the procedure for carrying out the following operations on a shaper: Horizontal cutting, Vertical cutting, concave surface, keyway cutting. 8
14. a.i) What are the various factors to be considered in selection of grinding wheel? Discuss each in detail. 8
- ii) What is meant by superfinishing? Briefly explain the various methods of superfinishing. 8

Or

- b.i) What are the advantages of centerless grinding over other cylindrical grinding operations 8
- ii) Explain the following in grinding a) Dressing of b) Truing 8
15. a.i) Write short note on i) High speed machining ii) Ultra precision machining 8
- ii) Discuss with neat sketch Electron beam machining equipment. 8

Or

- b.i) Enumerate with neat sketch Ultrasonic machining equipment. 8
- ii) Explain about Laser beam machining. 8
