

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2173408****Date: 19/11/2018****Subject Name: Design of Machine Tools****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

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

		<b>MARKS</b>
<b>Q.1</b>	(a) Explain the hydraulic transmission	<b>03</b>
	(b) Explain the mechanical transmission	<b>04</b>
	(c) Explain the classification of speed boxes.	<b>07</b>
<b>Q.2</b>	(a) Explain the classify the speed box	<b>03</b>
	(b) Explain the working motions of a machine tool	<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 design of feed box	<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) Explain the factors affecting stiffness of machine tool structure and methods of improving it.	<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 static stiffness	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain the dynamics stiffness	<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>

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