OPEN UNIVERSITY OF SRI LANKA LIBRARY

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
BACHELOR OF TECHNOLOGY-LEVEL 5
FINAL EXAMINATION 2007/2008
MEM5336 - MANAGEMENT FOR ENGINEERS
DATE : 23RD MAY 2008
TIME : 0930 – 1230 HRS
DURATION : THREE HOURS

This question paper has two sections, Section A and Section B. Answer any Five Parts from Section A and any Five Questions from Section B.

1. Answer any **Five** Parts. Each part carries equal marks.

   (a) Write down the contributions made by Elton Mayo on "Behavioural Management Theory".

   (b) What are the two basic Theories in Motivation? Explain each Theory briefly.

   (c) Sketch two types of Organizational Structures familiar to you.

   (d) Explain the term "Leadership" briefly.

   (e) What are Marketing Variables?

   (f) Explain the Break Even Analysis used in decision making.

   (g) List the different methods used to evaluate a Capital Project.

   (h) Compare and contrast between Production and Productivity.

(20 Marks)

2 (a) Discuss the validity of Herzberg's Two Factor Theory in relation to the Sri Lankan scenario.

(08 Marks)

(b) Leaders are born, not made".
Critically analyze this statement drawing examples from leadership theories and approaches.

(08 Marks)

3. (a) Briefly describe the control process cycle, taking examples which are familiar to you.

(05 Marks)

(b) What are the functions of a Human Resource Manager with regard to staffing?

(05 Marks)

(c) Low priority is given to the training and development of manpower in industries in Sri Lanka. Describe in detail the reasons for this unfortunate situation

(06 Marks)

4. (a) Explain the following terms.

(i) Ledger
(ii) Balance sheet
(iii)Journal

(04 Marks)

(b) Prepare a Trial Balance for a company as at 31st March 2006 where the following transactions have taken place.

(04 Marks)

	Value in Rs. ,000
Bank account	5,000
Capital on 1st April 2005	11,000
Cash in hand	1,000
Drawings	8,000
Motor Bicycles	1,000
Vehicle expenses	2,000
Office expenses	3,000
Purchases	30,000
Trade creditors	4,000
Trade debtors	10,000
Sales	50,000

Assume a situation where there has been no opening or closing stocks.

Based on the above data and information, produce,

(i) Profit and loss account for the company for the year ending 31st March 2006.

(04 Marks)

(ii) Balance sheet of the Company as at 31st March 2006.

(04 Marks)

5. (a) Give reasons for implementing an inventory control system in a manufacturing organization.

(03 Marks)

(b) Show that the total yearly cost in an economic lot size model is,

$$K = \frac{A\lambda}{Q} + \frac{IQ}{2} + Is + C\lambda$$

And variable cost $K = \frac{A\lambda}{Q} + \frac{IQ}{2}$ (When $s = 0$)

Where λ = Demand (units/unit time)
Q = Lot size in units
s = Minimum stock level in units
I = Stock holding cost/unit/unit time
C = Cost of one unit of item
A = Administrative cost

UNIVERSITY OF SRI JAYEWARDENEPURA LIBRARY

(03 Marks)

Also show that for the minimum value of K,

$$\overset{*}{Q} = \frac{\sqrt{2\lambda A}}{I} \qquad \overset{*}{K} = \sqrt{2\lambda AI}$$

(03 Marks)

(c) Hence, show graphically the variation of K and Q.

(03 Marks)

(d) A company assembles Television sets. It purchases 3,600 colour picture tubes a year at Rs.6,500 each. Order cost is Rs.3, 100 and annual stock holding cost is 20% of purchase price. All other items required for the assembly of TV sets are available within the company and no additional costs are involved by the company for holding them in inventory. Compute the followings.

(i) Optimum quantity of TV sets to be produced annually.
(ii) Total annual ordering cost
(iii) Stock holding cost of TV sets.

(04 Marks)

6. (a) Explain the objectives of "Transportation Model".

(03 Marks)

What are the conditions that should be satisfied when finding a basic solution in a transportation problem?

(03 Marks)

(b) Large identical oil containers fabricated at (03) separate production yards are transported to (04) warehouses regularly before they are shipped or taken delivery by the distributors. The transportation costs (in Rupees) from the three yards to the warehouses are given in the following matrix.

Warehouses / Yards	A	B	C	D
1	4	6	8	8
2	6	8	6	7
3	5	7	6	8

The number of oil containers produced in unit time by the three yards 1,2 and 3 are 40, 60 and 50 respectively. The demand at the warehouses in unit time A,B,C and D are20,30,50 and 50 respectively.

(i) Determine the transportation cost as a basic solution.

(05 Marks)

(ii) Calculate the minimum transportation cost.

(05 Marks)

7. (a) What are the different concepts in marketing?

(03 Marks)

Briefly describe the above mentioned concepts with practical examples.

(03 Marks)

(b) Consider the following three products.
(i) Soap
(ii) A filter to reduce pollution from motor vehicles
(iii) Sausages

Describe how you would market these three products taking into consideration the controllable and uncontrollable variables.

(06 Marks)

(c) Describe how you would market a product familiar to you, using all the marketing channels.

(04 Marks)

8. (a) Briefly discuss the different techniques you will apply in evaluating a capital project.

(06 Marks)

(b) The cost of a machine which was used in producing goods is Rs. 100,000. Cash flows during the lifetime of the machine during production are as follows.

Year	Net cash flow
1	5,000
2	10,000
3	20,000
4	30,000
5	40,000
6	30,000
7	25,000

OPEN UNIVERSITY OF SRI LANKA LIBRARY

Assume that the scrap value of the machine at the end of the 7th year is Rs.15.000/-
Cost of capital is given as 15%. Calculate the Internal Rate of Return (IRR).
Based on the above comment whether the project is feasible or not.

(10 Marks)

You may use the Table A attached.

9. (a) Write down the objectives of a Maintenance Department in a Factory.

(05 Marks)

(b) Explain the specific functions of a Maintenance Engineer in a typical plant engaged in continuous production of products such as Cement.

(05 Marks)

(c) "Preventive maintenance cost can be reduced with the implementation of condition based maintenance". Comment on this statement.

(06 Marks)

All Rights Reserved.

TABLE A—PRESENT VALUE OF ONE UNIT—VALUE OF MONEY

Years Hence	1%	2%	4%	6%	8%	10%	12%	14%	15%	16%	18%	20%	22%	24%	25%	26%	28%	30%	35%	40%	45%	50%
1	0·990	0·980	0·962	0·943	0·926	0·909	0·893	0·877	0·870	0·862	0·847	0·833	0·820	0·806	0·800	0·794	0·781	0·769	0·741	0·714	0·690	0·667
2	0·980	0·961	0·925	0·890	0·857	0·826	0·797	0·769	0·756	0·743	0·718	0·694	0·672	0·650	0·640	0·630	0·610	0·592	0·549	0·510	0·476	0·444
3	0·971	0·942	0·889	0·840	0·794	0·751	0·712	0·675	0·658	0·641	0·609	0·579	0·551	0·524	0·512	0·500	0·477	0·455	0·406	0·364	0·328	0·296
4	0·961	0·924	0·855	0·792	0·735	0·683	0·636	0·592	0·572	0·552	0·516	0·482	0·451	0·423	0·410	0·397	0·373	0·350	0·301	0·260	0·226	0·198
5	0·951	0·906	0·822	0·747	0·681	0·621	0·567	0·519	0·497	0·476	0·437	0·402	0·370	0·341	0·328	0·315	0·291	0·269	0·223	0·186	0·156	0·132
6	0·942	0·888	0·790	0·705	0·630	0·564	0·507	0·456	0·432	0·410	0·370	0·335	0·303	0·275	0·262	0·250	0·227	0·207	0·165	0·133	0·108	0·088
7	0·933	0·871	0·760	0·665	0·583	0·513	0·452	0·400	0·376	0·354	0·314	0·279	0·249	0·222	0·210	0·198	0·178	0·159	0·122	0·095	0·074	0·059
8	0·923	0·853	0·731	0·627	0·540	0·467	0·404	0·351	0·327	0·305	0·266	0·233	0·204	0·179	0·168	0·157	0·139	0·123	0·091	0·068	0·051	0·039
9	0·914	0·837	0·703	0·592	0·500	0·424	0·361	0·308	0·284	0·263	0·225	0·194	0·167	0·144	0·134	0·125	0·108	0·094	0·067	0·048	0·035	0·026
10	0·905	0·820	0·676	0·558	0·463	0·386	0·322	0·270	0·247	0·227	0·191	0·162	0·137	0·116	0·107	0·099	0·085	0·073	0·050	0·035	0·024	0·017
11	0·896	0·804	0·650	0·527	0·429	0·350	0·287	0·237	0·215	0·195	0·162	0·135	0·112	0·094	0·086	0·079	0·066	0·056	0·037	0·025	0·017	0·012
12	0·887	0·788	0·625	0·497	0·397	0·319	0·257	0·208	0·187	0·168	0·137	0·112	0·092	0·076	0·069	0·062	0·052	0·043	0·027	0·018	0·012	0·008
13	0·879	0·773	0·601	0·469	0·368	0·290	0·229	0·182	0·163	0·145	0·116	0·093	0·075	0·061	0·055	0·050	0·040	0·033	0·020	0·013	0·008	0·005
14	0·870	0·758	0·577	0·442	0·340	0·263	0·205	0·160	0·141	0·125	0·099	0·078	0·062	0·049	0·044	0·039	0·032	0·025	0·015	0·009	0·006	0·003
15	0·861	0·743	0·555	0·417	0·315	0·239	0·183	0·140	0·123	0·108	0·084	0·065	0·051	0·040	0·035	0·031	0·025	0·020	0·011	0·006	0·004	0·002
16	0·853	0·728	0·534	0·394	0·292	0·218	0·163	0·123	0·107	0·093	0·071	0·054	0·042	0·032	0·028	0·025	0·019	0·015	0·008	0·005	0·003	0·002
17	0·844	0·714	0·513	0·371	0·270	0·198	0·146	0·108	0·093	0·080	0·060	0·045	0·034	0·026	0·023	0·020	0·015	0·012	0·006	0·003	0·002	0·001
18	0·836	0·700	0·494	0·350	0·250	0·180	0·130	0·095	0·081	0·069	0·051	0·038	0·028	0·021	0·018	0·016	0·012	0·009	0·005	0·002	0·001	0·001
19	0·828	0·686	0·475	0·331	0·232	0·164	0·116	0·083	0·070	0·060	0·043	0·031	0·023	0·017	0·014	0·012	0·009	0·007	0·003	0·002	0·001	
20	0·820	0·673	0·456	0·312	0·215	0·149	0·104	0·073	0·061	0·051	0·037	0·026	0·019	0·014	0·012	0·010	0·007	0·005	0·002	0·001	0·001	
21	0·811	0·660	0·439	0·294	0·199	0·135	0·093	0·064	0·053	0·044	0·031	0·022	0·015	0·011	0·009	0·008	0·006	0·004	0·002	0·001		
22	0·803	0·647	0·422	0·278	0·184	0·123	0·083	0·056	0·046	0·038	0·026	0·018	0·013	0·009	0·007	0·006	0·004	0·003	0·001	0·001		
23	0·795	0·634	0·406	0·262	0·170	0·112	0·074	0·049	0·040	0·033	0·022	0·015	0·010	0·007	0·006	0·005	0·003	0·002	0·001			
24	0·788	0·622	0·390	0·247	0·158	0·102	0·066	0·043	0·035	0·028	0·019	0·013	0·008	0·006	0·005	0·004	0·003	0·002	0·001			
25	0·780	0·610	0·375	0·233	0·146	0·092	0·059	0·038	0·030	0·024	0·016	0·010	0·007	0·005	0·004	0·003	0·002	0·001	0·001			
26	0·772	0·598	0·361	0·220	0·135	0·084	0·053	0·033	0·026	0·021	0·014	0·009	0·006	0·004	0·003	0·002	0·002	0·001				
27	0·764	0·586	0·347	0·207	0·125	0·076	0·047	0·029	0·023	0·018	0·011	0·007	0·005	0·003	0·002	0·002	0·001	0·001				
28	0·757	0·574	0·333	0·196	0·116	0·069	0·042	0·026	0·020	0·016	0·010	0·006	0·004	0·002	0·002	0·002	0·001	0·001				
29	0·749	0·563	0·321	0·185	0·107	0·063	0·037	0·022	0·017	0·014	0·008	0·005	0·003	0·002	0·002	0·001	0·001	0·001				
30	0·742	0·552	0·308	0·174	0·099	0·057	0·033	0·020	0·015	0·012	0·007	0·004	0·003	0·002	0·001	0·001	0·001					
40	0·672	0·453	0·208	0·097	0·046	0·022	0·011	0·005	0·004	0·003	0·001	0·001										
50	0·608	0·372	0·141	0·054	0·021	0·009	0·003	0·001	0·001	0·001												

OPEN UNIVERSITY OF SRI LANKA
LIBRARY