SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI JUN 2019

DPB2033: BUSINESS MATHEMATICS

TARIKH : 03 NOVEMBER 2019
MASA : 2.30 PETANG - 4.30 PETANG (2 JAM)

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

Dokumen sokongan yang disertakan : Formula, Jadual PVIF & PVIFA

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

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) Count the differentiation for the following equations:
Kirakan pembezaan untuk persamaan berikut:

i. $y = 8x^2$

[2 marks]
[*2 markah*]

ii. $y = 4x^3 + 2x^2 - 9x$

[3 marks]
[3 *markah*]

iii. $y = (8 - 4x)^4$

[5 marks]
[5 *markah*]

iv. $y = (x^2 + 2)(x - 4)$

[5 marks]
[5 *markah*]

CLO1
C2

b) The total revenue function, R(x) and total cost function, C(x) for a product are given as $R(x) = 2750x - 8x^2$ and $C(x) = 5x^2 + 800x + 1000$. Calculate:

Fungsi jumlah hasil, R(x) dan fungsi jumlah kos, C(x) bagi sebuah barang diberi adalah $R(x) = 2750x - 8x^2$ *and* $C(x) = 5x^2 + 800x + 1000$. *Kirakan:*

i. The marginal revenue function.
Fungsi hasil marginal.

[2 marks]
[*2 markah*]

ii. The total profit function.
Fungsi jumlah untung.

[2 marks]
[*2 markah*]

iii. The marginal profit function.
Fungsi untung marginal.

[2 marks]
[*2 markah*]

iv. The numbers of unit that will maximize profit.
Bilangan unit yang memaksimumkan keuntungan.

[4 marks]
[*4 markah*]

QUESTION 2

SOALAN 2

Cahaya Bintang Enterprise is a company produced health products. The company has decided to buy a new machine which is machine YA or machine BA. Both machines are expected to be used for five years. The scrap value for each machine is RM8, 000 and RM9, 500. Cash flow for each machine are shown as below:

Cahaya Bintang Enterprise merupakan sebuah syarikat yang mengeluarkan produk kesihatan. Syarikat telah membuat keputusan untuk membeli sebuah mesin baru sama ada mesin YA atau mesin BA. Kedua-dua mesin dijangka akan digunakan selama lima tahun. Susut nilai setiap mesin adalah sebanyak RM8, 000 dan RM9,500. Aliran wang tunai bagi setiap mesin adalah seperti berikut:

	Machine YA (RM) **Mesin YA**	**Machine BA (RM)** **Mesin BA**
Investment *Pelaburan*	(RM80, 000)	(RM75, 000)
Year 1 *Tahun 1*	27, 500	28, 000
Year 2 *Tahun 2*	27, 500	19, 500
Year 3 *Tahun 3*	26, 500	30, 000
Year 4 *Tahun 4*	26, 500	26, 500
Year 5 *Tahun 5*	25, 500	31, 200

The rate of return is 10%.

Kadar pulangan adalah 10%.

CLO1
C1

a) Count the payback period for machine YA and machine BA.
Kirakan tempoh bayaran balik untuk mesin YA dan mesin BA.

[5 Marks]
[*5 Markah*]

CLO1
C2

b) Compare the following elements for both machines:

Bandingkan unsur-unsur berikut untuk kedua-dua mesin:

i. Net present value.
Nilai kini bersih.

[10 Marks]
[*10 Markah*]

ii. Average rate of return.
Kadar pulangan purata.

[10 Marks]
[*10 Markah*]

QUESTION 3

SOALAN 3

CLO2
C2

a) A sum of money was deposited on 30th November 2017 in an investment fund which offered a simple interest of 8% per annum. On 7th June 2018, the investment worth RM23, 900. Compute the amount of initial investment using Banker's Rule.

Sejumlah wang telah didepositkan pada 30 November 2012 dalam dana pelaburan yang menawarkan kadar faedah mudah 8% setahun. Pada 7 Jun 2013, pelaburan tersebut adalah bernilai RM23, 900. Hitungkan jumlah pelaburan awal dengan menggunakan kaedah Peraturan Bank.

[5 Marks]
[*5 Markah*]

b) Aliya Batrisyia wishes to buy an RM87, 000 Peugeot car. She needs to pay 10% as a deposit and the balance will be borrowed from a financial company with an interest rate of 6% annually. The period of a loan is 7 years.

Aliya Batrisyia ingin membeli sebuah kereta Peugeot berharga RM87, 000. Dia perlu membayar 10% bayaran pendahuluan dan bakinya akan dipinjam dari sebuah syarikat kewangan yang menawarkan kadar faedah sebanyak 6% setahun. Tempoh pinjaman adalah selama 7 tahun.

CLO2
C3

You are required to calculate:

Anda dikehendaki mengira :

i. Total interest charged.

Jumlah faedah yang dikenakan.

[4 Marks]
[*4 Markah*]

ii. Total loan.

Jumlah pinjaman.

[2 Marks]
[*2 Markah*]

iii. Monthly payment.

Bayaran bulanan.

[3 Marks]
[*3 Markah*]

iv. Rebate, if Aliya Batrisyia wishes to settle the loan after 40th month.

Rebat, jika Aliya Batrisyia ingin menyelesaikan pinjaman bank selepas bulan ke 40.

[8 Marks]
[*8 Markah*]

v. Balance to be settled after the 40th month.

Baki yang perlu diselesaikan selepas bulan ke 40.

[3 Marks]
[*3 Markah*]

QUESTION 4

SOALAN 4

A concrete company transports concrete from three plants in Senai, Jasin and Sepang, to three construction sites at Bemban, Kluang and Puchong.

Sebuah syarikat konkrit mengangkut konkrit dari tiga kilang di Senai, Jasin dan Sepang, ke tiga tapak pembinaan di Bemban, Kluang dan Puchong.

The plants are able to supply the following numbers of tonnes per week:
Kilang-kilang tersebut mampu menawarkan bilangan tan konkrit setiap minggu seperti berikut:

Plant *Kilang*	Supply *Penawaran*
Senai	150
Jasin	175
Segamat	275

The requirements of the sites, in number of tonnes per week, are:
Keperluan bagi setiap tapak pembinaan, dalam tan setiap minggu, adalah:

Site *Tapak*	Demand *Permintaan*
Kluang	200
Bemban	100
Puchong	300

The cost of transporting 1 ton of concrete from each plant to each site differs according to the distance. The costs are shown in the following table:
Kos untuk mengangkut 1 tan konkrit dari setiap kilang ke setiap tapak pembinaan berbeza mengikut jarak. Kos-kos tersebut adalah seperti yang ditunjukkan di dalam jadual yang berikut:

From / *Dari* \ To / *Ke*	Kluang	Bemban	Puchong
Senai	5	4	6
Jasin	3	5	4
Segamat	6	3	3

CLO2
C2

a) Demonstrate the transportation matrix.
Tunjukkan matriks pengangkutan.

[5 marks]
[*5 markah*]

CLO2
C3

b) The objective of transportation model is to minimize the total transportation costs. Calculate:
Objektif model pengangkutan adalah untuk meminimumkan jumlah kos pengangkutan. Kirakan:

i. The total transportation cost by using the North-West Corner method.
Jumlah kos pengangkutan dengan menggunakan kaedah Pepenjuru Barat-Laut.

[5 marks]
[*5 markah*]

ii. Based on the question b(i), calculate the optimal transportation cost by using the Stepping Stone method.
Berdasarkan soalan b(i) kira kos pengangkutan optimal dengan menggunakan kaedah Batu Loncatan.

[15 marks]
[*15 markah*]

SOALAN TAMAT

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at *k* Percent for *n* Periods: PVIFA = $[1 - 1/(1 + k)^n] / k$

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	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	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	6.8052	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	8.8633	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	9.9856	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	13.004	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	6.1982	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	13.765	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	8.8786	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

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent 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	0.2097	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	0.7059	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	*	*	*	*

FORMULA BUSINESS MATHEMATIC

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$P = pQ - VCQ - FC$$

$$P = TR - TC$$

$$TC = VCQ + FC$$

$$TR = pQ$$

$$TVC = VCQ$$

$$BEP(Q) = \frac{FC}{p - VC}$$

$$BEP(RM) = BEP(Q)\ x\ \ p$$

$$CM = p - VC$$

$$CMR = \frac{p - VC}{p}\ x\ 100$$

$$\frac{dy}{dx} = nx^{n-1}$$

$$\frac{dy}{dx} = nx^{n-1} + 0$$

$$\frac{dy}{dx} = anx^{n-1}$$

$$\frac{dy}{dx} = anx^{n-1} + bmx^{m-1}$$

$$\frac{dy}{dx} = u\frac{dv}{dx} + v\frac{du}{dx}$$

$$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$$

$$\frac{dy}{dx} = \frac{dy}{du}\ x\ \frac{du}{dx}$$

$$I = Prt$$

$$I = IP - CP$$

$$I = \left(\frac{Pr + Yr}{2}\right)t \quad or \quad I = \frac{\Pr(t+1)}{2}$$

$$Y = \frac{P}{t}$$

$$DP = Rate\ (\%)\ x\ CP$$

$$P = CP - DP + other\ payments$$

$$S = P + I$$

$$S = P(1 + rt)$$

$$D = Sdt$$

$$H = S - D$$

$$MP = \frac{S}{n}$$

$$IP = DP + (MP\ x\ n)\ @\ DP + S\ @\ DP + P + I$$

$$R = \frac{\sum n}{\sum N}\ x\ I \quad and \quad \sum n = (\frac{n+1}{2})n, \quad \sum N = (\frac{N+1}{2})N$$

$$EP = (n\ x\ MP) - R$$

$$S = P(1 + \frac{i}{m})^{n.m}$$

$$P = \frac{S}{(1 + \frac{i}{m})^{n.m}}$$

$$P = R\left(\frac{1 - \left(1 + \frac{i}{m}\right)^{-n.m}}{\frac{i}{m}}\right) \quad and \quad R = \frac{P(\frac{i}{m})}{1 - (1 + \frac{i}{m})^{-n.m}}$$

$$S = R\left(\frac{\left(1 + \frac{i}{m}\right)^{n.m} - 1}{\frac{i}{m}}\right) \quad and \quad R = \frac{S(\frac{i}{m})}{(1 + \frac{i}{m})^{n.m} - 1}$$

$$PP = \frac{IO}{ACF}$$

$$PP = T + \frac{IO - \sum CF_T}{CF_{T+1}}$$

$$ARR = \frac{Average\ CF - Dep.}{IO}\ x\ 100$$

$$NPV = ACF(PVIFA, k\%, n) - IO$$

$$PI = \frac{TPV}{IO}$$