

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E - SEMESTER. – I - EXAMINATION – WINTER- 2013****Subject Code: 714605****Date:01/01/2014****Subject Name: ENGINEERING ECONOMICS & FINANCIAL  
MANAGEMENT****Time:10:30 to 13:00****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 the following terms. 07**

(i) Fixed cost, (ii) Variable cost, (iii) Direct cost, (iv) Depreciation, (v) Salvage value, (vi) Common size analysis, (vii) Index Analysis

**(b) Attempt any three of the following. 07**

What is time value of money?

What are the features of sole proprietorship?

Which are the functions of management? Explain any one.

What is economic batch quantity? How it can be determined?

**Q.2 (a) Prepare a balance sheet of Maxel Engineering Co. Pvt. Ltd. with the help of following financial data as on 31/3/2013. Calculate the working capital, current liquidity ratio and net worth of the company. 07**  
Amount in lacs.

<u>Details</u>	<u>Amt.</u>	<u>Details</u>	<u>Amt.</u>
Cash in hand	25	Raw material stock	15
Machinery of plant	130	Finished goods stock	16
Vehicles	30	Payment to be made in 45 days	20
Work in Progress	24	Payment to be received in 30 days	10
Share capital	100	Loan taken from bank for 5 years	125
Cash in bank account	32	Plant Building	40
Reserves	75	Share premium account	80
Depreciation	10%		

**(b) Select the better of the two alternatives shown below using an interest rate of 10% per year and the B/C ratio method. Assume one of the alternatives must be selected. 07**

	<u>Alternative X</u>	<u>Alternative Y</u>
First cost, Rs.	3,20,000	5,40,000
Annual M & O cost, Rs.	45,000	35,000
Annual benefits, Rs.	1,10,000	1,50,000
Life, years	10	20

**OR****(b) Calculate the capitalized cost of a project that has an initial cost of Rs.2,00,000 and an additional investment cost of Rs.40,000 after 10 years. The annual operating cost will be Rs.6000 for the first 4 years and Rs.9000 thereafter. In 07**

addition, there is expected to be recurring major rework cost of Rs.20,000 every 12 years. Assume that interest rate is 15% per year.

- Q.3 (a)** An industry wants to purchase any one machine attachment option out of following two different offers on the basis of **Present Worth Analysis**. **07**

	<u>Company A</u>	<u>Company B</u>
First cost, P (Rs.)	80,000	1,00,000
Annual Operating Cost, (AOC)	12,000	16,000
Salvage Value (SV), Rs.	10,000	15,000
Life, (years)	5	10
Rate of interest is	10% / year	10% / year.

- (b)** ➤ Explain: Fixed cost and Variable cost with sketch. **07**  
 ➤ A company manufactures a product for a stable market; where demand is 500 units/month. Machine setup cost / batch = 250, Stock holding cost = 10% of stock volume/annum, Unit cost = Rs.180. The products are made in batches, with all units in each batch being completed at same time, calculate Economic Batch Quantity.

**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, Rs.	No. of people	Direct Material Cost
Administration	40,000	4	-
Purchase & stores	60,000	4	-
Cutting shop	40,000	4	2,50,000
Fabrication shop	90,000	16	1,10,000
Painting shop	70,000	12	1,40,000
	3,00,000	40	5,00,000

- (b)** ➤ What is depreciation? Explain the reducing balance method with curve. **07**  
 ➤ The cost of a car is Rs.4,00,000, scrap value is Rs.40,000, estimated life = 12 years. Calculate the annual depreciation by Straight line method.

- Q.4 (a)** ➤ Explain: Break Even Point (BEP) Analysis along with graphical representation. Explain Margin of Safety on the diagram. **07**  
 ➤ Draw a Break Even chart using following details using appropriate scale. Selling price = Rs.100/unit; Fixed cost = Rs.1,50,000; Variable cost = Rs.60 /unit and volume of sales is 2000, 4000, 6000, 8000, 10000 units. Find the Break Even Quantity.

- (b)** ➤ What is division of labour? Why divisions of labour is necessary? **07**  
 ➤ What are the important factors of production? Explain significance of each.

**OR**

- Q.4 (a)** ➤ What is elasticity of demand? Explain increase, decrease, expansion and contraction of demand with diagram. **07**

- What is capital budgeting? Write the stepwise procedure for the same.  
**(b)** ➤ Explain: Equilibrium condition of demand and supply curve. **07**  
 ➤ Enlist different methods of long term financing? Explain any one.

- Q.5 (a)** Explain: Short term capital finance versus Long term capital finance. **07**

- (b)** Explain: Hedging approach in working capital financing. **07**

**OR**

**Q.5 (a)** Explain the characteristics of Pure market, Perfect market and Imperfect market. **07**

**(b)** Name different financial ratios? Why it is calculated? Explain any two. **07**

\*\*\*\*\*

Factors table for 10% Interest Rate

10%		Table 15 Discrete cash flow: compound interest factors					10%	
n	Single Payments		Uniform-Series Payments				Uniform Gradient	
	Compound Amount F/P	Present Worth P/F	Sinking Fund A/F	Compound Amount F/A	Capital Recovery A/P	Present Worth P/A	Gradient Present Worth P/G	Gradient Annual Series A/G
1	1.1000	0.9091	1.00000	1.0000	1.10000	0.9091		
2	1.2100	0.8264	0.47619	2.1000	0.57619	1.7355	0.8264	0.4762
3	1.3310	0.7513	0.30211	3.3100	0.40211	2.4869	2.3291	0.9366
4	1.4641	0.6830	0.21547	4.6410	0.31547	3.1699	4.3781	1.3812
5	1.6105	0.6209	0.16380	6.1051	0.26380	3.7908	6.8618	1.8101
6	1.7716	0.5645	0.12961	7.7156	0.22961	4.3553	9.6842	2.2236
7	1.9487	0.5132	0.10541	9.4872	0.20541	4.8684	12.7631	2.6216
8	2.1436	0.4665	0.08744	11.4359	0.18744	5.3349	16.0287	3.0045
9	2.3579	0.4241	0.07364	13.5795	0.17364	5.7590	19.4215	3.3724
10	2.5937	0.3855	0.06275	15.9374	0.16275	6.1446	22.8913	3.7255
11	2.8531	0.3505	0.05396	18.5312	0.15396	6.4951	26.3963	4.0641
12	3.1384	0.3186	0.04676	21.3843	0.14676	6.8137	29.9012	4.3884
13	3.4523	0.2897	0.04078	24.5227	0.14078	7.1034	33.3772	4.6988
14	3.7975	0.2633	0.03575	27.9750	0.13575	7.3667	36.8005	4.9955
15	4.1772	0.2394	0.03147	31.7725	0.13147	7.6061	40.1520	5.2789
16	4.5950	0.2176	0.02782	35.9497	0.12782	7.8237	43.4164	5.5493
17	5.0545	0.1978	0.02466	40.5447	0.12466	8.0216	46.5819	5.8071
18	5.5599	0.1799	0.02193	45.5992	0.12193	8.2014	49.6395	6.0526
19	6.1159	0.1635	0.01955	51.1591	0.11955	8.3649	52.5827	6.2861
20	6.7275	0.1486	0.01746	57.2750	0.11746	8.5136	55.4069	6.5081
21	7.4002	0.1351	0.01562	64.0025	0.11562	8.6487	58.1095	6.7189
22	8.1403	0.1228	0.01401	71.4027	0.11401	8.7715	60.6893	6.9189
23	8.9543	0.1117	0.01257	79.5430	0.11257	8.8832	63.1462	7.1085
24	9.8497	0.1015	0.01130	88.4973	0.11130	8.9847	65.4813	7.2881
25	10.8347	0.0923	0.01017	98.3471	0.11017	9.0770	67.6964	7.4580
26	11.9182	0.0839	0.00916	109.1818	0.10916	9.1609	69.7940	7.6186
27	13.1100	0.0763	0.00826	121.0999	0.10826	9.2372	71.7773	7.7704
28	14.4210	0.0693	0.00745	134.2099	0.10745	9.3066	73.6495	7.9137
29	15.8631	0.0630	0.00673	148.6309	0.10673	9.3696	75.4146	8.0489
30	17.4494	0.0573	0.00608	164.4940	0.10608	9.4269	77.0766	8.1762
31	19.1943	0.0521	0.00550	181.9434	0.10550	9.4790	78.6395	8.2962
32	21.1138	0.0474	0.00497	201.1378	0.10497	9.5264	80.1078	8.4091
33	23.2252	0.0431	0.00450	222.2515	0.10450	9.5694	81.4856	8.5152
34	25.5477	0.0391	0.00407	245.4767	0.10407	9.6086	82.7773	8.6149
35	28.1024	0.0356	0.00369	271.0244	0.10369	9.6442	83.9872	8.7086
40	45.2593	0.0221	0.00226	442.5926	0.10226	9.7791	88.9525	9.0962
45	72.8905	0.0137	0.00139	718.9048	0.10139	9.8628	92.4544	9.3740
50	117.3909	0.0085	0.00086	1163.91	0.10086	9.9148	94.8889	9.5704
55	189.0591	0.0053	0.00053	1880.59	0.10053	9.9471	96.5619	9.7075
60	304.4816	0.0033	0.00033	3034.82	0.10033	9.9672	97.7010	9.8023
65	490.3707	0.0020	0.00020	4893.71	0.10020	9.9796	98.4705	9.8672
70	789.7470	0.0013	0.00013	7887.47	0.10013	9.9873	98.9870	9.9113
75	1271.90	0.0008	0.00008	12709	0.10008	9.9921	99.3317	9.9410
80	2048.40	0.0005	0.00005	20474	0.10005	9.9951	99.5606	9.9609
85	3298.97	0.0003	0.00003	32980	0.10003	9.9970	99.7120	9.9742
90	5313.02	0.0002	0.00002	53120	0.10002	9.9981	99.8118	9.9831
95	8556.68	0.0001	0.00001	85557	0.10001	9.9988	99.8773	9.9889
96	9412.34	0.0001	0.00001	94113	0.10001	9.9989	99.8874	9.9898
98	11389	0.0001	0.00001		0.10001	9.9991	99.9052	9.9914
100	13781	0.0001	0.00001		0.10001	9.9993	99.9202	9.9927