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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (old) - EXAMINATION – SUMMER 2017

Subject Code:181903 **Date:02/05/2017**

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 merchant's circle diagram and derive expressions to show relationship among different forces acting on single point cutting tool.	**07**
	(b)	In orthogonal turning of 50mm diameter mild steel bar on lathe the following data was obtained: rake angle=15˚, cutting speed=100 m/min, feed=0.2mm/rev, cutting force= 180 kg, feed force= 60 kg. Calculate: shear plane angle, co-efficient of friction and shear force if the chip thickness ratio =0.3mm	**07**
Q.2	**(a)**	Explain in detail "Principle of Location".	**07**
	(b)	A 300mm diameter bar is turned at 45 rpm with depth of cut 2mm and feed 0.3mm/rev. The forces measured are: cutting force=1850N and feed force=450N. Calculate: power consumption and specific cutting energy.	**07**
		OR	
	(b)	Differentiate between Jigs and Fixtures. What is a drilling jig. Explain different types of bushes used in drilling jigs.	**07**
Q.3	**(a)**	Compare gear hobbing and gear shaping as production processes with neat diagrams.	**07**
	(b)	Differentiate between compound die, combination die and progressive die with neat diagrams.	**07**
		OR	
Q.3	**(a)**	Discuss various methods of thread manufacturing in detail with neat diagrams.	**07**
	(b)	Explain the principle of metal shearing. Why is clearance provided in shearing operation.	**07**
Q.4	**(a)**	Define "Tool Life". Discuss various types of tool wears with neat diagrams.	**07**
	(b)	Define "Non-conventional machining". What is the need of these processes. Give classification of Non-conventional machining processes.	**07**
		OR	
Q.4	**(a)**	Define"Machinability". What is the importance of tool angles on the geometry single point cutting tool.	**07**
	(b)	Explain in detail the method of reducing cutting forces in press work.	**07**
Q.5	**(a)**	Explain in brief bar type and chucking type machines.	**07**
	(b)	Describe the principle of material removal in the Ultrasonic machining process. Also discuss how the following factors affect material removal (a) Grain size (b) Frequency (c) Amplitude	**07**

OR

Q.5	**(a)**	Explain various machine tool structures based on rigidity.	**07**
	(b)	Explain with diagram working of electro discharge machining process. State the characteristics of di-electric fluid.	**07**