Code No: 125EE **R15**

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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