

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2161909****Date: 03/05/2017****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		Short Questions	14
	1	What is meant by Material Utilization factor?	
	2	Define the terms Machinability and Machinability index	
	3	What is the use of Pressure plate in press setups ?	
	4	Write Tool signature according to ASA notation of the following : 16-12-8-8-10-15-3	
	5	Name the two common profiles used for gear teeth.	
	6	What do you mean by Oblique cutting?	
	7	Indicate the sources of energy in ECM and USM.	
	8	State two advantages of using Jigs and Fixtures.	
	9	Enlist the common methods for gear cutting.	
	10	When indexing fixtures are used?	
	11	Draw sketches of Acme thread and Square thread.	
	12	What is the function of Locating device?	
	13	Write comment on the bushes used in Drilling jigs.	
	14	Which Abrasives are used in AJM?	
Q.2	(a)	Sketch a single point cutting tool and show on it the various tool elements and tool angles.	03
	(b)	Write short note on “Types of Chips in metal cutting”.	04
	(c)	With usual notations draw and explain ‘Merchant’s circle diagram’.	07
		OR	
	(c)	In an orthogonal cutting operation, the following data have been observed: Uncut chip thickness = 0.127mm Width of cut = 6.35 mm Cutting speed = 2 m/s Cutting force = 567 N Thrust force = 227 N Chip thickness = 0.228 mm Rake angle = 10^0 Calculate shear angle, shear stress along the shear plane, chip velocity and the power for the cutting operation.	07
Q.3	(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)	Write short note on “Economics of Machining”	04
	(c)	What is Cutting fluid? Explain in brief Purpose of cutting fluids and Properties of Cutting fluids.	07

		OR	
Q.3	(a)	What are the differences between Jigs and Fixtures?	03
	(b)	Explain Characteristics of Cutting Tool materials. Enlist Types of Tool materials.	04
	(c)	Write short note on : (1) 3-2-1 Principle of location (2) Box Jig	07
Q.4	(a)	Give classification of Dies.	03
	(b)	What is Power clamping? State merits of power clamping over mechanical clamping.	04
	(c)	Write difference between: (1) Progressive and Combination dies (2) Piercing and Blanking operations	07
		OR	
Q.4	(a)	Differentiate clearly between gear forming and gear generating methods.	03
	(b)	Enlist various gear finishing processes. Explain any one of them.	04
	(c)	State various thread manufacturing methods. Explain any two of them briefly.	07
Q.5	(a)	Explain any one method of reducing cutting forces in press working.	03
	(b)	Briefly describe the principle of EDM with a neat sketch.	04
	(c)	Describe the operation of electro chemical grinding (ECG) with the help of a neat sketch? What are the differences between ECG and conventional grinding?	07
		OR	
Q.5	(a)	Give brief classification of Non-conventional Machining processes.	03
	(b)	Explain Advantages, Limitations of Ultrasonic machining briefly.	04
	(c)	What is Laser? Explain briefly the working principle of Laser beam Machining. State its advantages.	07
