Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – SUMMER 2013

Subject Code: 181903 **Date: 15/05/2013**

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)** Define Non-conventional machining? Why do we need these processes? Give classification of the Non conventional processes? **07**

(b) Distinguish between jig and fixture. State advantages of jigs and fixtures. **07**

Q.2 **(a)** Write in detail the methods of reducing the cutting forces in press working. **07**

(b) Discuss the various types of pilots used in progressive die. **07**

OR

(b) Sketch and design a progressive die to make a steel washer 30 mm outside diameter with 15 mm hole. From 1.6 mm thick steel sheet. The ultimate shear strength of the material is 320 N/mm^2. Calculate, **07**

a. Maximum punch force necessary to blank and punch the washer if both punches operate at the same time.
b. Punch and die size for piercing and blanking operation

Q.3 **(a)** Write short note on ï ñLathe tool Dynamometerò. **07**

(b) In orthogonal cutting, if the feed is 1.25 mm/rev and chip thickness after cutting is 2mm, determine the following. **07**

1. Chip thickness ratio
2. Shear angle

The tool bit has a rake angle of 10º.

If shear strength = 600 N/mm^2

Width of cut = 10 mm

Cutting speed = 30 m/min

Co-efficient of friction = 0.9

Determine,

a. Shear force
b. Friction angle
c. Cutting force
d. Horse power at the cutting tool

OR

Q.3 **(a)** Draw Merchantôs force diagram. Derive the equations for frictional force, normal reaction, shear force and normal force. **07**

(b) The following equation for tool life has been obtained for H. S. S. tool. **07**

$$VT^{0.13} f^{0.6} d^{0.3} = C$$

A 60 minute tool life was obtained while cutting at V = 40 m/min, f = 0.25 mm/rev and d= 2 mm.

Calculate the effect on tool life if speed, feed and depth of cut are together increased by 25% and also if they are increased individually by 25%. Also give your comments.

Q.4	**(a)**	What is LASER? Explain LBM.	**07**
	(b)	Describe the degrees of freedom for workpiece located in space. Draw a simple sketch to show the 3-2-1 locating principle and explain.	**07**

OR

Q.4	**(a)**	List various clamping devices used in jigs and fixtures. Sketch any two clamping devices and explain its working.	**07**
	(b)	Write important functions of dielectric fluid and electrolyte. Also write various types of commonly used dielectric fluid and electrolyte.	**07**
Q.5	**(a)**	Explain with the help of sketch, principle, types, and applications of gear hobbing.	**07**
	(b)	Describe the essential parts of turret lathe. What is the field of application of turret lathe?	**07**

OR

Q.5	**(a)**	Write short note on Gear finishing process.	**07**
	(b)	Discuss the various types of multi spindle automats.	**07**

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