Printed Pages: 02   **Sub Code: NPI 601**

Paper Id: | 141201 | **Roll No.** | | | | | | | | | | |

BTECH
(SEM VI) THEORY EXAMINATION 2018-19
PRINCIPLES OF MACHINE TOOL DESIGN

Time: 3 Hours   *Total Marks: 100*

Note: **1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

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

a.	Is there any recent developments in machine tools if yes define few of them.
b.	What are planers used for.
c.	Differentiate between coupling and clutches.
d.	Describe chain drives and where they are used.
e.	Define the laws of stepped regulation.
f.	How range ratios are is selected.
g.	What are the requirements for machine tool structures?
h.	Give any two basic guide way profiles.
i.	What do you mean by dynamic stability?
j.	What are mechanical tool testing methods?

SECTION B

2. **Attempt any *three* of the following:**   **10x3=30**

a.	Describe the expression for Force analysis of machine tools.
b.	What are fundamentals of kinematics structure of machine tools Discuss?
c.	How the gearing diagrams are developed explain.
d.	Explain the design guidelines used for machine tool structures.
e.	What are the basic numerical controls used in control systems.

SECTION C

3. **Attempt any *one* part of the following:**   **10x1=10**

a.	Explain briefly the machine tool design process.
b.	What are the requirements of machine tool design process.

4. **Attempt any *one* part of the following:**   **10x1=10**

a.	Describe any two slider crank mechanism used with figures.
b.	Define the various elements of hydraulic transmission systems.

5. **Attempt any *one* part of the following:**   **10x1=10**

a.	Describe standard progression ratio and speed chart.
b.	How the feed box is designed explain.

6. **Attempt any *one* part of the following:**   **10x1=10**

a.	Explain the process for designing bed, column and housing of machine tool structure.
b.	What are the various model techniques used in design.

7. **Attempt any *one* part of the following:**   **10x1=10**

a.	What is the process for assessing the chatter in machine tools?
b.	What are controls used for speed and feed change.