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10ME/AU45

Fourth Semester B.E. Degree Examination, Dec.2014/Jan. 2015
Manufacturing Process – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. What are the assumptions made in Earnst – Merchant theory? **(02 Marks)**

b. Show that, $\phi = \frac{\pi}{4} - \frac{\beta}{2} + \frac{\alpha}{2}$, using Earnst – Merchant theory. **(08 Marks)**

c. In turning a steel rod by a given cutting tool at a given machining condition under a given environment, the tool life decreases from 80 min to 20 min due to increase in cutting velocity from 60 m/min to 120 m/min. At what cutting velocity, the tool life of that tool under the same condition and environment will be 40 minutes? **(06 Marks)**

d. Explain with sketches, flank wear and crater wear. **(04 Marks)**

2 a. Discuss about high – speed steels (HSS) and cemented carbide tool materials as regard to its composition, manufacturing and applications. **(12 Marks)**

b. What are the factors affecting temperature in metal cutting? Explain. **(06 Marks)**

c. List any four desirable properties of cutting tool material. **(02 Marks)**

3 a. With a neat sketch, explain crank and slotted link mechanism in a shaper. **(06 Marks)**

b. With a neat sketch, explain the parts of a turret lathe. **(08 Marks)**

c. Explain thread cutting operation in a lathe. **(06 Marks)**

4 a. Show the twist drill elements and drill angles using twist drill nomenclature. **(06 Marks)**

b. Explain straight cut and contouring NC systems. **(06 Marks)**

c. Discuss about preparatory functions and miscellaneous functions in a manual part programming. **(08 Marks)**

PART – B

5 a. What is indexing? Mention different methods of indexing. Briefly explain compound indexing method. **(08 Marks)**

b. Index 24 divisions on a work-piece using simple indexing. **(06 Marks)**

c. Explain any three milling operations. **(06 Marks)**

6 a. Explain any three grinding wheel characteristics / parameters. **(06 Marks)**

b. Briefly explain any five bonding processes. **(05 Marks)**

c. Sketch and explain surface grinding machine. **(05 Marks)**

d. Explain truing and dressing of grinding wheels. **(04 Marks)**

7 a. What is the principle of broaching? **(02 Marks)**

b. What are the advantages and limitations of broaching? **(04 Marks)**

c. Explain with neat sketches, lapping and super finishing processes. **(10 Marks)**

c. Explain any two broaching operations. **(04 Marks)**

8 a. What is the need of non – traditional machining (NTM)? **(04 Marks)**

b. Explain with neat sketches :

i) Electron beam machining

ii) Laser beam machining. **(16 Marks)**

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