Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 152002 **Date: 05/05/2017**

Subject Name: Manufacturing Technology - I

Time: 02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary and clearly mention the same.**
3. **Figures to the right indicate full marks.**
4. **Draw neat diagrams. Diagrams with inferior quality may not be awarded credit.**

Q.1 **(a)** Enlist the specifications of lathe machine. Describe them briefly and support your answer with neat schematic line diagrams. **07**

(b) What are the different measuring and gauging devices available in workshop? Briefly explain the functions performed by them. **07**

Q.2 **(a)** Draw neat schematic diagrams of the following type of chips generated during machining on lathe machine using single point cutting tool. Describe the cutting parameters responsible to generate these type of chips. **07**

1. Continuous chips
2. Discontinuous chips
3. Continuous chips with built up edge

(b) What are the functions performed by the following? **07**
3-jaw self centering chuck, 4-jaw independent chuck, Face plate, Dog and dog plate, Mandrel

OR

(b) Describe the Merchant Circle analysis for the measurement of various cutting forces during orthogonal machining. **07**

Q.3 **(a)** Name the different cutters used on milling machine and explain in brief the function performed by them. **07**

(b) Compare and contrast the following machining operations to be performed on lathe and drilling machine from relative motions and accuracy point of view. **07**

1.Drilling 2.Boring

OR

Q.3 **(a)** Give difference between up milling and down milling process with the help of relative motion between cutting tool and work piece. Also discuss with critical reasons that up milling is safer than down milling. **07**

(b) Draw and explain different operations of drilling machines. **07**

Q.4	**(a)**	Describe grinding wheel specification and its selection for specific machining conditions and work piece materials.	**07**
	(b)	What are the relative motions between tool and work piece on shaper machine? What are basic machine set ups required before starting any machining operation on shaper machine?	**07**

OR

Q.4	**(a)**	Draw complete labelled diagrams of following operations to highlight the tooling requirements and relative motions between tool and workpiece: 1. Dovetail guide way machining on shaper 2. Internal keyway machining on slotter	**07**
	(b)	Explain the following: 1. Dressing and Truing of grinding wheel 2. Loading and Glazing of grinding wheel	**07**
Q.5	**(a)**	Differentiate between Capstan and Turret lathe from construction, application and accuracy point of view.	**07**
	(b)	Briefly describe the following machining operations to be performed on lathe machine with the help of neat schematic diagrams. 1. Taper turning (any one method) 2. Internal and external grooving	**07**

OR

Q.5	**(a)**	List out different cutting tool materials available to manufacture a cutting tool. Correlate the properties of various cutting tool materials with its field of application.	**07**
	(b)	Draw schematic diagrams of surface grinder and cylindrical grinder to explain the difference between them.	**07**

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