

25/10/13

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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, Nov /Dec 2013

MANUFACTURING ENGINEERING BRANCH

II Semester

MF 8201 MACHINE TOOLS AND PROCESSES

(REGULATIONS 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Distinguish between orthogonal and oblique cutting.
2. State any functions of cutting fluid.
3. Distinguish between reaming and boring operations.
4. State any two features of automatic screw machine.
5. Differentiate between up milling and down milling.
6. Define sawing operation.
7. What is meant by grain size of an abrasive material?
8. Define G ratio.
9. What are the different dielectric media used in EDM process?
10. What is "self adjusting feature" in ECM?

PART B – (5X16=80 Marks)

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- 11 i) Enumerate with neat sketch working of a continuous surface broaching machine. (8)
 - ii) Describe the operation of a quick return motion in a mechanical shaper. (8)
 - 12 a i) Explain merchant's force circle. Mention the assumptions made. (8)
 - ii) In an orthogonal cutting test with a tool of rake angle 10° , the following observations were made:

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(ii). Explain any one method of tactile sensing in detail

(8)

14. a) (I) For the point $3i + 7j + 5k$ perform the following sequence of operations. Rotation of 90° about x axis, Followed by Rotation of 90° about y axis, Followed by Translation of 8 units in y and 2 units in z axis, Find the final point. Represent your results graphically. (8)

(II). Explain the procedure of finding the general D-H representation matrix for forward kinematics of Robot. (8)

(OR)

b) (i). Explain lead through programming method in detail (8)

(ii). Explain few Motion, End effectors and sensor commands for robot programming (8)

15. a) Explain in detail the steps involved in implementing the robot in industries.

(OR)

b) For a particular robot project the total investment cost is estimated to be Rs. 100,000. The total operating costs (Labor, maintenance and other expenses) are expected to be Rs. 20,000 per year and anticipated revenue from the robot installation are Rs. 65000 annually. It is expected that the robot will have service life of 5 years.

(i) Determine the payback period that is expected of investment. (4)

(ii). Consider 30% minimum annual rate of return. Give your decision for project implementation based on EUAC method. Take $(A/P, 30\%, 5) = 0.41058$ (4)

(iii). Explain few applications of robots in detail

(8).