

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI**

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI JUN 2017

DPB2033 : BUSINESS MATHEMATICS

TARIKH : 30 OKTOBER 2017

MASA : 8.30 PAGI - 10.30 PAGI (2 JAM)

Kertas ini mengandungi **SEPULUH (10)** halaman bercetak.
Struktur (4 soalan)

Dokumen sokongan yang disertakan : Jadual PVIF dan PVIFA

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTION:

This section consists of **FOUR (4)** structured questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **EMPAT (4)** soalan struktur. Jawab **SEMUA** soalan.*

QUESTION 1**SOALAN 1**

CLO1
C1

- a) Differentiate these equations:

Bezakan persamaan berikut:

i. $y = (x^3 + 2)^{3/2}$

[5 marks]

[5 markah]

ii. $y = \frac{3x^2 + 2x}{x^4 + 4x}$

[10 marks]

[10 markah]

CLO1
C2

- b) The revenue function for firm A is $R(x) = 35x - 0.03x^2$ and cost function is $C(x) = 6000 + 5x$.

Diberi fungsi hasil firma A ialah $R(x) = 35x - 0.03x^2$ manakala fungsi kos

$C(x) = 6000 + 5x$.

- i. Derive the profit function.

Terbitkan fungsi untung.

[3 marks]

[3 markah]

- ii. Determine the level of production in unit which will maximize the profit.

Tentukan peringkat pengeluaran dalam unit yang dapat memaksimumkan keuntungan.

[4 marks]

[4 markah]

- iii. Calculate the selling price.

Kirakan harga jualan yang dikenakan.

[3 marks]

[3 markah]

QUESTION 2

SOALAN 2

Fareez Enterprise Company is planning to buy a new machine. They were offered with **TWO (2)** machines which will cost RM225,000 for Machine X and RM230,000 for Machine Y. The required rate of return for both machines was established at 10%. The estimated cash flow for both machines are listed as follows:

*Syarikat Fareez Enterprise merancang untuk membeli mesin baru. Mereka ditawarkan **DUA (2)** buah mesin yang memerlukan kos sebanyak RM225,000 untuk Mesin X dan RM230,000 untuk mesin Y. Kadar pulangan diperlukan bagi kedua-dua mesin telah ditetapkan sebanyak 10%. Anggaran aliran tunai untuk kedua dua mesin adalah seperti berikut:*

Year/ Tahun	Cash flow/ <i>Aliran Tunai</i>	
	Machine X (RM)	Machine Y (RM)
	<i>Mesin X(RM)</i>	<i>Mesin Y(RM)</i>
1	95,000	115,000
2	85,000	95,000
3	75,000	85,000
4	85,000	75,000
5	95,000	65,000

You are required to:

Anda dikehendaki untuk:

CLO1
C1

- a) Identify the elements following for both machines :

Kenalpasti elemen yang berikut bagi kedua-dua mesin:

- i. Payback period (PBP).
Tempoh bayar balik(TBB).

[4 marks]

[4 markah]

- ii. Average rate of return (ARR).
Kadar Pulangan Purata (KPP).

[6 marks]

[6 markah]

CLO1
C2

- b) Calculate and determine:

Kira dan tentukan:

- i. The Net present value (NPV) for both machines.
Nilai kini bersih bagi kedua-dua mesin.

[13 marks]

[13 markah]

- ii. Which machine should be chosen? Why?

Mesin yang manakah patut dipilih? Kenapa?

[2 marks]

[2 markah]

QUESTION 3

SOALAN 3

CLO2
C2

- a) Syuhada plans to replace her old car with a new one that costs RM95,200. The down payment that she can afford is RM17,000. She plans to borrow the rest from the bank. The bank offers the loan that can be settled by the monthly installment of RM1,175 for 90 months. Calculate:

Syuhada bercadang untuk menggantikan kereta lamanya dengan kereta baru yang bernilai RM95,200. Bayaran muka yang mampu disediakan oleh beliau adalah RM17,000. Beliau bercadang untuk meminjam bakinya daripada bank. Pihak bank menawarkan pinjaman yang boleh diselesaikan dengan bayaran ansuran bulanan sebanyak RM1,175 untuk tempoh 90 bulan. Kira:

- i. The interest rate charged by the bank.

Kadar faedah yang dikenakan oleh pihak bank.

[8 marks]

[8 markah]

- ii. The amount of interest charged by the bank

Jumlah faedah yang dikenakan oleh pihak bank

[2 marks]

[2 markah]

CLO2
C3

- b) Aidil had deposited RM5 000 into a saving account on 30th March 2015 which offers a simple interest rate of 3.5% per annum. On 27th October 2015, he withdrew RM500 from the account. Calculate:

Aidil telah menyimpan RM5 000 ke dalam akaun simpanannya pada 30 Mac 2015 yang menawarkan kadar faedah ringkas sebanyak 3.5% untuk tempoh setahun. Pada 27 Oktober 2015, beliau telah mengeluarkan RM500 dari akaun tersebut. Kira:

- i. The exact time and approximate time for the date he deposited the money until the date he withdrew his saving.

Masa tepat dan masa anggaran bagi tempoh dia mula menyimpan wangnya sehingga ke tarikh dia mengeluarkan wangnya.

[5 marks]

[5 markah]

- ii. The interest received on the date he withdrew his saving using Banker's Rule method.

Faedah yang diterima pada tarikh dia mengeluarkan wangnya dengan menggunakan kaedah Aturan Bank.

[3 marks]

[3 markah]

- iii. The amount that is left in the account a year after withdrawal.

Jumlah wang yang tinggal di dalam akaun beliau selepas setahun pengeluaran.

[7 marks]

[7 markah]

QUESTION 4

SOALAN 4

Reez Wood Sdn Bhd produces office cabinets in factories which are located in Ipoh, Seremban and Pasir Gudang. The office cabinets are distributed to the warehouses in Arau, Butterworth and Cheras. Transportation costs per unit from the factories to the warehouses are shown in the following table;

Reez Wood Sdn Bhd menghasilkan kabinet pejabat di kilang-kilang yang terletak di Ipoh, Seremban dan Pasir Gudang. Syarikat tersebut hendak mendedarkan kabinet pejabat tersebut ke gudang-gudang mereka yang terletak di Arau, Butterworth dan Cheras. Kos pengangkutan seunit dari kilang ke gudang-gudang adalah seperti jadual berikut;

Factory	Arau	Butterworth	Cheras
Ipoh	RM37	RM34	RM36
Seremban	RM36	RM32	RM35
Pasir Gudang	RM42	RM35	RM41

The capacity for each factory and the requirement for the warehouses are listed below:

Kapasiti kilang-kilang dan keperluan gudang adalah seperti berikut:

Factory	Capacity (units)	Warehouse	Requirement (units)
Ipoh	300	Arau	200
Seremban	200	Butterworth	170
Pasir Gudang	100	Cheras	230

- CLO2
C1
- a) Tabulate the complete matrix for the transportation table.
Bentukkan jadual matriks untuk pengangkutan yang lengkap.
- [5 marks]
[5 markah]
- CLO2
C2
- b) Calculate the transportation cost by using Minimum Cost Method.
Kirakan kos pengangkutan dengan menggunakan Kaedah Kos Minimum.
- [5 marks]
[5 markah]
- CLO2
C3
- c) Calculate the optimal transportation cost by using the Stepping Stone Method.
Kirakan kos pengangkutan yang paling optima dengan menggunakan Kaedah Batu Loncatan.
- [15 marks]
[15 markah]

SOALAN TAMAT

APPENDIX 1

Present value interest factors for one dollar discounted at k per cent for n periods: $PVIF_{k,n} = 1/(1+k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4096	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2087	0.1594
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2326	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6811	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929	0.0802	0.0451	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0313	0.0168	0.0144	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462	0.0382	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402	0.0329	0.0151	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349	0.0284	0.0126	0.0057	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7479	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0984	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	-
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102	0.0075	0.0055	0.0017	0.0005	-	-
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	-	-	-
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037	0.0026	0.0007	-	-	-
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	-	-	-	-

APPENDIX 2

Present value interest factors for one-dollar annuity discounted at k per cent for n periods: $PVIFA = [1 - 1/(1 + k)^n]$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4568	1.4400	1.3609
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5349	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	3.8372	3.4212	3.3289	2.9247
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6055	4.0310	3.5655	3.4631	3.0190
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0168	4.8332	4.1925	3.6819	3.5705	3.0915
11	10.3688	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8025	6.4951	6.2065	5.9377	5.6889	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.2551	10.5751	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4205	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.1341	11.3481	10.6351	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.0041	12.1061	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	4.6106	3.9616	3.8241	3.2487
15	13.8651	12.8491	11.9381	11.1181	10.3801	9.7122	9.1079	8.5595	8.0607	7.6081	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.7181	13.5781	12.5611	11.6521	10.8381	10.1051	9.4466	8.8514	8.3126	7.8237	7.3732	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.5621	14.2921	13.1661	12.1661	11.2741	10.4771	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	4.7746	4.0591	3.9099	3.2948
18	16.3981	14.9921	13.7541	12.6591	11.6901	10.8281	10.0591	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178	4.8122	4.0799	3.9279	3.3037
19	17.2261	15.6781	14.3241	13.1341	12.0851	11.1581	10.3361	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9421	3.3105
20	18.0461	16.3511	14.8771	13.5901	12.4621	11.4701	10.5941	9.8181	9.1285	8.5036	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	3.3158
21	18.8571	17.0111	15.4151	14.0291	12.8211	11.7641	10.8361	10.0171	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913	4.1212	3.9631	3.3198
22	19.6601	17.6581	15.9371	14.4511	13.1631	12.0421	11.0611	10.2011	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587	6.0113	4.9094	4.1300	3.9705	3.3230
23	20.4561	18.2921	16.4441	14.8571	13.4831	12.3031	11.2721	10.3711	9.5802	8.8932	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.2431	18.9141	16.9361	15.2471	13.7991	12.5501	11.4691	10.5291	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	4.9371	4.1428	3.9811	3.3272
25	22.0231	19.5231	17.4131	15.6221	14.0941	12.7831	11.6541	10.6751	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9849	3.3286
30	25.8081	22.3961	19.6001	17.2921	15.3721	13.3651	12.4091	11.2581	10.2741	9.4769	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.4091	24.9991	21.4871	18.6651	16.3741	14.4981	12.9481	11.6551	10.5671	9.6442	8.8562	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
40	32.8351	27.3551	23.1151	19.7931	17.1591	15.0461	13.3321	11.9251	10.7571	9.7791	8.9511	8.2424	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.1961	31.4241	25.7301	21.4821	18.2561	15.7621	13.8011	12.2331	10.9621	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333