

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEM-VI Examination-Nov/Dec-2011**

**Subject code: 162505**

**Date: 02/12/2011**

**Subject Name: Estimating, Costing & Engineering Economics**

**Time: 10.30 am -1.00 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) State the advantages of an efficient costing. **07**  
(b) Explain in brief how to control costs. **07**

- Q.2** (a) A certain piece of work is produced by a firm in batches of 100. The direct material cost for that 100 pieces work is Rs 1600/- and the direct labour cost is Rs 2000. Factory on-cost is 35% of the total material and labour cost. Overhead charges are 20% of the factory cost. Calculate prime cost and factory cost. If the management wants to make a profit of 10% on the gross cost, determine the selling price of each article. **07**  
(b) The market price of a lathe is Rs 50000 and the discount allowed to the distributor is 20% of the market price. It is found that the selling expense cost is  $\frac{1}{4}$ <sup>th</sup> the factory cost and if the material cost, labour cost, and factory overhead charges are in the ratio of 2:4:2; what profit is made by the factory on each lathe, if the material cost is Rs 4000? Neglect other overheads. **07**

**OR**

- (b) A factory is producing 1000 bolts and nuts per hour on a machine. Its material cost is 575, labour cost Rs 445 and the direct expenses is Rs 183. The factory on- cost is 150% of the total labour cost and office on-cost is 30% of the total factory cost. If the selling price of each bolt and nut is Rs 15, calculate whether the management is going in loss or profit and by what amount? **07**
- Q.3** (a) A lathe is purchased for Rs 80000/- and the assumed life is 10 years and scrap value Rs 20000. If the depreciation is charged by Diminishing Balance method, calculate the percentage by which value of the lathe is reducing every year and depreciation fund after 2 years. **07**  
(b) A machine is costing Rs 66000 and is expected to run for 10 years at the end of which its scrap value is likely to be Rs 6000. Machine is expected to run 2000 hours per year on an average. Estimate the depreciation charge per hour of the machine. **07**

**OR**

- Q.3** (a) Estimate the weight of C.I. used in manufacturing step pulley as shown in Figure: 1. Assume density of C.I. as 7.2 gm/cc **07**  
(b) Estimate the total time taken to turn a 150 mm long, 30 mm diameter M.S. rod to a diameter of 28 mm in a single cut. Assume cutting speed to be 30 m/min, feed to be 0.1 mm/rev. and the mounting time in self centering chuck to be 50 seconds. Neglect time taken for setting up tool etc. **07**

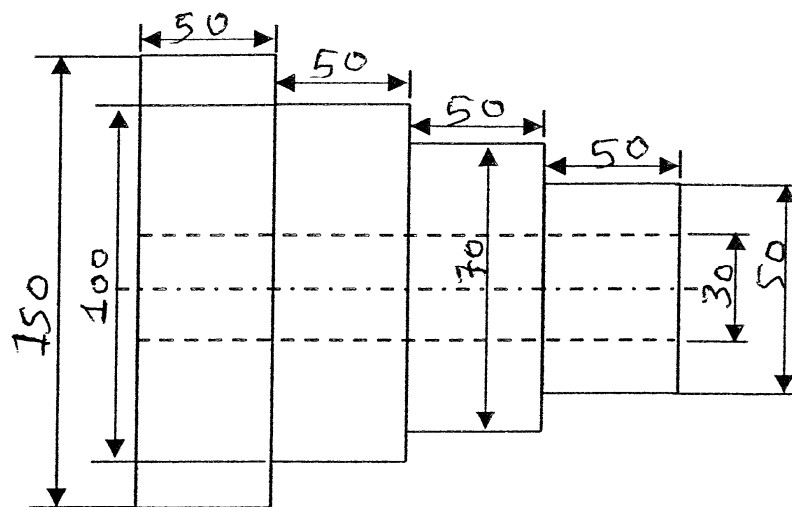
- A circular Aluminium rod is to be reduced from 5 to 4 cm for a length of 100 mm in two cuts. Assuming cutting speed as 300 m/min and feed as 0.01 cm/rev, estimate the time required for turning. 07
- Q.4 (a)** Find the time required to drill 6 holes in a casted flange, each of 1 cm depth, 07  
if the hole dia. is 2 cm. Assume cutting speed as 20 m/min and feed as .02 cm/rev.

**OR**

- Q.4 (a)** Estimate the time required for cutting 3 mm pitch threads on a M.S. bar of 07  
2.8 cm diameter and 10 cm long. Assume the cutting speed for threading as 15 m/min.
- (b)** A slot is to be made on a milling machine with the help of a cutter, 07  
revolving at 120 r.p.m. Find the time required to prepare the slot in two cuts, if it is 2 cm deep and 10 cm long with a cutter of 8 cm dia. Assume the feed as 0.5 mm/rev.
- Q.5 (a)** A 20 x 5 cm C.I. surface is to be faced on a milling machine with a cutter 07  
having a diameter of 10 cm and 16 teeth. If the cutting speed and feed are 50 m/min and 5 cm/min respectively, determine the milling time, rpm of the cutter and feed per tooth.
- (b)** Find the time required for doing rough grinding of a 15 cm long steel shaft 07  
to reduce its diameter from 4 to 3.8 cm with the grinding wheel of 2 cm face width. Assume cutting speed as 15 m/min and depth of cut as 0.25 mm.

**OR**

- Q.5 (a)** Find out the time required for shaping a block of 30 cm x 15 cm size in two 07  
cuts. Assume feed as 0.6 mm/stroke and cutting speed as 15 m/min.
- (b)** A machine bed is to be planed in two cuts on a planing machine. It takes 07  
10 seconds in forward stroke and 4 seconds in return stroke. Find out the time required to plane the bed of width 60 cm. Assume the feed as 2 mm/strokes and tool clearance 5 cm.



All dimensions are in mm. Figure not to scale

Figure: 1 Question: 3(a)