Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Examination December 2009

Subject code: 131903 **Subject Name: Manufacturing Process-I**

Date: 29 / 12 / 2009 **Time: 11.00 am – 1.30 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)**	Explain different taper turning methods.	**05**
	(b)	Write short note on different type of chucks used in a lathe.	**05**
	(c)	Explain different operations performed with the help of a lathe.	**04**
Q.2	**(a)**	Explain different factors affecting the tool life.	**04**
		A cutting tool cutting at 22 m/min, gave a life of 60 minutes between regrinds when operating on roughening cuts with mild steel. What will be its probable life when engaged on light finishing cuts? Take n = 1/8 and 1/10 for roughening and finishing cuts respectively in Taylor's tool life equation.	
	(b)	Explain single point cutting tool geometry.	**03**
	(c)	Explain hydraulic shaper mechanism.	**07**
		OR	
	(c)	Explain crank and slotted link quick return mechanism in a shaper.	**07**
Q.3	**(a)**	Explain different types of reamers used in drilling.	**05**
	(b)	Explain instruments used in the alignment test of a lathe.	**05**
	(c)	Explain jig boring machine.	**04**
		OR	
Q.3	**(a)**	Explain different types of milling cutters.	**05**
	(b)	Explain different indexing methods used in milling machine.	**05**
	(c)	Index for 87 divisions with the help of compound indexing.	**04**
Q.4	**(a)**	Explain grinding wheel designation system.	**05**
	(b)	Differentiate between centre type and centre less grinding machines.	**05**
	(c)	Explain Trueing and Dressing of grinding wheel.	**04**
		OR	
Q.4	**(a)**	Explain basic methods of milling.	**05**
	(b)	Explain the slotted disc mechanism in slotting machine.	**05**
	(c)	Differentiate between a shaper and a planer.	**04**
Q.5	**(a)**	Write advantages, limitations and applications for broaching.	**05**
	(b)	Explain different types of saw bands in sawing machine.	**05**
	(c)	Explain different operations performed with the help of a drilling machine.	**04**
		OR	

Q.5 **(a)** A work piece 200 mm x 300 mm is to be machined on a shaper. Calculate the machining time by considering following parameters. **05**
Cutting speed = 10 m/min.
Return speed = 20 m/min.
Feed = 5 mm/full stroke.
Clearance at each end = 50 mm.

(b) A hole of 25 mm diameter and 62.5 mm depth is to be drilled. The suggested feed is 1.25 mm/rev.and the cutting speed is 60 m/min. Assume the clearance height is 5 mm. Determine: feed speed, spindle rpm, cutting time and Material removal rate. **05**

(c) A 150 mm long 12.7 mm diameter stainless steel rod is being turned to 12.19 mm diameter on a centre lathe. Spindle speed = 400 rev./min. **04**
Axial speed = 203.20 mm/min.
Determine: cutting speed, Material removal rate and Machining time.

****