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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, May - 2018

MACHINE TOOLS

(Common to MSNT, ME, MCT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the factors responsible for built-up edge in cutting tools?	[2]
b)	Name the various cutting tool materials and what are the important characteristics of cutting tools?	[3]
c)	State the principle features of automatic lathes.	[2]
d)	State the specification of a lathe.	[3]
e)	Explain the working principle of shaping and types of shaper.	[2]
f)	What are the work holding devices of boring and drilling machine	[3]
g)	Specify the honing parameters for good honing process	[2]
h)	Differentiate between compound indexing and differential indexing.	[3]
i)	What are the advantages and disadvantages of using center less grinding	[2]
j)	Explain different types of abrasives used in finishing processes.	[3]

PART - B

(50 Marks)

2.a) Determine the cutting speed and machining time per cut when the work piece having 60 mm diameter is rotating at 600 rpm. The feed given as 0.2 mm/rev and length of cut 10 cm.
  b) Give formula for cutting power in a metal cutting machine and explain about Material removal rate and Specific energy and its significance.   [5+5]

OR

3.a) The tool signature is given as follows 6-6-5-10-5-5-0.8, label each in the diagram.
  b) Explain ideal properties of cutting tool materials.   [5+5]

4.a) Explain the construction and working of a vertical turret lathe.
  b) Explain what is meant by a Taper. Discuss in detail the taper turning by compound rest swelling method.   [5+5]

OR

5.a) What is face plate? Where will you prefer its use and why?
  b) What machining operations can be performed on a center lathe? Explain in detail. [5+5]

6.a) Write a brief note on kinematic scheme of the shaping and planning machines.
 b) Explain the principle of slotting and state the operations performed on it.   [5+5]

OR

7.a) With neat sketch explain the construction and working principle of twist drill.
 b) State the difference between the operations of fine boring and Jig boring machine. [5+5]

8.a) What are Through feed, In feed and End feed in center less grinding operations.
 b) Write a brief note on methods of indexing.   [5+5]

OR

9.a) Describe in detail about honing tools.
 b) Explain the difference between grinding and lapping machines.   [5+5]

10.a) Mention various types of bonds used in making of grinding wheel also mention their application.
 b) What are the advantages and disadvantages of the different bonds used in grinding wheel?   [5+5]

OR

11.a) How the grinding wheel is selected for a particular job?
 b) With a neat sketch explain the construction and working principle of surface grinding machine.   [5+5]

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