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B. E. (Sixth Semester) Examination 2020

(Old Scheme)

(Mech. Engg. Branch)

MACHINE TOOL TECHNOLOGY

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : (a) part is compulsory. Attempt any two from (b), (c), (d) from each unit.

Unit - I

1. (a) Classify cutting tool based on number of cutting edge. 2
- (b) Compare orthogonal & oblique cutting. 7
- (c) To the orthogonal cutting if the feed is 1.25 mm/

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revolution & chip thickness after cutting is 2 mm.

Find : 7

(i) Chip thickness ratio

(ii) Shear Angle

(iii) Friction Angle

(d) What are the systems of description of tool geometry. 7

Unit - II

2. (a) What is Machinability Index? 2

(b) What are the function & properties of cutting fluid? 7

(c) Calculate the percentage change in cutting speed required to give 65% of reduction in tool life. Assume $n = 0.2$. 7

(d) Establish the tool life equation & calculate cutting speed for 5 minutes tool life from following data. A tool life of 75 minutes was obtained at a speed of 25 mpm & that of 10 minutes when cutting at 60 rpm. 7

Unit - III

3. (a) What are the various materials used for making slide ways. 2

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(b) What are various types of antifriction ways with neat sketch. 7

(c) What are advantages & disadvantages of using cast iron as bed materials. 7

(d) What is the purpose of using stiffener & explain type of stiffeners. 7

Unit - IV

4. (a) What is the purpose of drive in Machine Tool. 2

(b) Explain rules for layout of gear box having sliding cluster. 7

(c) Explain Ray diagram & deviation diagram. 7

(d) A machine tool possesses 5 spindle speeds in Geometric progression to work on material at 24m/min. If the spindle accommodates cutter ranging from 15 mm to 50 mm diameter. Determine the spindle speeds. 7

Unit - V

5. (a) What are type of machine foundation. 2

(b) Explain drilling machine test with neat sketch. 7

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- (c) What are advantages, disadvantages & application of Norton gear box. 7
- (d) Define performance test & acceptance test. Explain test mandrels. 7

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