Reg.No.										

MANIPAL INSTITUTE OF TECHNOLOGY
Manipal University, Manipal – 576 104

B.TECH END SEMESTER EXAMINATION (Make Up - 6th Semester)
SUBJECT: ESSENTIALS OF MANAGEMENT & ENGINEERING ECONOMICS
(HSS 302)

REVISED CREDIT SYSTEM
(16/December/2014)

Time: 3 Hour. MAX.MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- **INTEREST TABLE** is provided in the last page (else use formula).

PART - A

1A) Explain the steps in organizing and write the benefits of organizing. **(03)**

1B) Explain briefly the selection procedure adopted in any general type of organization. **(03)**

1C) Explain briefly the process of delegation with a suitable example. **(04)**

2A) Draw the sketch to explain the portfolio matrix concept and clearly highlight its relevance in the present context. **(03)**

2B) Briefly explain the assumptions of 'Theory X' and 'Theory Y'. **(03)**

2C) Sketch the process of Management By Objectives (MBO). Develop the objectives for Top, Middle, Lower level for any one selected organization (by adding all the dimensions). **(2+2=4)**

3A) Explain with a sketch autocratic, democratic and free-rein leadership styles. **(03)**

3B) List and explain the barriers of communication. **(03)**

3C) In applying the rate of return on investment as a control tool, would you favour using an undepreciated or a depreciated asset base? **(04)**

PART - B

4A) A company one year ago borrowed Rs.4,00,000 to pay for a new machine tool, agreeing to repay the loan in 25 monthly equal payments at an annual nominal interest rate of 12% compounded monthly. The company now wants to pay off completely the remaining loan amount, which will be paid during the next instalment period (i.e. at 13th installment). How much would this payment be, assuming no penalty costs for early payout? **(04)**

4B) Using an interest rate of 12%, what is the capitalized cost of a tunnel to transport water through the Someshwar Mountain range if the first cost is Rs. 1,00,00,000 and the maintenance costs are expected to occur in a 6-year cycles as shown below? **(03)**

Year	1	2	3	4	5	6
Maintenance Cost	1,00,000	2,30,000	2,60,000	3,00,000	3,50,000	3,50,000

4C) For the given cash flow below, determine the internal rate of return. **(03)**

Year	0	1	2	3	4
Cash flow (Rs.)	-90,000	50,000	75,000	90,000	-30,000

5A) State the law of demand and elasticity of demand. Explain any four determinants of demand. **(04)**

5B) A person is depositing an amount of Rs.5,000 on a quarterly basis with an interest rate of 12% per year compounded quarterly from past three years in a saving account. He is planning to deposit the amount for another two years after which he planning to withdraw the amount from the account and will be depositing it in a FD account earning an interest rate of 10% with a maturity of five year period. What amount the person will be getting at the end of the five year tenure of the FD account? **(03)**

5C) Computers purchased by a public utility costs Rs.35,000 each. Past records indicate that they have a useful life of five years, after which, they will be disposed of with a scrap value of Rs.500. Determine the following by using declining balance method. **(03)**

i) Depreciation charge during year two and three.

ii) The book value of the computers at the end of fourth year.

6A) An eight year old asset may be replaced with either of the two new assets. Current data for each alternative are given below, using the cash flow approach and interest rate of 12% per year. Determine the best course of action. **(05)**

Course of action	**Current asset (Rs)**	**Challenger 1 (Rs)**	**Challenger 2 (Rs)**
First cost	-	30000	54000
Defender trade	-	10500	7500
Annual cost	9000	4500	3600
Salvage value	1500	3000	1500
Life, years	5 yr	5 yr	5 yr

6B) A company engaging in selling of laboratory equipment estimates that profit from sales should increase by Rs.2,00,000 per year if a mobile demonstration unit is built. A large unit with sleeping accommodation for the driver will cost Rs.9,70,000 while a smaller unit without sleeping cabin will be Rs. 6,30,000. Salvage values for the large and small units after five years will be, Rs.97,000 and Rs.35000 respectively. Lodging costs saved by the larger unit should amount Rs.1,10,000 annually, but its transportation costs will exceed those of the smaller unit by Rs.31,000. With the money at 12% should a mobile demonstration unit be built? And if so which size is preferable? Use annual worth analysis. **(05)**

1% **Compound Interest Factors** **1%**

	Single Payment		Uniform Payment Series				Arithmetic Gradient		
	Compound Amount Factor	Present Worth Factor	Sinking Fund Factor	Capital Recovery Factor	Compound Amount Factor	Present Worth Factor	Gradient Uniform Series	Gradient Present Worth	
	Find *F* Given *P*	Find *P* Given *F*	Find *A* Given *F*	Find *A* Given *P*	Find *F* Given *A*	Find *P* Given *A*	Find *A* Given *G*	Find *P* Given *G*	
n	*F/P*	*P/F*	*A/F*	*A/P*	*F/A*	*P/A*	*A/G*	*P/G*	*n*
1	1.010	.9901	1.0000	1.0100	1.000	0.990	0	0	1
2	1.020	.9803	.4975	.5075	2.010	1.970	0.498	0.980	2
3	1.030	.9706	.3300	.3400	3.030	2.941	0.993	2.921	3
4	1.041	.9610	.2463	.2563	4.060	3.902	1.488	5.804	4
5	1.051	.9515	.1960	.2060	5.101	4.853	1.980	9.610	5
6	1.062	.9420	.1625	.1725	6.152	5.795	2.471	14.320	6
7	1.072	.9327	.1386	.1486	7.214	6.728	2.960	19.917	7
8	1.083	.9235	.1207	.1307	8.286	7.652	3.448	26.381	8
9	1.094	.9143	.1067	.1167	9.369	8.566	3.934	33.695	9
10	1.105	.9053	.0956	.1056	10.462	9.471	4.418	41.843	10
11	1.116	.8963	.0865	.0965	11.567	10.368	4.900	50.806	11
12	1.127	.8874	.0788	.0888	12.682	11.255	5.381	60.568	12
13	1.138	.8787	.0724	.0824	13.809	12.134	5.861	71.112	13
14	1.149	.8700	.0669	.0769	14.947	13.004	6.338	82.422	14
15	1.161	.8613	.0621	.0721	16.097	13.865	6.814	94.481	15
16	1.173	.8528	.0579	.0679	17.258	14.718	7.289	107.273	16
17	1.184	.8444	.0543	.0643	18.430	15.562	7.761	120.783	17
18	1.196	.8360	.0510	.0610	19.615	16.398	8.232	134.995	18
19	1.208	.8277	.0481	.0581	20.811	17.226	8.702	149.895	19
20	1.220	.8195	.0454	.0554	22.019	18.046	9.169	165.465	20
21	1.232	.8114	.0430	.0530	23.239	18.857	9.635	181.694	21
22	1.245	.8034	.0409	.0509	24.472	19.660	10.100	198.565	22
23	1.257	.7954	.0389	.0489	25.716	20.456	10.563	216.065	23
24	1.270	.7876	.0371	.0471	26.973	21.243	11.024	234.179	24
25	1.282	.7798	.0354	.0454	28.243	22.023	11.483	252.892	25
26	1.295	.7720	.0339	.0439	29.526	22.795	11.941	272.195	26
27	1.308	.7644	.0324	.0424	30.821	23.560	12.397	292.069	27
28	1.321	.7568	.0311	.0411	32.129	24.316	12.852	312.504	28
29	1.335	.7493	.0299	.0399	33.450	25.066	13.304	333.486	29
30	1.348	.7419	.0287	.0387	34.785	25.808	13.756	355.001	30

4% Compound Interest Factors 4%

n	Single Payment: Compound Amount Factor Find F Given P F/P	Single Payment: Present Worth Factor Find P Given F P/F	Uniform Payment Series: Sinking Fund Factor Find A Given F A/F	Uniform Payment Series: Capital Recovery Factor Find A Given P A/P	Uniform Payment Series: Compound Amount Factor Find F Given A F/A	Uniform Payment Series: Present Worth Factor Find P Given A P/A	Arithmetic Gradient: Gradient Uniform Series Find A Given G A/G	Arithmetic Gradient: Gradient Present Worth Find P Given G P/G	n
1	1.040	.9615	1.0000	1.0400	1.000	0.962	0	0	1
2	1.082	.9246	.4902	.5302	2.040	1.886	0.490	0.925	2
3	1.125	.8890	.3203	.3603	3.122	2.775	0.974	2.702	3
4	1.170	.8548	.2355	.2755	4.246	3.630	1.451	5.267	4
5	1.217	.8219	.1846	.2246	5.416	4.452	1.922	8.555	5
6	1.265	.7903	.1508	.1908	6.633	5.242	2.386	12.506	6
7	1.316	.7599	.1266	.1666	7.898	6.002	2.843	17.066	7
8	1.369	.7307	.1085	.1485	9.214	6.733	3.294	22.180	8
9	1.423	.7026	.0945	.1345	10.583	7.435	3.739	27.801	9
10	1.480	.6756	.0833	.1233	12.006	8.111	4.177	33.881	10
11	1.539	.6496	.0741	.1141	13.486	8.760	4.609	40.377	11
12	1.601	.6246	.0666	.1066	15.026	9.385	5.034	47.248	12
13	1.665	.6006	.0601	.1001	16.627	9.986	5.453	54.454	13
14	1.732	.5775	.0547	.0947	18.292	10.563	5.866	61.962	14
15	1.801	.5553	.0499	.0899	20.024	11.118	6.272	69.735	15
16	1.873	.5339	.0458	.0858	21.825	11.652	6.672	77.744	16
17	1.948	.5134	.0422	.0822	23.697	12.166	7.066	85.958	17
18	2.026	.4936	.0390	.0790	25.645	12.659	7.453	94.350	18
19	2.107	.4746	.0361	.0761	27.671	13.134	7.834	102.893	19
20	2.191	.4564	.0336	.0736	29.778	13.590	8.209	111.564	20
21	2.279	.4388	.0313	.0713	31.969	14.029	8.578	120.341	21
22	2.370	.4220	.0292	.0692	34.248	14.451	8.941	129.202	22
23	2.465	.4057	.0273	.0673	36.618	14.857	9.297	138.128	23
24	2.563	.3901	.0256	.0656	39.083	15.247	9.648	147.101	24
25	2.666	.3751	.0240	.0640	41.646	15.622	9.993	156.104	25

12% Compound Interest Factors 12%

n	F/P	P/F	A/F	A/P	F/A	P/A	A/G	P/G	n
1	1.120	.8929	1.0000	1.1200	1.000	0.893	0	0	1
2	1.254	.7972	.4717	.5917	2.120	1.690	0.472	0.797	2
3	1.405	.7118	.2963	.4163	3.374	2.402	0.925	2.221	3
4	1.574	.6355	.2092	.3292	4.779	3.037	1.359	4.127	4
5	1.762	.5674	.1574	.2774	6.353	3.605	1.775	6.397	5
6	1.974	.5066	.1232	.2432	8.115	4.111	2.172	8.930	6
7	2.211	.4523	.0991	.2191	10.089	4.564	2.551	11.644	7
8	2.476	.4039	.0813	.2013	12.300	4.968	2.913	14.471	8
9	2.773	.3606	.0677	.1877	14.776	5.328	3.257	17.356	9
10	3.106	.3220	.0570	.1770	17.549	5.650	3.585	20.254	10
11	3.479	.2875	.0484	.1684	20.655	5.938	3.895	23.129	11
12	3.896	.2567	.0414	.1614	24.133	6.194	4.190	25.952	12
13	4.363	.2292	.0357	.1557	28.029	6.424	4.468	28.702	13
14	4.887	.2046	.0309	.1509	32.393	6.628	4.732	31.362	14
15	5.474	.1827	.0268	.1468	37.280	6.811	4.980	33.920	15
16	6.130	.1631	.0234	.1434	42.753	6.974	5.215	36.367	16
17	6.866	.1456	.0205	.1405	48.884	7.120	5.435	38.697	17
18	7.690	.1300	.0179	.1379	55.750	7.250	5.643	40.908	18
19	8.613	.1161	.0158	.1358	63.440	7.366	5.838	42.998	19
20	9.646	.1037	.0139	.1339	72.052	7.469	6.020	44.968	20
21	10.804	.0926	.0122	.1322	81.699	7.562	6.191	46.819	21
22	12.100	.0826	.0108	.1308	92.503	7.645	6.351	48.554	22
23	13.552	.0738	.00956	.1296	104.603	7.718	6.501	50.178	23
24	15.179	.0659	.00846	.1285	118.155	7.784	6.641	51.693	24
25	17.000	.0588	.00750	.1275	133.334	7.843	6.771	53.105	25
26	19.040	.0525	.00665	.1267	150.334	7.896	6.892	54.418	26
27	21.325	.0469	.00590	.1259	169.374	7.943	7.005	55.637	27
28	23.884	.0419	.00524	.1252	190.699	7.984	7.110	56.767	28
29	26.750	.0374	.00466	.1247	214.583	8.022	7.207	57.814	29
30	29.960	.0334	.00414	.1241	241.333	8.055	7.297	58.782	30