

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2152007****Date: 25/11/2019****Subject Name: Manufacturing Technology - I****Time: 10:30 AM TO 01:00 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.

		MARKS
Q.1	(a) Draw and explain T-slot machining operation on milling machine.	03
	(b) What kind of workpieces are hold by 3-jaw self centering chuck and 4-jaw independent chuck during machining operations? Draw line diagrams to support your answer.	04
	(c) Differentiate between production of flat surfaces on lathe machine, milling machine and shaper machine.	07
Q.2	(a) Evaluate the statement: 'Capstan and Turret lathes are known as production lathe.'	03
	(b) With the help of schematic diagram explain broaching operation.	04
	(c) Briefly describe various machining parameters and conditions which are responsible to produce desired surface finish on machined surface of workpiece.	07
OR		
	(c) Explain the various cutting forces exerted during orthogonal and oblique machining operation using single point cutting tool with the help of suitable diagrams.	07
Q.3	(a) Differentiate between radial drilling machine and bench drilling machine.	03
	(b) Describe with sketch the alignment test on lathe to check whether the surface of face plate is normal to spindle axis.	04
	(c) Explain with the help of neat diagram the available mechanism to change the stroke length on shaper machine.	07
OR		
Q.3	(a) Describe with sketch the alignment test on drilling machine to check whether the feed movement of spindle is perpendicular to the table of machine.	03
	(b) Briefly explain deep-hole drilling operation and bring out the limitations of it.	04
	(c) Draw line diagram of vertical shaper machine with complete labeling. Explain the machining operation to produce key ways on cylindrical component using this machine.	07
Q.4	(a) Describe with neat sketch the plunge cut grinding operation on center type cylindrical grinding machine.	03
	(b) Determine the change gears to be set between stud and lead screw of a lathe machine without feed box to cut the following thread pitches:	04

1. 2.5 mm pitch single start thread
2. 2.3 mm pitch single start thread

The available change gears are 20 to 120 teeth in steps of 4 teeth and lathe machine is equipped with a lead screw of 3 mm pitch.

- (c) Explain the following milling machine operations with sketch. 07
Gang milling; String milling

OR

- Q.4 (a)** Briefly describe the following specification of grinding wheel. 03
Hardness of wheel; structure of wheel

- (b) A horizontal milling machine is available with standard universal dividing head milling attachment (i.e. 40:1 reduction ratio). Machine is also provided with standard brown and sharpe set of three index plates with following hole circles are present on it: 04

Plate1: 15,16,17,18,19,20

Plate2: 21,23,27,29,31,33

Plate3: 37,39,41,43,47,49

Your tasks:

1. Find out the indexing required to cut 35 teeth spur gear
2. Find out the indexing required to cut 54 teeth spur gear

- (c) Differentiate between arbor mounted and shank mounted milling cutters. List out various cutters in this category and write down related machining operation performed by these cutters in only one line for each cutter. 07

- Q.5 (a)** Bring out the difference between dressing and truing of grinding wheel. 03

- (b) With the help of line diagrams and brief description bring out the difference between vertical and horizontal milling machine. 04

- (c) Derive equation to find out set over distance in tail stock off set method used for taper turning operation on lathe machine. 07

OR

- Q.5 (a)** Draw neat schematic diagram of surface grinding operation with complete labeling. 03

- (b) List out various specifications of lathe machine. Explain them with only one line of description. 04

- (c) With the help of neat diagram explain the machine set-up for spiral milling operation on milling machine. 07
