Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2152007 **Date: 06/06/2019**

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.**
3. **Figures to the right indicate full marks.**
4. **Draw neat diagrams. Diagrams with inferior quality may not be awarded credit.**

			MARKS
Q.1	**(a)**	Explain Tool signature with the help of neat diagram of single point cutting tool.	**03**
	(b)	What is the significance of following work holding devices? Mandrel; four jaw independent chuck Draw simple line diagrams to support your answer.	**04**
	(c)	With the help of neat schematic diagrams explain the following alignment tests. 1. Spindle axis of radial drilling machine square with its table 2. Spindle axis of lathe parallel to its bed	**07**
Q.2	**(a)**	Discuss the parameters responsible to produce discontinuous chips during machining operation.	**03**
	(b)	Briefly explain the setting of various machining parameters for the following: 1. Achieving more material removal rate 2. Obtaining less surface roughness value on workpiece	**04**
	(c)	Draw neat schematic labeled diagrams of the following machining operations and briefly explain about relative motions and tooling needed for performing that operation. 1. Producing inclined flat surface on shaper machine 2. Boring operation on lathe machine	**07**
		OR	
	(c)	With the help of neat schematic diagram explain the procedure and set-up of cutting force measurement during machining of cylindrical workpiece on lathe machine using single point cutting tool.	**07**
Q.3	**(a)**	Explain drill geometry with the help of neat diagrams.	**03**
	(b)	Explain the following milling machine operations with sketch. Abreast milling; Straddle milling	**04**
	(c)	Draw and explain the mechanism which provides reciprocating motion to Ram on shaper machine.	**07**
		OR	
Q.3	**(a)**	What is deep hole drilling operation? What are the difficulties commonly observed in deep hole drilling operation?	**03**
	(b)	Differentiate between arbor mounted and shank mounted milling cutters. Give suitable examples of them.	**04**
	(c)	Draw and explain the mechanism which provides reciprocating motion to	**07**

Table on planner machine.

Q.4 **(a)** Bring out the difference between capstan and turret lathe. **03**

(b) List out different types of drilling machines. Briefly discuss important specifications of drilling machine. **04**

(c) Determine the suitable change gear train for cutting the following threads on work piece using a lathe machine equipped with a lead screw of 6 mm pitch. The available gears are 20 to 120 teeth in steps of 4 teeth. Draw the neat schematic diagram of end of bed gear train in each case to show the relative motions amongst work piece, gears, lead screw and cutting tool. **07**

1. 2 mm pitch, right hand, single start thread
2. 3 mm pitch, left hand, single start thread

Also mention the position of chasing dial at which it can be engaged to cut the same thread in successive cuts. Assume suitable data if it is necessary and clearly mention the same.

OR

Q.4 **(a)** Explain the features and functions of knee tool holder which is used on capstan and turret lathe. **03**

(b) Differentiate between orthogonal and oblique machining conditions with the help of suitable sketches of single point cutting tool. **04**

(c) Determine the machine set up and indexing required to cut 18 teeth slab milling cutter with right hand helical teeth on a universal milling machine with 6 mm pitch table screw. The diameter of cutter required is 150 mm and the lead of the helix is 600 mm with a tooth depth of 10 mm. The milling machine is supplied with a standard dividing head with a change gear set 20 to 120 in steps of 4 teeth. **07**

Q.5 **(a)** How are multiple keyways produced with the help of broaching operation? **03**

(b) With the help of neat diagrams explain the difference between up-milling operation and down-milling operation. **04**

(c) Explain the following terms with respect to grinding wheel. **07**

1. Dressing and truing operation
2. Loading and glazing of grinding wheel

OR

Q.5 **(a)** Differentiate between parting off operation on milling and sawing machine. **03**

(b) With the help of neat diagrams describe the application of dividing head milling attachment on milling machine. **04**

(c) Explain the principle of center less grinding process. Briefly discuss about through feed center less grinding and plunge cut center less grinding. **07**

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