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   **04**
       machine.
                                              OR

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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.
Cutting speed = 10 m/min.
Return speed = 20 m/min.
Feed = 5 mm/full stroke.
Clearance at each end = 50 mm.   **05**

(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.
Axial speed = 203.20 mm/min.
Determine: cutting speed, Material removal rate and Machining time.   **04**

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