

SULIT



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

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI JUN 2016

DPB2033: BUSINESS MATHEMATICS

TARIKH : 22 OKTOBER 2016

MASA : 8.30 AM - 10.30 AM (2 JAM)

Kertas ini mengandungi **TUJUH (7)** halaman bercetak.
Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula

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) Identify the value of x and y in the following simultaneous equation;

Kenalpasti nilai x dan y dalam persamaan serentak berikut;

$$x + 3y = 7$$

$$4x - y = 10$$

[5 marks]
[5 markah]

CLO1
C3

- b) Harith Furniture Sdn Bhd produces furniture product. By using the information given below, find the number of furniture to be sold if the company wanted to earn a profit of RM200,000.

Harith Furniture Sdn Bhd menghasilkan produk perabot. Menggunakan maklumat yang diberi seperti di bawah, kira bilangan unit perabot yang perlu dijual sekiranya syarikat mensasarkan keuntungan RM 200,000.

Variable Cost / *kos berubah seunit* : 20% of the price per unit

Machines / *Mesin* : RM 200,000

Other fixed costs / *Lain- lain kos tetap* : RM 400,000

Price / *Harga* : RM 5,000 per unit

[5 marks]
[5 markah]

CLO1
C3

- c) The revenue function and cost function of a product for Teguh Maju Enterprise are $R(x) = 200x - x^2$ and $C(x) = 0.1x^2 + 2x + 800$ respectively, calculate;

Fungsi hasil dan kos produk untuk Teguh Maju Enterprise ialah $R(x) = 200x - x^2$ and $C(x) = 0.1x^2 + 2x + 800$, kira;

- i. The profit function , $P(x)$.

Fungsi Keuntungan , $P(x)$.

[2 marks]
[2 markah]

- ii. The maximum revenue.

Maksimum hasil.

[5 marks]
[5 markah]

- iii. The price at maximum revenue.

Harga pada maksimum hasil.

[3 marks]
[3 markah]

- iv. The increase in cost if the number of product increases from 50 units to 100 units.

Peningkatan harga sekiranya bilangan produk meningkat dari 50 unit kepada 100 unit.

[5 marks]
[5 markah]

QUESTION 2

SOALAN 2

CLO1
C1

- a) Nurizz Aleesya had bought a sewing machine with RM8 000 through an installment plan. She has paid RM1 000 for the down payment. The balance will be settled within ten months of installments. If the interest rates for the installment balance is 8.5% per annum, Indicate :

Nurizz Aleesya membeli sebuah mesin jahit pada harga RM8 000 melalui pelan ansuran. Beliau telah membayar RM1 000 sebagai bayaran pendahuluan. Bakinya akan diselesaikan dalam tempoh sepuluh bulan ansuran. Jika kadar faedah untuk baki ansuran ialah 8.5 % setahun, tunjukkan:

- i. The total interest charged.

Jumlah Faedah yang dikenakan.

[5 marks]

[5 markah]

- ii. Monthly Payment.

Bayaran Bulanan.

[5 marks]

[5 markah]

CLO1
C2

- b) Determine the outstanding balance if she wished to settle all her debts after the third payment.

Tentukan baki tertunggak jika beliau ingin menyelesaikan semua hutang selepas bayaran ketiga.

[10 marks]

[10 markah]

CLO1
C4

- c) Calculate the amount of this investment after one year if RM100 was invested with the interest rate was at 9.04% compounded annually.

Kirakan jumlah pelaburan selepas setahun sekiranya RM100 dilaburkan dan kadar faedah adalah 9.04% dikompaun setiap tahun.

[5 marks]

[5 markah]

QUESTION 3**SOALAN 3**

A corporation will replace an existing product with an improved and expanded product line. As the finance manager, you are considering two machines for that new product line, Machine A and Machine B. Both with five-year expected lives and identical initial cash investment of RM60,000. There is no scrap value. The required rate of return for both machines was established at 12%. The expected annual free cash flows from both machines are as follow:

Sebuah syarikat akan menggantikan produk sedia ada dengan rangkaian produk yang diperbaiki dan diperkembangkan. Sebagai pengurus kewangan, anda dikehendaki mempertimbangkan dua buah mesin untuk rangkaian produk baru itu, iaitu Mesin A dan Mesin B. Kedua-dua mesin mempunyai jangka hayat selama lima tahun dan pelaburan permulaan sebanyak RM60,000 masing-masing. Tiada nilai sisa. Kadar pulangan diperlukan bagi kedua-dua mesin telah ditetapkan sebanyak 12%. Alir tunai tahunan yang dijangka dari setiap mesin adalah seperti berikut:

Year Tahun	Machine A (RM) Mesin A (RM)	Machine B (RM) Mesin B (RM)
1	20,000	18,000
2	20,000	16,000
3	20,000	20,000
4	20,000	22,000
5	20,000	26,000

You are required to:

*Anda dikehendaki :*CLO2
C1

- a) Identify the following for both machines :
Kenalpasti yang berikut bagi kedua-dua mesin :

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

[4 marks]

[4 markah]

- ii. Average rate of return (ARR).
Purata kadar pulangan (PKP).

[6 marks]

[6 markah]

CLO2
C3

- b) Calculate the Net present value (NPV) for both machines.
Kirakan nilai kini bersih bagi kedua-dua mesin.

[10 marks]

[10 markah]

CLO2
C4

- c) Which machine should be chosen? Why? .
Mesin yang manakah perlu dipilih? Kenapa? .

[5 marks]

[5 markah]

QUESTION 4

SOALAN 4

A supervisor has five workers and five jobs in queue. The time (hours) that each worker needs to complete each job is shown in the following table.

Seorang supervisor mempunyai lima orang pekerja di bawah seliaannya untuk melaksanakan lima tugas. Masa menyiapkan tugas (dalam jam) bagi setiap pekerja adalah seperti jadual berikut:

Worker/pekerja	Job _A / tugas _A	Job _B / tugas _B	Job _C / tugas _C	Job _D / tugas _D	Job _E / tugas _E
Worker ₁ /Pekerja ₁	13	15	18	17	18
Worker ₂ /Pekerja ₂	12	13	13	12	16
Worker ₃ /Pekerja ₃	17	19	11	18	13
Worker ₄ /Pekerja ₄	15	15	14	16	17
Worker ₅ /Pekerja ₅	13	19	17	15	18

You are required to
Anda dikehendaki

- a) Outline the assignment matrix table.
Sediakan jadual matriks umpukkan.

[5 marks]
[5 markah]

- b) Determine the optimum solution for the assignment model above so that the total time spent is minimized.

Tentukan penyelesaian optimum di atas supaya jumlah masa siap adalah minimum.

[20 marks]
[20 markah]

END OF QUESTION
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	0.5823	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	0.2097	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	0.6810	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	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	-
35	0.7035	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	5.5348	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	7.8661	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	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	5.0188	4.8332	4.1925	3.6819	3.5705	3.0915
11	10.368	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8025	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.255	10.575	9.9540	9.3851	8.8653	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.134	11.348	10.635	9.9656	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	13.004	12.106	11.296	10.563	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	13.865	12.849	11.938	11.118	10.380	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.718	13.578	12.561	11.652	10.838	10.106	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.562	14.292	13.166	12.166	11.274	10.477	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	16.398	14.992	13.754	12.659	11.690	10.828	10.059	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	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1992	5.8775	4.8435	4.0967	3.9424	3.3105
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	3.3158
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	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	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	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	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	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	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	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	25.808	22.396	19.600	17.292	15.372	13.365	12.409	11.258	10.274	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.6442	8.8552	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.6765	8.8785	8.1924	7.5979	7.0790	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333