Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– V • EXAMINATION – WINTER 2016

Subject Code: 152002 **Date: 24/11/2016**
Subject Name: Manufacturing Technology - I
Time: 10:30AM – 01:00PM **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)** Describe in brief various work holding and tool holding devices used on conventional machine tools. **07**

(b) With the help of schematic diagrams discuss the functions of different arbor mounted and shank mounted milling cutters. **07**

Q.2 **(a)** Draw and explain the following machining operations: **07**

1. Knurling operation on Lathe machine
2. Facing operation on Lathe machine

(b) What are the functions performed by the cutting fluid during machining operation? **07**
Also mention different types of cutting fluids used for a specific machining operation.

OR

(b) Differentiate between hydraulic shaper and mechanical shaper. Compare and contrast relative merits and demerits of hydraulic mechanism and mechanical mechanism. **07**

Q.3 **(a)** Explain with the help of neat schematic diagrams the ways available to get different speeds of spindle rotation on lathe machine. **07**

(b) Briefly explain the effect of changing various cutting parameters on the surface finish produced and cutting forces induced during conventional machining. **07**

OR

Q.3 **(a)** Explain with the help of line diagram, the process of helical milling operation on horizontal milling machine. Assume suitable data and clearly mention the same for proper description. **07**

(b) Graphically explain the effect on the value of rake angle and clearance angle of single point cutting tool, when the tool is positioned either above or below the axis of work piece rotation on lathe machine. Also mention the position of single point cutting tool on front and rear tool post on lathe machine, if the direction of **07**

work piece is changed.

Q.4	**(a)**	Differentiate between up-milling and down-milling operation. Why is up-milling called as safe milling operation than down-milling operation?	**07**
	(b)	Give the grinding wheel specification and describe each parameter of it for proper selection of grinding wheel for grinding operation.	**07**

OR

Q.4	**(a)**	Explain the following milling machine operation: 1. Gang milling operation 2. T-slot milling operation	**07**
	(b)	Evaluate the statement: "Hard grinding wheels are used for soft workpiece materials and soft grinding wheels are used for hard workpiece materials."	**07**
Q.5	**(a)**	List out the various machining operations performed on drilling machine. Explain briefly all of them. Support your answer with the help of schematic diagram of each of them.	**07**
	(b)	Describe the functions of various measuring and gauging instruments available in the workshop.	**07**

OR

Q.5	**(a)**	Explain automatic feed mechanism on shaper machine for machining horizontal flat surface.	**07**
	(b)	Enumerate the types of cutting tool materials used for machining operation. Bring out the significance of all cutting tool materials for specific application.	**07**

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