R13

Code No: 115EE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, March - 2017

MACHINE TOOLS

(Common to ME, MCT, MSNT)

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) Under what conditions a continuous chip with built-up-edge is formed? [2]
b) Briefly discuss about chip breakers. [3]
c) Differentiate between single spindle and multi-spindle automatic lathes. [2]
d) Write short notes on the Turret indexing mechanism. [3]
e) How do you specify a drilling machine? [2]
f) Give the differences and similarities between planer and shaper. [3]
g) Give a neat sketch of an internal pull types broaches and indicate the various terms relating to its teeth. [2]
h) Explain the general considerations in selection of milling cutters. [3]
i) What is trueing? [2]
j) Write a short note on shellac bond and Bakelite bond. [3]

PART - B

(50 Marks)

2.a) Explain the relationship amongst the cutting velocity, chip flow velocity and shear velocity as applied to orthogonal cutting?
b) What do you understand by the term 'Tool life'? What factors influence the life of a cutting tool? [5+5]

OR

3.a) Define chip breaker? And what do you understand by Inhomogeneous Strain-chip?
b) Define the various tool parts of a single point cutting tool. What are the standard angles of cutting tool? Describe them with neat sketches? [5+5]

4. Briefly explain about the working principle of lathe machine, operations which can be performed on lathe, specifications and classification of lathe machine? [10]

OR

5.a) Briefly discuss about the different type of taper turning methods with sketches.
b) Discuss about tool holders of lathe machine. [5+5]

6.a) Give classification of planer machine? And explain about Double column planning machine, edge-planning machine

b) What is a twist drill? Explain the parts and function of a twist drill. What are the advantages of using it? [5+5]

OR

7.a) What is a slotter? Classify it, and explain the slotted disc mechanism with a neat sketch.

b) Classify boring machines. And Explain in detail with neat sketches horizontal type of boring machines. [5+5]

8.a) Compare up-cut and down-cut milling process with particular reference to chip formation and forces induced in component and cutter.

b) What is lapping? Write in detail any three types of lapping. [5+5]

OR

9.a) Describe the features and working of a universal milling machine with the help of a block diagram.

b) What is honing? Describe in detail about honing and honing tools. [5+5]

10.a) List out factors which influence the performance of grinding wheel. Explain them in detail.

b) Sketch and explain three methods of cylindrical grinding. [5+5]

OR

11.a) What is 'grain size' related to grinding? How it effects the performance of grinding process.

b) Discuss the selection procedure of a grinding wheel. [5+5]

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