Answer all Questions
Non-Programmable calculator permitted

Time: Three Hours

Q1. a) Distinguish between Diversifiable and Non-diversifiable risk by using real world examples?

(04 Marks)

b) The stock of Alpha Ltd. performs well relative to other stocks during recessionary periods. The stock of beta Ltd., on the other hand, does well during growth periods. Expected rate of return of these stocks for the next year are estimated as follows:

Economic condition	Return on Alpha (%)	Return on Beta (%)	Probability
High growth	05	50	0.3
Low growth	10	30	0.4
Stagnation	20	-10	0.2
Recession	40	-40	0.1

  i. Calculate the expected rate of return and standard deviation for the stock of Alpha Ltd. and stock of beta Ltd. separately.

  ii. Calculate the coefficient of variation for both stocks.

  iii. If you are an investor, which company you would select for the investment?

(09 Marks)

c) The risk free rate of return is 11 percent. The expected rate of return on the market portfolio is 15 percent. The expected rate of growth for the dividend of firm Z is 8 percent. The last dividend paid on the stock of firm Z was Rs. 20. The beta of firm Z's stock is 1.3.

  i. What is the equilibrium price of the stock of firm Z?

  ii. How would the equilibrium price change when (a) the inflation premium increases by 2 percent, (b) the expected growth rate increases by 3 percent, and (c) the beta of Z's equity rises to 1.5

(07 Marks)

(Total 20 Marks)

1

Q2. a) Explain the three approaches to determine the cost of equity.

(04M

b) A company has on its books the following amount and specific costs of each type of capita

Type of capital	Book value	Market value	Specific cost
	(Rs)	(Rs)	(%)
Debt	400,000	380,000	15
Preference	100,000	110,000	18
Equity	600,000	1,200,000	25
Retained earnings	200,000	-	20

    i. Determine the weighted average cost of capital using (a) book value weights an market value weights.

    ii. Can you think of a situation where the weighted average cost of capital would b same using either of weights?

(08 M

c) XYZ company currently pays a dividend of Rs.40 per share and this dividend is expect grow at a 15 percent annual rate for 3 years, then at a 12 % rate for the next three years, al is expected to grow at 5 percent rate forever. What value would you place on the equity percent rate of return were required?

(08 M

(Total 20 Ma

Q3. a) Briefly explain the theories of capital structure with real world examples.

(04M

b) Firm X and Y are identical in every aspect except that X is unlevered while Y is levered. Company Y has Rs. 5 million of 5 percent debentures outstanding. Assume that tax rate is 4 percent, EBIT is Rs. 400,000 and that cost of equity is 10 percent.

Calculate the value of the firms, if the M-M assumptions are met?

(06 Ma

c) The following data relate to capital structure of two companies (Apple Ltd and Orange Ltd).

Capital structure	Apple Ltd	Orange Ltd
Debt	50 %	20 %
Equity	50 %	80 %
Borrowing rate	13 %	13%
Net operating income	Rs. 360,000	Rs.360,000

i. If you own 2 percent of the common stock of Apple Ltd, what is your rupee return if the overall capitalization rate of the company (Ko) is 18 percent? What is implied equity capitalization rate (Ke)?

ii. What is the implied equity capitalization rate of Orange Ltd? Whether it is different from that of Apple Ltd. If so, give the reasons.

(10 Marks)

(Total 20 Marks)

4. a) Distinguish between "Operating Leverage and Financial Leverage" with appropriate illustrations.

(05 Marks)

b) Grey company presently has Rs.6 million in debt outstanding, bearing an interest rate of 12 percent. It wishes to finance a Rs. 8 million expansion programme and is considering three alternatives:

Alternative I   Additional debt at 14 percent interest
Alternative II   Preferred stock with a 12 percent dividend
Alternative III   Sale of common stock at Rs. 50 per share

The company presently has 800,000 shares of common stock outstanding and tax rate is 40 percent.

i. If EBIT are presently Rs.2.5 million, what would be EPS for three alternatives, assuming no immediate increase in operating profit?

ii. Develop a break-even or indifference chart for these alternatives. What are the approximate indifference points? To check one of these points, mathematically determine the indifference point between the debt plan and the common stock plan. What are the horizontal axes intercepts?

3

iii. Compute the degree of financial leverage for each alternative at the expected EBIT level of Rs. 2.5 million.

iv. Which alternative do you prefer? How much would EBIT need to increase before the next alternative would be better in terms of EPS?

(15 Marks

(Total 20 Marks

Q5. a) Define the term 'Agency Problem', and briefly describe the goals of financial management.

(04 Marks

b) AB Ltd. is creating a sinking fund to redeem its preference capital of Rs. 5 million issued 20th February 2011 and maturing 19th February 2023. The company will make equal payment for the funds and expects that it will earn 15 percent per year. The first annual payment will made on 20th February, 2011.

Determine the size of the annual payment for sinking fund?

(03 Marks

c) Suppose you borrow Rs. 1, 000, 000, you are going to repay the loan by making equal annual payments for five years. The interest rate on the loan is 16 percent per year.

Prepare an amortization schedule for the loan. How much interest will you pay over the life the loan?

(07 Marks

d) Assume that it is now January 1, 2011, and you will need Rs. 1,000,000 on January 1, 2015 start a business. Your bank compounds interest at a 10 percent annual rate.

i. How much should you deposit on January 1, 2010, to have the required sum of 1,000,000 on January 1, 2015?

ii. If you want to make an equal payment on January 1 every year, from 2011 through 2 to accumulate the required sum of Rs. 1,000,000, how large would each of the payments be?

iii. If your uncle were to offer either to make payments calculated in part (ii) or give y lump sum of Rs. 750,000 on January 1, 2011, which would you choose?

(06 Marks

(Total 20 Marks

Important Formulas:

1. $E(R) = \sum\limits_{i=1}^{n} P_i R_i$

2. $\sigma = \sqrt{\sum\sum\limits_{i-1}^{n} (R_i - E(r))^2 P_i}$

3. $C.V = \dfrac{\sigma}{x} \times 100$

4. $DOL = [(EBIT + FC)/EBIT]$

5. $DFL\ \dfrac{EBIT}{EBIT - I - [PD/(1-t)]}$

6. $DOL = DOL * DFL$

7. $E(R_i) = R_f + \beta_j(R_m - R_f)$

8. $WACC = W_dK_d(1-t) + W_pK_p + W_eK_e$

9. $K_e = D_1/P_o + g$

10. $EPS = \dfrac{(EBIT - I)(1-t) - Pref.div.}{NS}$

11. $FV_{OA} = PMT\left[\dfrac{(1+i)^n - 1}{i}\right]$

12. $FV_{AD} = PMT\left[\dfrac{(1+i)^n - 1}{i}\right](1+i)$

13. $PV_{OA} = PMT\left[\dfrac{(1+i)^{-n} - 1}{i}\right]$

14. $PV_{AD} = PMT\left[\dfrac{(1+i)^{-n} - 1}{i}\right](1+i)$

ble - 1 Future value of Rs. 1 at the end of t periods $= (1 + r)^t$

Interest Rate

t	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%	36%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1200	1.1400	1.1500	1.1600	1.1800	1.2000	1.2400	1.2800	1.3200	1.3600
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2544	1.2996	1.3225	1.3456	1.3924	1.4400	1.5376	1.6384	1.7424	1.8496
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.4049	1.4815	1.5209	1.5609	1.6430	1.7280	1.9066	2.0972	2.3000	2.5155
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5735	1.6890	1.7490	1.8106	2.0053	2.0736	2.3642	2.6844	3.0360	3.4210
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.7623	1.9254	2.0114	2.1003	2.2878	2.4883	2.9316	3.4360	4.0075	4.6526
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.9738	2.1950	2.3131	2.4364	2.6996	2.9860	3.6352	4.3980	5.2899	6.3275
7	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.2107	2.5023	2.6600	2.8262	3.1855	3.5832	4.5077	5.6295	6.9826	8.6054
8	1.0829	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.4760	2.8526	3.0590	3.2784	3.7589	4.2998	5.5895	7.2058	9.2170	11.703
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.7731	3.2519	3.5179	3.8030	4.4355	5.1598	6.9310	9.2234	12.166	15.917
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	3.1058	3.7072	4.0456	4.4114	5.2338	6.1917	8.5944	11.806	16.060	21.647
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.4785	4.2262	4.6524	5.1173	6.1759	7.4301	10.657	15.112	21.199	29.439
12	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.8960	4.8179	5.3503	5.9360	7.2876	8.9161	13.215	19.343	27.983	40.037
13	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	4.3635	5.4924	6.1528	6.8858	8.5994	10.699	16.386	24.759	36.937	54.451
14	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.8871	6.2613	7.0757	7.9875	10.147	12.839	20.319	31.691	48.757	74.053
15	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	5.4736	7.1379	8.1371	9.2655	11.974	15.407	25.196	40.565	64.359	100.71
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	6.1304	8.1372	9.3576	10.748	14.129	18.488	31.243	51.923	84.954	136.97
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1588	3.7000	4.3276	5.0545	6.8660	9.2765	10.761	12.468	16.672	22.186	38.741	66.461	112.14	186.28
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	7.6900	10.575	12.375	14.463	19.673	26.623	48.039	85.071	148.02	253.34
19	1.2081	1.4568	1.7535	2.1068	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	8.6128	12.056	14.232	16.777	23.214	31.948	59.568	108.89	195.39	344.54
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	9.6463	13.743	16.367	19.461	27.393	38.338	73.864	139.38	257.92	468.57
25	1.2824	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.835	17.000	26.462	32.919	40.874	62.669	95.396	216.54	478.90	1033.6	2180.1
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.063	13.268	17.449	29.960	50.950	66.212	85.850	143.37	237.38	634.82	1645.5	4142.1	10143.
40	1.4889	2.2080	3.2620	4.8010	7.0400	10.286	14.974	21.725	31.409	45.259	93.051	188.88	267.86	378.72	750.38	1469.8	5455.9	19427.	66521.	*
50	1.6446	2.6916	4.3839	7.1067	11.467	18.420	29.457	46.902	74.358	117.39	289.00	700.23	1083.7	1670.7	3927.4	9100.4	46890.	*	*	*
60	1.8167	3.2810	5.8916	10.520	18.679	32.988	57.946	101.26	176.03	304.48	897.60	2595.9	3970.2	5529.8	*	*	*	*	*	*

The factor is greater than 99,999.

Table -2 Present value of Rs.1 to be received after t periods = $1/(1+r)^t$

Interest Rate

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696	0.8621	0.8475	0.8333	0.8065	0.7813	0.7576
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.7972	0.7695	0.7561	0.7432	0.7182	0.6944	0.6504	0.6104	0.5739
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7118	0.6750	0.6575	0.6407	0.6086	0.5787	0.5245	0.4768	0.4348
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6355	0.5921	0.5718	0.5523	0.5158	0.4823	0.4230	0.3725	0.3294
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5674	0.5194	0.4972	0.4761	0.4371	0.4019	0.3411	0.2910	0.2495
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5066	0.4556	0.4323	0.4104	0.3704	0.3349	0.2751	0.2274	0.1890
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4523	0.3996	0.3759	0.3538	0.3139	0.2791	0.2218	0.1776	0.1432
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4039	0.3506	0.3269	0.3050	0.2660	0.2326	0.1789	0.1388	0.1085
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3606	0.3075	0.2843	0.2630	0.2255	0.1938	0.1443	0.1084	0.0822
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3220	0.2697	0.2472	0.2267	0.1911	0.1615	0.1164	0.0847	0.0472
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.2875	0.2366	0.1869	0.1954	0.1619	0.1346	0.0938	0.0662	0.0357
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2567	0.2076	0.1625	0.1685	0.1462	0.1122	0.0935	0.0610	0.0271
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2292	0.1821	0.1413	0.1597	0.1252	0.0935	0.0779	0.0492	0.0205
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2046	0.1597	0.1229	0.1401	0.1079	0.0779	0.0649	0.0397	0.0155
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.1827	0.1401	0.1069	0.1229	0.0835	0.0649	0.0397	0.0247	0.0118
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1631	0.1229	0.0929	0.0930	0.0708	0.0541	0.0320	0.0193	0.0089
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1456	0.1078	0.0808	0.0802	0.0600	0.0451	0.0258	0.0150	0.0068
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1300	0.0946	0.0703	0.0691	0.0508	0.0376	0.0208	0.0118	0.0051
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1161	0.0829	0.0611	0.0596	0.0431	0.0313	0.0168	0.0092	0.0038
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1037	0.0728	0.0531	0.0514	0.0365	0.0261	0.0135	0.0072	0.0029
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.0926	0.0638	0.0462	0.0443	0.0309	0.0217	0.0109	0.0056	0.0022
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.0826	0.0560	0.0402	0.0382	0.0262	0.0181	0.0088	0.0044	0.0017
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0738	0.0491	0.0348	0.0329	0.0222	0.0151	0.0071	0.0034	0.0013
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0659	0.0431	0.0304	0.0284	0.0188	0.0126	0.0057	0.0027	0.0010
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0588	0.0378	0.0151	0.0245	0.0160	0.0105	0.0046	0.0021	0.0002
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0334	0.0196	0.0037	0.0116	0.0070	0.0042	0.0016	0.0001	
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0107	0.0053	0.0009	0.0026	0.0013	0.0007	0.0002		
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0035	0.0014		0.0006	0.0003	0.0001			

The factor is zero to four decimal places.

Table -3 Present value of an annuity of Rs.1 per period for t periods $= [1 - 1/(1 + r)^t]/r$

Interest Rate

Number of Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	16%	18%	20%	24%	28%	32%	36%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696	0.8475	0.8333	0.8065	0.7813	0.7576	0.7.
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.6901	1.6467	1.6257	1.5656	1.5278	1.4568	1.3916	1.3315	1.21
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4018	2.3216	2.2832	2.1743	2.1065	1.9813	1.8684	1.7663	1.61
4	3.8020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.0373	2.9137	2.8550	2.6901	2.5887	2.4043	2.2410	2.0957	1.91
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6048	3.4331	3.3522	3.1272	2.9906	2.7454	2.5320	2.3452	2.18
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.1114	3.8887	3.7845	3.4976	3.3255	3.0205	2.7594	2.5342	2.33
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.5638	4.2883	4.1604	3.8115	3.6046	3.2423	2.9370	2.6775	2.46
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	4.9676	4.6389	4.4873	4.0776	3.8372	3.4212	3.0758	2.7860	2.54
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.3282	4.9464	4.7716	4.3030	4.0310	3.5655	3.1842	2.8681	2.60
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.6502	5.2161	5.0188	4.4941	4.1925	3.6819	3.2689	2.9304	2.64
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	5.9377	5.4527	5.2337	4.6560	4.3271	3.7757	3.3351	2.9776	2.88
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.1944	5.6603	5.4206	4.7932	4.4392	3.8514	3.3868	3.0133	2.70
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.4235	5.8424	5.5831	4.9095	4.5327	3.9124	3.4272	3.0404	2.72
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.6282	6.0021	5.7245	5.0081	4.6106	3.9616	3.4587	3.0609	2.74
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	6.8109	6.1422	5.8474	5.0916	4.6755	4.0013	3.4834	3.0764	2.75
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	6.9740	6.2651	5.9542	5.1624	4.7296	4.0333	3.5026	3.0882	2.75
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.1196	6.3729	6.0472	5.2223	4.7746	4.0591	3.5177	3.0971	2.76
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.2497	6.4674	6.1280	5.2732	4.8122	4.0799	3.5294	3.1039	2.76
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.3658	6.5504	6.1982	5.3162	4.8435	4.0967	3.5386	3.1090	2.78
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.4694	6.6231	6.2593	5.3527	4.8696	4.1103	3.5458	3.1129	2.77
21	18.8570	17.0112	15.4150	14.0292	12.8212	11.7641	10.8355	10.0168	9.2922	8.6487	7.5620	6.6870	6.3125	5.3837	4.8913	4.1212	3.5514	3.1158	2.77
22	19.6604	17.6580	15.9369	14.4511	13.1630	12.0416	11.0612	10.2007	9.4424	8.7715	7.6446	6.7429	6.3587	5.4099	4.9094	4.1300	3.5558	3.1180	2.77
23	20.4558	18.2922	16.4436	14.8568	13.4886	12.3034	11.2722	10.3741	9.5802	8.8832	7.7184	6.7921	6.3988	5.4321	4.9245	4.1371	3.5592	3.1197	2.77
24	21.2434	18.9139	16.9355	15.2470	13.7986	12.5504	11.4693	10.5288	9.7066	8.9847	7.7843	6.8351	6.4338	5.4509	4.9371	4.1428	3.5619	3.1210	2.77
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	7.8431	6.8729	6.4641	5.4669	4.9476	4.1474	3.5640	3.1220	2.77
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.0552	7.0027	6.5660	5.5168	4.9789	4.1601	3.5693	3.1242	2.777
40	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.2438	7.1050	6.6418	5.5482	4.9966	4.1659	3.5712	3.1250	2.777
50	39.1961	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617	9.9148	8.3045	7.1327	6.6605	5.5541	4.9995	4.1666	3.5714	3.1250	2.777

Table -4 Future value of an annuity of Rs.1 per period for t periods = $[(1+r)^t - 1]/r$

Interest Rate

Number of Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	16%	18%	20%	24%	28%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1200	2.1400	2.1600	2.1800	2.2000	2.2400	2.2800
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100	3.3744	3.4396	3.5056	3.5724	3.6400	3.7776	3.9184
4	4.0604	4.1216	4.1836	4.2465	4.3101	4.3746	4.4399	4.5061	4.5731	4.6410	4.7793	4.9211	5.0665	5.2154	5.3680	5.6842	6.0156
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051	6.3528	6.6101	6.8771	7.1542	7.4416	8.0484	8.6999
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156	8.1152	8.5355	8.9775	9.4420	9.9299	10.980	12.136
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9.2004	9.4872	10.089	10.730	11.414	12.142	12.916	14.615	16.534
8	8.2857	8.5830	8.8932	9.2142	9.5491	9.8975	10.260	10.637	11.028	11.436	12.300	13.233	14.240	15.327	16.499	19.123	22.163
9	9.3685	9.7546	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.776	16.085	17.519	19.086	20.799	24.712	29.369
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	17.549	19.337	21.321	23.521	25.959	31.643	38.593
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	20.655	23.045	25.733	28.755	32.150	40.238	50.398
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	24.133	27.271	30.850	34.931	39.581	50.895	65.510
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523	28.029	32.089	36.786	42.219	48.497	64.110	84.853
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975	32.393	37.581	43.672	50.818	59.196	80.496	109.61
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772	37.280	43.842	51.660	60.965	72.035	100.82	141.30
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	42.753	50.980	60.925	72.939	87.442	126.01	181.87
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	48.884	59.118	71.673	87.068	105.93	157.25	233.79
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599	55.750	68.394	84.141	103.74	128.12	195.99	300.25
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159	63.440	78.969	98.603	123.41	154.74	244.03	385.32
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	72.052	91.025	115.38	146.63	186.69	303.60	494.21
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	81.699	104.77	134.84	174.02	225.03	377.46	633.59
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.457	62.873	71.403	92.503	120.44	157.41	206.34	271.03	469.06	812.00
23	25.716	28.845	32.453	36.618	41.430	46.996	53.436	60.893	69.532	79.543	104.60	138.30	183.60	244.49	326.24	582.63	1040.4
24	26.973	30.422	34.426	39.083	44.502	50.816	58.177	66.765	76.790	88.497	118.16	158.66	213.98	289.49	392.48	723.46	1332.7
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347	133.33	181.87	249.21	342.60	471.98	898.09	1706.8
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.28	136.31	164.49	241.33	356.79	530.31	790.95	1181.9	2640.9	5873.2
40	48.886	60.402	75.401	95.026	120.80	154.76	199.64	259.06	337.88	442.59	767.09	1342.0	2360.8	4163.2	7343.9	22728.	69377.
50	64.463	84.579	112.80	152.67	209.35	290.34	406.53	573.77	815.08	1163.9	2400.0	4994.5	10436.	21813.	45497.	*	*
60	81.670	114.05	163.05	237.99	353.58	533.13	813.52	1253.2	1944.8	3034.8	7471.6	18536.	29220.	*	*	*	*

*The factor is greater than 99,999.