Printed Pages: 02 **Sub Code: EPI601**

Paper Id: 141227 **Roll No.** | | | | | | | | | | |

B.TECH.
(SEM -VI) THEORY EXAMINATION 2018-19
PRINCIPLES OF MACHINE TOOL DESIGN

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If required any missing data then choose suitably.

SECTION A

1. Attempt all questions in brief. **2 x 10 = 20**

a. Explain crater wear
b. What do you mean by dynamic rigidity?
c. Write difference between up-milling & down-milling.
d. What is a transfer machine?
e. Lathe is the queen of all machine tools justify?
f. Write down laws of stepped regulation.
g. Explain the types of machine tools surface.
h. Write steps for selection of bearing machine tools.
i. Differentiate between group & individual drive.
j. Explain basics of numerical control system.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. Explain what characteristics of grinding process makes it different from conventional turning/milling operations?
b. State the important parameters that would influence the torque and thrust in drilling. Describe the cutting action of a drill.
c. Briefly describe any 4 mechanisms that can convert rotary motion into translation.
d. What do you understand by 'Chatter' in machine tools? How it affects the product quality? How it can be removed? Explain.
e. With the help of neat sketches describe the working, advantages and disadvantages of the following types of speed variators: (i) Adjustable pulley variator. (ii) Cone variator with spheres supported on shafts.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Describe the factors that should be considered while making a choice between groups versus individual drive.
(b) With the help of neat sketch describe the working of a Cam-controlled mechanism used in automatic lathes.

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Discuss the significance of machine tool layout. Write the layout formula for a knee-type vertical milling machine.
(b) Discuss the advantages & disadvantages of hydraulic regulation of machine tool derives. Describe the working of a hydraulic drive unit for rotary motions

5. Attempt any *one* part of the following: **10 x 1 = 10**

(a) State the advantages & disadvantages of numerically controlled machine tools over conventional automated machines. How do you select the parts for NC machining?

(b) With the help of a neat sketch explain the working principle of Word-Leonard drive used for machine tools. What are some of the important applications of this type of drive?

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Write a detailed note on the history and development of machine tools.

(b) Describe one mechanical friction stepless drive and one electrical stepless drive with suitable sketches

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe the working principle of Oldham coupling with the help of neat sketch.

(b) Explain in detail various step involved in testing of machine tools.