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06ME45

Fourth Semester B.E. Degree Examination, June/July 2011
Manufacturing Process – II

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions selecting at least TWO questions from each part.

PART – A

- 1 a. How is 'TOOL LIFE' defined? On what factors does the tool life depend? (06 Marks)
- b. What is TAYLOR's Tool life equation? Calculate the cutting speed for a tool to have a tool life of 160 min. The same tool had a life of 9 minutes when cutting at 250 m/min. Take $n = 0.22$ in the Taylor's tool life equation. (08 Marks)
- c. Why can relief or clearance angles never be zero or negative? What is the effect of cutting speed, feed rate and depth of cut on the force on cutting tool? (06 Marks)
- 2 a. Write short notes on the following cutting tool materials.
i) Carbon steels ii) High speed steels iii) Cemented carbides (12 Marks)
- b. Discuss briefly "Temperature distribution in metal cutting". List the various methods of measuring chip-tool interface temperature. (08 Marks)
- 3 a. Differentiate between CAPSTAN and TURRET LATHES. (06 Marks)
- b. How shapers are classified? Explain briefly "Quick Return Mechanism" used in shaper with neat sketch. (10 Marks)
- c. State the main differences between SHAPER and PLANER. (04 Marks)
- 4 a. Draw a neat sketch of TWIST DRILL by showing various parts and explain its nomenclature. (10 Marks)
- b. Find the time required to drill 6 holes of 16 mm dia each on a flange. Assume flange thickness = 30 mm, Cutting speed = 20 m/min, feed = 0.2 mm/rev. (06 Marks)
- c. List various work holding devices used in a DRILLING machine. (04 Marks)

PART – B

- 5 a. Explain briefly with neat sketch the following MILLING operations:
i) Face Milling ii) Angular Milling iii) End Milling (09 Marks)
- b. Show the calculation for indexing 28 equal divisions in a milling machine. The following index plates are available:

Plate No. 1	15	16	17	18	19	20
Plate No. 2	21	23	27	29	31	33
Plate No. 3	37	39	41	43	47	49

- Find the simple indexing arrangement. (06 Marks)
- c. List and explain briefly the various attachments used in milling machine. (05 Marks)
- 6 a. Explain the factors to be kept in mind in selecting a GRINDING WHEEL. (08 Marks)
- b. Describe the "CENTRE LESS GRINDING PROCESS". What are the various feeding methods used in centreless grinding? (08 Marks)
- c. What are natural and artificial abrasives? (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 7 a. What is a LAP? What for it is used and how does it differ from grinding? (06 Marks)
b. Explain briefly the LAPPING PROCESS. Give the examples of LAPPING WORK. (06 Marks)
c. What is HONING? How are honing machines classified? List advantages and disadvantages of honing. (08 Marks)
- 8 a. Explain briefly with a neat sketch the working principle of PLASMA ARC machining. State also its characteristics, advantages and disadvantages with applications. (10 Marks)
b. Explain briefly with a neat sketch the working principle of ULTRA SONIC Machining. State also its characteristics, advantages and disadvantages with applications. (10 Marks)

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