

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019

**Subject Code:2173408**

**Date:14/05/2019**

**Subject Name: Design of Machine Tools**

**Time: 02:30 PM TO 05:00 PM**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
<b>Q.1</b>	(a) Explain the working motions of a machine tool	<b>03</b>
	(b) Explain the mechanical transmission	<b>04</b>
	(c) Explain in brief, general engineering design process to machine	<b>07</b>
<b>Q.2</b>	(a) Explain the classify the speed box	<b>03</b>
	(b) Explain the machine tool structures requirements.	<b>04</b>
	(c) Explain the auxiliary motion in machine	<b>07</b>
	<b>OR</b>	
	(c) Explain the design of speed box	<b>07</b>
<b>Q.3</b>	(a) Explain the aim of speed feed regulation	<b>03</b>
	(b) Explain the functions of machine tool structures and their requirements	<b>04</b>
	(c) Explain the static stiffness	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Design of spindle for deflection of spindle axis due to bending	<b>03</b>
	(b) Explain the general design procedure of column structure.	<b>04</b>
	(c) Explain the design criteria for machine tool structures	<b>07</b>
<b>Q.4</b>	(a) Describe the functions of spindle unit	<b>03</b>
	(b) Explain the shapes of slid ways	<b>04</b>
	(c)	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Describe the requirements of spindle unit	<b>03</b>
	(b) Explain the factors affecting on design of sliding-friction power screws.	<b>04</b>
	(c) Explain the rail travelling components	<b>07</b>
<b>Q.5</b>	(a) Explain the hoisting components	<b>03</b>
	(b) Explain the application of slide way profiles and their combinations	<b>04</b>
	(c) Explain the design of feed box	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain the protecting devices for slide ways	<b>03</b>
	(b) Explain materials of machine tool structures for bar subjected to tension only	<b>04</b>
	(c) Explain different materials used for designing the hoist.	<b>07</b>

\*\*\*\*\*