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| NEW SCHEME |
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Fourth.

Fifth Semester B.E. Degree Examination, Dec.06/Jan. 07

ME / IP / AU / IM

Manufacturing Process – II

Time: 3 hrs.]

[Max. Marks:100

Note: 1. Answer any FIVE questions.**2. Assume missing data suitably, if any.**

- 1 a. Show the different cutting angles of a single point cutting tool, with a neat sketch. (05 Marks)
- b. Explain the relationship between cutting velocity and chip flow velocity and cutting velocity and shear velocity and prove the same. (05 Marks)
- c. During the machining of C-20 steel with a triple carbide cutting tool 0-8-6-7-10-70-1mm ORS shape. The following data was obtained
Feed – 0.18 mm/revolution. Depth of cut – 2mm. Cutting speed – 120 m/min. Chip thickness – 0.4 mm. Determine i) Chip reduction coefficient ii) Shear angle. (10 Marks)
- 2 a. What is tool life. Explain different tool failures. (05 Marks)
- b. A tool life of 80 minutes is obtained at a speed of 30 mpm and 8 minutes at 60 mpm. Determine the following i) Tool life. ii) Cutting speed for 4 minutes tool life. (10 Marks)
- c. Explain the effect of alloying elements on HSS tool. (05 Marks)
- 3 a. Differentiate between capstan lathe and Turret lathe. (05 Marks)
- b. Explain with fig. the work feeding mechanism for capstan lathe. (07 Marks)
- c. Show the tool layout for the product shown in fig.3(c) for capstan lathe. (08 Marks)

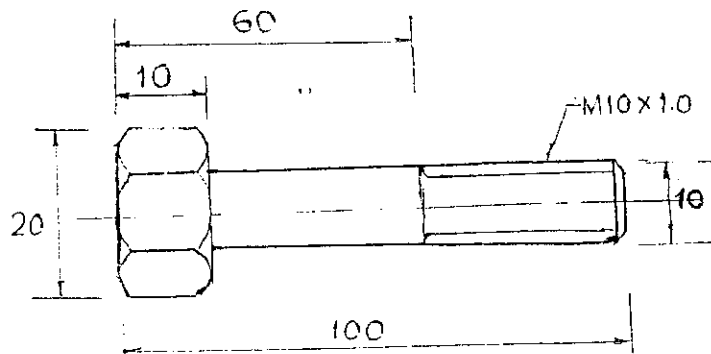


Fig. 3(c)

- 4 a. Explain with neat sketch, the geometry of twist drill. (06 Marks)
- b. What is the purpose of socket and sleeve in drilling operation explain with figure. (06 Marks)

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- c. Show the tool layout of turret drilling machine for the product shown in fig. 4(c). (08 Marks)

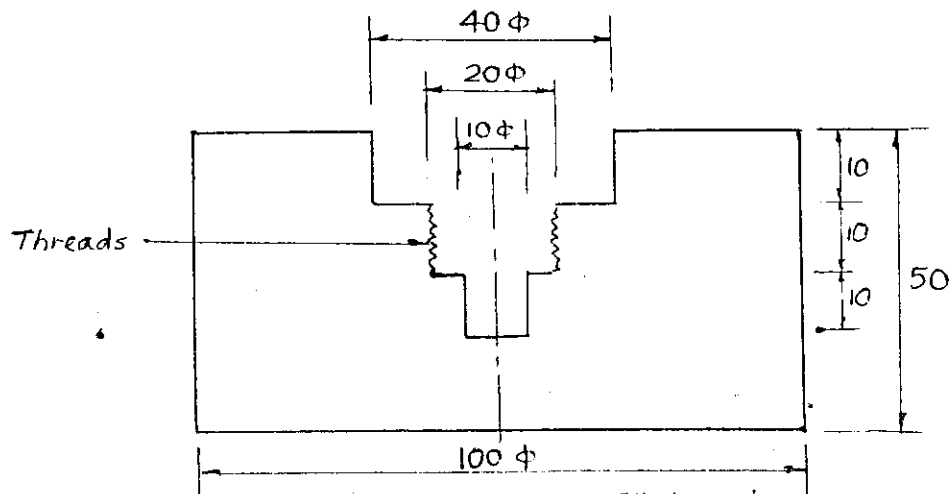


Fig.4.(c) All dimensions are in mm

- 5 a. Differentiate between shaper and planer. (05 Marks)
 b. Explain with figure the table feeding mechanism of shaper. (05 Marks)
 c. Estimate the time required to machine a cast iron surface 250mm long and 150mm wide on a shaper with a cutting to return ratio of 3:2. Use a cutting speed of 21 m/min, a feed of 2mm / stroke and a clearance of 25 mm the available ram strokes on the shaper are 28, 40, 60 and 90 strokes / min. Also determine MRR assuming depth of cut as 4 mm. (10 Marks)
- 6 a. Differentiate between up milling and down milling. Show the chip cross – section with figure for both the operations. (05 Marks)
 b. Determine the time required to mill a slot of 300 × 25 mm in a work piece of 300 mm length with a side and face milling cutter of 100 mm diameter, 25 mm wide and having 18 teeth. The depth of cut is 5mm, the feed per tooth is 0.1mm and cutting speed is 30 m/min. Assume approach and over travel distance 50 mm. (10 Marks)
 c. Name different types of indexing and explain indexing mechanism of a dividing head with sketch. (05 Marks)
- 7 a. Why soft wheel is used to grind hard material and hard grinding wheel for soft material. (06 Marks)
 b. Explain the characteristics of a grinding wheel. (06 Marks)
 c. What are fine finishing operations, explain machine lapping process using a vertical lapping machine. (08 Marks)
- 8 Write short notes on any four :
 a. EDM
 b. ECM
 c. LBM
 d. AJM
 e. EBM
 f. Chemical Machining. (20 Marks)
