THE OPEN UNVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
BACHELOR OF TECHNOLOGY – LEVEL 5
FINAL EXAMINATION 2006/2007
MEM 5336/MEU 3303 – MANAGEMENT FOR ENGINEERS
DATE : 7TH MARCH 2007
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.

SECTION A

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

   (a) What factors led to the evolution of Behavioural Management Theory?

   (b) Name and explain the key elements of Management.

   (c) List out the types of controllable and uncontrollable variables in Marketing.

   (d) Explain briefly the techniques of Work Study.

   (e) What are the main functions of Factories Ordinance?

   (f) How does the "Travel chart" help in solving plant lay out problems?

   (g) "Contractual Maintenance is gaining popularity in present day industries". Comment on this statement.

   (h) Explain what is meant by "Group Dynamics".

(20 marks)

SECTION B

2. Leadership is crucial in motivating and inspiring the work force to perform the assigned tasks willingly and happily. However, those managers who do not effectively engage in leadership functions cannot be regarded as good managerial leaders.

   (a) State four functions of leadership.

(04marks)

   (b) Briefly explain three unique features which differentiate Leaders from Managers.

(06 marks)

   (c) Describe how a Leader could motivate clerical grade workers by using an appropriate motivational theory.

(06 marks)

3. You are the Financial Analyst of a company. Director of Projects has asked you to analyze three proposed capital investments in projects titled A, B and C. Because of scarcity of resources only one project can be accepted.

	Projects		
	A	B	C
Initial cost (Rs.)	200,000	230,000	180,000
Expected life (years)	5	5	5
Scrap value expected (Rs.)	10,000	15,000	8,000
Expected net cash inflows	Rs.	Rs.	Rs.
End year 1	80,000	100,000	55,000
2	70,000	70,000	65,000
3	65,000	50,000	95,000
4	60,000	50,000	10,000
5	55,000	50,000	-

The company estimates its cost of capital as 18%.

Present values at 18% are as follows.

Year	1	2	3	4	5
Present value	0.8475	0.7182	0.6086	0.5158	0.4371

Refer Table A for value of money

(i) Calculate the following.

(a) Pay back period for each project. **(03 marks)**

(b) Accounting rate of return for each project. **(03 marks)**

(c) Net Present Value for each Project. **(04 marks)**

(ii) Based on your analysis which project would you recommend? Give reasons. **(06 marks)**

4. (a) What is the objective of " Capacity Management" in a production system? **(04 marks)**

(b) Discuss the different techniques used in demand forecasting. **(04 marks)**

The actual demand for computers sold by DTP computer Ltd. is given in the Table 1. Forecast the demand on the basis of three months moving average. **(04 marks)**

Plot the original data and three months moving average forecast on the same graph. Comment on the results. **(04 marks)**

Table I

Month	Actual Demand
January	200
February	240
March	180
April	140
May	250
June	200
July	180
August	210
September	240
October	220
November	280
December	320

5. (a) What are Marketing Variables? Discuss each of them. **(05 marks)**

(b) What is meant by "Promotion" in Marketing? **(05 marks)**

(c) Explain a Market Mix using a new product. **(06 marks)**

6. (a) Define "Human Resource Management". **(04 Marks)**

(b) What are the four objectives of Human Resource Management? **(04 Marks)**

(c) Elaborate on the responsibility of Human Resource Management in an Organization? **(04 Marks)**

(d) "There is an inter-relationship among Human Resource Management functions". Explain briefly. **(04 Marks)**

7. a) Briefly explain the following.
i Quality of design **(02 Marks)**
ii Quality of manufacture **(02 Marks)**

b) Explain briefly quality characteristics of a product expected by the customer. **(06 Marks)**

c) What benefits can be achieved by obtaining quality assurance certificates such as ISO 9001? **(06 Marks)**

8. (a) Briefly explain the following in the context of accounting.
(i) Journal
(ii) Ledger
(iii) Cash book. **(03 marks)**

(b) Accounts of XYZ Trading Company Ltd showed the following year ending balances as at 31st March 2005.

	Rs'000	Rs'000
Sales		2850
Opening stock	100	
Purchases	1550	
Wages and salaries	500	
Rates	40	
Insurance	30	
Electricity	20	
Office expenses	60	
Selling expenses	90	
Interest on loan	10	
Building	560	
Equipment	400	
Cumulative provision for depreciation on equipment		160
Motor vehicles	240	
Cumulative provision for depreciation on Motor vehicle		60
Trade debtors	560	
Cash	252	
Long term loans		80
Trade creditors		320
Share Capital :		
8% preference shares (20,000 Authorized)		
Issued: 10,000 of Rs. 10/ each		100
Ordinary shares (100,000 Authorized)		800
Issued : 80,000 of Rs. 10/- each		30
General reserves balance at 01.04.2005		12
Profit & Loss account, balance at 01.04.2005	4412	4412

The following additional information are given as at 31st March 2005.

			Rs.
i	Stocks (inventory) are valued at		120,000
ii	Accruals are :	Wages & Salaries	20,000
		Electricity	6,000
iii	Prepayments	Rates	10,000
		Insurance	6,000
iv	Depreciation	Buildings	NIL
		Equipment	20% of cost
		Motor Vehicles	25% of cost
v	Proposed dividends are:	8% to preferential shares holders	
		15% to ordinary share holders	
vi	Transfer of general reserves is to be Rs. 110,000/-		
v	Provide company taxation of Rs. 140,000/-		

Prepare the following statements of accounts.

(i) Trading and Profit & Loss account (with appropriate accounts) for the year ended 31st March 2005. **(07 Marks)**

(ii) Balance sheet as at 31st March 2005 **(06 Marks)**

9. (a) What do you understand by the term "Transportation algorithm" ?

(04 Marks)

(b) A company has factories at F_1, F_2 and F_3 which has supply warehouses W_1, W_2 and W_3. Weekly factory capacities are 200, 160 and 90 units and the weekly warehouses requirements are 180, 120 and 150 units respectively. Unit shipping costs (in Rs) are as follows;

		Warehouse		
		W_1 (Rs.)	W_2 (Rs.)	W_3 (Rs.)
Factory	F_1	16	20	12
	F_2	14	8	18
	F_3	26	24	16

Determine the optimum distribution for the company to minimize shipping costs.

(12 Marks)

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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	0·002	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	0·002	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												