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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (old) - EXAMINATION – SUMMER 2018

Subject Code:181903 Date:02/05/2018

Subject Name:Production Technology

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.**

Q.1	**(a)**	Draw the Merchants circle diagram and specify various entities on it. State the conditions under which it is valid.	**07**
	(b)	With the help of neat sketches explain (i) any one of the gear generating process (ii) any one of the thread manufacturing method	**07**
Q.2	**(a)**	Name the commonly used dielectric fluids. Explain the functions performed by the dielectric fluid in EDM process	**04**
		Explain the formation of "re-cast layer" in EDM process. Specify whether the "re-cast" layer is desirable or not.	**03**
	(b)	Data of an orthogonal cutting operation carried out on a mild steel workpiece of 80mm diameter, using a carbide tipped tool is given below: cutting speed = 280 m/min; feed = 0.25 mm/rev; cutting force = 1800 N; feed force = 1000N; and chip thickness = 0.32 mm, rake angle = 10°. Find the shear angle, shear force, normal force acting on the shear plane, friction force, coefficient of friction.	**07**
		OR	
	(b)	What do you mean by chip thickness ratio? How it is influenced by the shear plane angle?	**03**
		What are the functions of side rake and clearance angles? Can a single point tool have zero end cutting edge angle? Justify your answer	**04**
Q.3	**(a)**	What do you mean by ultrasonic? With the help of a neat sketch, explain the functions performed by various elements of the USM system.	**07**
	(b)	Why drives are required? Name the drives used in machine tools. Explain the working of any one of it (give a neat sketch).	**07**
		OR	
Q.3	**(a)**	Giving the relevant chemical reactions and a neat sketch, explain the ECM process	**07**
	(b)	Differentiate between single spindle and multi spindle automats.	**03**
		Sketch and label (i) any one of the commonly used bed section and (ii) any one of the column section. Also specify their applications	**04**
Q.4	**(a)**	Differentiate between conical and cylindrical locators. Give a neat sketch of each. Also give one example of use, in each type.	**07**
	(b)	Why clamping devices are used? List all of them. With the help of a neat sketch, explain the working of any one of them.	**05**
		Suggest and sketch a bush, if the surface on which the hole to be drilled is inclined to the axis of the drill.	**02**
		OR	
Q.4	**(a)**	What are drill bushes? Why are they used in a jig? Name different types of jigs. How does a leaf jig differ from a plate jig (give neat sketches of each)	**07**
	(b)	With the help of neat sketches, explain the terms (i) locating from plane surfaces and (ii) locating from circular surfaces	**07**

Q.5	**(a)**	Give the schematic illustration of shearing with a punch and die.	**04**
		With the help of neat sketches bring out the significance of clearance in shearing	**03**
	(b)	Explain the following terms and bring out their significance (give sketches, wherever required) (i) scrap-strip layout (ii) guide rails, stripper plates and piolets	**07**

OR

Q.5	**(a)**	Schematically illustrate the making of a washer in a progressive die.	**07**
	(b)	Citing a suitable example, explain the procedure to find the center of pressure. What is its significance in blanking	**07**

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