Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021

Subject Code:2161909 Date:30/11/2021

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	Define tool life and list the factors affecting tool life.	**03**
	(b)	Write short note on "Types of Chips in metal cutting".	**04**
	(c)	What do you understand by orthogonal and oblique cutting? How do they differ from each other?	**07**
Q.2	**(a)**	What is meant by fool proofing as applied to jigs and fixtures?	**03**
	(b)	Explain the essential characteristics and function of cutting fluid.	**04**
	(c)	List various principles of location and explain the 3-2-1 Principal of Location with neat sketches.	**07**
		OR	
	(c)	The following relates to orthogonal turning o f a mild steel rod of 40 mm diameter. Feed 0.9 mm; chip thickness 1.2 mm; work rotational speed 80 rpm. Calculate chip thickness ratio (r), chip reduction ratio (K) and total length of chip removed per minute.	**07**
Q.3	**(a)**	What are the differences between Jigs and Fixtures?	**03**
	(b)	Explain the function of (i) Die Block (ii) Punch.	**04**
	(c)	Draw the Merchant's circle diagram and derive relation among various forces acting on cutting tool.	**07**
		OR	
Q.3	**(a)**	What do you mean by chip with built up edge? What factors are responsible for this type of chip formation?	**03**
	(b)	What are crater wear and flank wear.	**04**
	(c)	Name several techniques for determining tool chip contact temperature. Describe the Tool/work thermocouple method of measuring temperatures.	**07**
Q.4	**(a)**	The useful tool life of a HSS tool machining mild steel at 18 m/min is 3 hours. Calculate the tool life when the tool operates at 24 m/min. Take n = 0.125	**03**
	(b)	Discuss Chasing with neat sketch.	**04**
	(c)	Explain with neat sketch manufacturing of gear by Gear shaping using pinion type cutters. What are the advantages of this method?	**07**
		OR	
Q.4	**(a)**	State the reasons why bush is used in jigs.	**03**
	(b)	Draw and discuss Hinged clamping device.	**04**
	(c)	Briefly explain about regions of heat generation and also explain about various factors affecting cutting temperature.	**07**
Q.5	**(a)**	Differentiate between a progressive die and a combination die.	**03**
	(b)	Write short note on material utilization factor for a sheet metal on a press tool using press tool die.	**04**
	(c)	Write short note on USM.	**07**

OR

Q.5	**(a)**	List the various process parameters that affect the MRR in EDM Machining.	**03**
	(b)	Write important functions of dielectric fluid.	**04**
	(c)	Describe water jet machining process with the help of neat sketch. State its advantages and application.	**07**

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