

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013****Subject code: 714605****Date: 11-06-2013****Subject Name: Engineering Economics and Financial Management****Time: 10.30 am – 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)** Attempt the following questions. **07**
1. Why value of money is changed with respect to time?
 2. Explain: Role of Engineering Economy in decision making of engineering industries.
 3. Compare: Simple interest and Compound interest.
- (b)** Prepare a balance sheet of Amin Engg. Co. Ltd. with the help of following financial data as on 31/3/2013. Calculate the working capital and current liquidity ratio. **07**

<u>Details</u>	<u>Amount in Rs. (lacs)</u>
" Cash in hand -----	25
" Machinery of plant -----	330
" Vehicles -----	30
" Work in Progress -----	24
" Share capital -----	100
" Cash in bank account-----	32
" Raw material stock -----	15
" Finished goods stock -----	16
" Payment to be made in 45 days -----	22
" Payment to be received from customers (30 days) --	10
" Loan taken from bank for 5 years -----	120
" Building -----	42
" Share premium account -----	200
" Reserves -----	75

- Q.2 (a)** A Works Manager is trying to decide between two machines with the estimates presented below. **07**

	<u>Machine A</u>	<u>Machine B</u>
First cost, P (Rs)	60,000	90,000
Annual Operating Cost, (AOC)	20000	25,000
Salvage Value (SV), Rs.	12,000	15,000
Life, (years)	3	6

Determine which machine should be selected on the basis of Present Worth (PW) Analysis, if rate of interest is 10% / year.

- (b) A small water utility is trying to decide between installing a laboratory for conducting the required water analysis or sending samples to a private laboratory. For establishment of laboratory, initial investment of Rs.3,00,000 will be required. In addition, a full time technician will have to be hired at a cost of Rs.4000 /month. A total of 400 analytical tests are required each month. 07

If the analysis is done in-house, the cost /sample will average Rs.3, but if the samples are sent to an outside lab, the average cost will be Rs.25. The equipment purchased for lab is expected to have a useful life of 5 years. If the utility uses an interest rate of 10% /year, determine the **Benefit to cost ratio** for the project.

OR

- (b) A city engineer is considering two alternatives for the local water supply. 07

First alternative: The construction of earthen Dam on a near by river, which has highly variable flow. The dam will form a reservoir, so the city may have a dependable source of water. Initial cost = Rs. 80,00,000; Annual upkeep cost = Rs. 25,000; Life of dam is expected to last infinitely.

Second alternative: Drilling of wells as needed and construct pipelines for transport of water. Average 10 wells are required.

Initial cost = 45,000 per well, including pipe line Average life = 5 years; Annual operating cost = Rs.12,000 per well. If $i = 10\%$ per year, which alternative should be selected on the basis of **Capitalized Cost**?

- Q.3** (a) 1. A person is investing 1,00,000 in term deposit now, and how much money will be accumulated (compound) at interest rate of 10% and after 8 years? Draw cash flow diagram. 07

2. How much money should be invested that is guaranteed to yield Rs. 8,000/- per year for 10 years starting from next year, at an interest of 10% per year? Draw cash flow diagram.

- (b) 1. Explain: Fixed cost and Variable cost. 07

2. A product is manufactured in the batch of 200 quantities. The direct material cost is Rs. 3400, and direct labour cost is Rs. 2600. Consider overheads as 50% of direct costs, and marketing expenses are Rs.25 / product. If selling price is Rs.100 per product, then find the profit / product.

OR

- Q.3** (a) A small engineering company has following department-wise actual costing. Apportion the overheads to the workshops. Apportion of administration should be on purchase and apportion of purchase & stores should be on two shops. 07

Cost Centers	Department Overheads	No. of people	Direct Material Cost
Administration	40,000	2	-
Purchase & stores	60,000	2	-
Fabrication shop	80,000	18	3,10,000
Painting shop	70,000	12	1,40,000
	2,50,000	34	4,50,000

- (b) 1. What is depreciation? What are different methods of depreciation? **07**
 2. The cost of a car is Rs. 6,00,000, scrap value is Rs. 50,000, estimated life = 10 years, Depreciation rate = 10%. Calculate the annual depreciation by Straight line method.
- Q.4 (a)** 1. What are the important factors of production? Explain significance of each factor. **07**
 2. Explain: Break Even Point (BEP) Analysis along with graphical representation.
- (b) 1. What is division of labour? What are the advantages of making divisions of labour? **07**
 2. Explain: Product Life Cycle with significant features of its four stages along with nature of curve.
- OR**
- Q.4 (a)** 1. What are the advantages of large scale production? **07**
 2. Compare between direct cost and indirect cost.
- (b) 1. Explain: Law of Demand with nature of curve. **07**
 2. Enlist different methods of long term financing? Explain any one.
- Q.5 (a)** Explain: Profit-Volume ratio in the context of costing. (with sketch) **07**
(b) Explain: Reducing balance method of depreciation. (with sketch) **07**
- OR**
- Q.5 (a)** Explain: Primary market and Secondary market. **07**
(b) Which are different ratios of a financial statement? Define any two. **07**
