

PGDM (IB) 2017-19  
CORPORATE FINANCE  
IB303

Trimester – III<sup>rd</sup>, MARCH 2018

Time: 2.5 Hours

Max. Marks: 50

Roll No.

**Instruction:** Students are required to write Roll No on every page of the question paper, writing anything **except** the Roll No will be treated as Unfair means. In case of rough work please use answer sheet.

Section A

(Marks 15)

There are 5 questions Attempt any three. Each question carries five marks.

A 1. Satya Sharma is 63 years old and recently retired. He wishes to provide retirement income for himself and is considering an annuity contract with the Philo Life Insurance Company. Such a contract pays him an equal-rupee amount each year that he lives. For this cash-flow stream, he must put up a specific amount of money at the beginning. According to actuary tables, his life expectancy is 15 years, and that is the duration on which the insurance company bases its calculations regardless of how long he actually lives. If Philo Life uses a compound annual interest rate of 5 percent in its calculations, what must Sharma pay at the outset for an annuity to provide him with INR100,000 per year? (Assume that the expected annual payments are at the end of each of the 15 years.)

A 2. Just today, Favorite Foods, Inc.'s common stock paid a \$1.40 annual dividend per share and had a closing price of \$21. Assume that the market's required return, or capitalization rate, for this investment is 12 percent and that dividends are expected to grow at a constant rate forever. Calculate the implied growth rate in dividends.

A 3. Is there an easily identifiable debt-equity ratio that will maximize the value of a firm? Why or why not?

A 4. The bird-in-the-hand argument, which states that a dividend today is safer than the uncertain prospect of a capital gain tomorrow, is often used to justify high dividend payout ratios. Explain the fallacy behind this argument.

A 5. Indicate the effect that the following will have on the operating cycle. Use the letter *I* to indicate an increase, the letter *D* for a decrease, and the letter *N* for no change.

- Receivables average goes up.
- Inventory turnover goes from 3 times to 6 times.
- Payables turnover goes from 6 times to 11 times.
- Receivables turnover goes from 7 times to 9 times.
- Payments to suppliers are accelerated.

**Section B**

(Marks 20)

There are 3 questions. Attempt any two. Each question carries 10 marks

B 1. The Downtown Athletic Club must choose between two mechanical tennis ball throwers. Machine A costs less than machine B but will not last as long. The cash *outflows* from the two machines are shown here:

Machine	0	1	2	3	4
A	\$500	\$120	\$120	\$120	
B	\$600	\$100	\$100	\$100	\$100

Machine A costs \$500 and lasts three years. There will be maintenance expenses of \$120 to be paid at the end of each of the three years. Machine B costs \$600 and lasts four years. There will be maintenance expenses of \$100 to be paid at the end of each of the four years. Revenues per year are assumed to be the same, regardless of machine. Recommend a machine assuming cost funds 10%.

B 2. To increase sales from their present annual \$24 million, Kim Chi Company, a wholesaler, may try more liberal credit standards. Currently, the firm has an average collection period of 30 days. It believes that, with increasingly liberal credit standards, the following will result:

	CREDIT POLICY			
	A	B	C	D
Increase in sales <i>from previous level</i> (in millions)	\$2.8	\$1.8	\$1.2	\$6
Average collection period for incremental sales (days)	45	60	90	144

The prices of its products average \$20 per unit, and cost average \$18 per unit. No bad-debt losses are expected. If the company has a pre-tax opportunity cost of funds of 30 percent, which credit policy should be pursued? Why? (Assume a 360-day year.)

B 3. Filer Manufacturing has 9.5 million shares of common stock outstanding. The current share price is \$53, and the book value per share is \$5. Filer Manufacturing also has two bond issues outstanding. The first bond issue has a face value of \$75 million and an 8 percent coupon and sells for 93 percent of par. The second issue has a face value of \$60 million and a 7.5 percent coupon and sells for 96.5 percent of par. The first issue matures in 10 years, the second in 6 years.

- What are Filer's capital structure weights on a book value basis?
- What are Filer's capital structure weights on a market value basis?
- Which are more relevant, the book or market value weights? Why?

**Section C**

(Marks 15)

Aguilera Acoustics (AAI), Inc., projects unit sales for a new seven-octave voice emulation implant as follows:

Year	Unit Sales
1	85,000
2	98,000
3	106,000
4	114,000
5	93,000

Production of the implants will require \$1,500,000 in net working capital to start and additional net working capital investments each year equal to 15 percent of the projected sales increase for the following year.

Total fixed costs are \$900,000 per year, variable production costs are \$240 per unit, and the units are priced at \$325 each. The equipment needed to begin production has an installed cost of \$21,000,000.

The implants are intended for professional singers and this equipment is considered for straight line depreciation for over a period of five years. In five years, this equipment can be sold for about 20 percent of its acquisition cost. AAI is in the 35 percent marginal tax bracket and has a required return on all its projects of 18 percent.

Based on these preliminary project estimates,

- A) What is the NPV of the project?
- B) What is the IRR?

Annuity Table

Present value of an annuity of 1 i.e.  $\frac{1 - (1 + r)^{-n}}{r}$

Where  $r$  = discount rate  
 $n$  = number of periods

Periods n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

Present Value Table

Present value of 1 i.e.  $(1 + r)^{-n}$

Where  $r$  = discount rate  
 $n$  = number of periods until payment

Periods (n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	2
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	3
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	4
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	5
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	6
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	7
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	8
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	9
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	10
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.305	11
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	12
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	13
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	14
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	2
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	3
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	4
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	5
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	6
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	7
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	8
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	9
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	10
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	11
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	12
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	13
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	14
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	15

Future value interest factor of an ordinary annuity of \$1 per period at % for n periods, FVIFA(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100	2.110	2.120	2.130	2.140	2.150	2.160	2.170	2.180	2.190	2.200
3	3.030	3.060	3.081	3.122	3.158	3.184	3.215	3.246	3.278	3.310	3.342	3.374	3.407	3.440	3.473	3.506	3.538	3.572	3.606	3.640
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641	4.710	4.778	4.850	4.921	4.993	5.066	5.141	5.215	5.291	5.368
5	5.101	5.204	5.309	5.416	5.525	5.637	5.751	5.867	5.985	6.105	6.228	6.353	6.480	6.610	6.742	6.877	7.014	7.154	7.297	7.442
6	6.152	6.308	6.468	6.630	6.802	6.975	7.153	7.336	7.523	7.716	7.913	8.115	8.323	8.536	8.754	8.977	9.205	9.442	9.683	9.930
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487	9.783	10.088	10.405	10.730	11.067	11.414	11.772	12.142	12.523	12.916
8	8.286	8.593	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436	11.859	12.300	12.757	13.233	13.727	14.240	14.773	15.327	15.902	16.499
9	9.369	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.519	18.285	19.086	19.923	20.789
10	10.462	10.950	11.464	12.005	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	22.388	23.521	24.709	25.959
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21.814	23.045	24.349	25.733	27.200	28.755	30.404	32.150
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713	24.133	25.650	27.271	29.002	30.850	32.824	34.934	37.180	39.561
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.212	28.028	29.985	32.089	34.352	36.786	39.404	42.219	45.244	48.497
14	14.947	15.974	17.068	18.239	19.589	21.015	22.550	24.215	26.019	27.975	30.095	32.393	34.883	37.581	40.505	43.672	47.105	50.818	54.841	59.190
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.162	29.381	31.792	34.405	37.230	40.277	43.542	47.030	50.860	55.140	59.865	64.941	70.385
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	39.190	42.753	46.672	50.890	55.537	60.625	66.169	72.189	78.690	85.642
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501	48.894	53.739	58.918	64.475	70.575	77.268	84.574	92.502	101.063
18	19.615	21.412	23.414	25.545	28.132	30.806	33.999	37.450	41.301	45.599	50.396	55.750	61.725	68.394	75.806	84.141	93.408	103.74	115.27	128.12
19	20.811	22.841	25.117	27.577	30.539	33.760	37.379	41.446	46.018	51.169	56.939	63.440	70.749	78.989	88.292	98.603	110.28	123.44	138.17	154.74
20	22.019	24.297	26.870	29.775	33.066	36.786	40.995	45.762	51.180	57.275	64.203	72.052	80.947	91.025	102.44	115.38	130.03	146.65	165.42	186.69
25	28.243	32.030	36.459	41.649	47.727	54.865	63.245	73.106	84.701	98.347	114.41	133.33	155.62	181.87	212.99	249.21	292.10	342.80	402.04	471.98
30	34.785	40.668	47.575	56.066	66.439	79.068	94.461	113.28	136.31	164.9	199.02	241.33	293.20	356.79	434.75	530.31	647.44	790.85	966.71	1,181.9
35	41.660	48.994	60.462	73.652	90.320	111.43	138.24	172.32	215.71	271.02	341.59	431.66	546.66	693.57	881.17	1,120.7	1,426.5	1,816.7	2,314.2	2,948.3
40	48.886	60.402	75.401	95.026	120.80	154.76	199.64	259.06	337.68	437.9	581.83	767.09	1,013.7	1,342.0	1,791.1	2,360.8	3,134.5	4,133.2	5,529.8	7,343.9
50	64.463	84.579	112.80	152.67	209.35	290.94	406.63	573.77	815.08	1,163.9	1,668.8	2,400.0	3,459.5	4,994.5	7,171.7	10,436	15,000	21,813	31,515	45,487

Future value interest factor of \$1 per period at 1% for n periods, FVIF(1,n)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100	1.110	1.120	1.130	1.140	1.150	1.160	1.170	1.180	1.190	1.200
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210	1.232	1.254	1.277	1.300	1.323	1.346	1.369	1.392	1.416	1.440
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331	1.368	1.405	1.443	1.482	1.521	1.561	1.602	1.643	1.685	1.728
4	1.041	1.082	1.125	1.170	1.215	1.262	1.311	1.360	1.412	1.464	1.518	1.574	1.630	1.689	1.749	1.811	1.874	1.939	2.005	2.074
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611	1.685	1.762	1.842	1.925	2.011	2.100	2.192	2.288	2.386	2.488
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772	1.870	1.974	2.082	2.195	2.313	2.436	2.565	2.700	2.840	2.985
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949	2.076	2.211	2.353	2.502	2.660	2.826	3.001	3.185	3.378	3.583
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144	2.305	2.476	2.656	2.853	3.069	3.278	3.511	3.759	4.021	4.300
9	1.094	1.195	1.305	1.423	1.549	1.689	1.838	1.999	2.172	2.358	2.558	2.773	3.004	3.252	3.518	3.803	4.108	4.435	4.785	5.160
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594	2.839	3.106	3.395	3.707	4.046	4.411	4.807	5.234	5.695	6.192
11	1.116	1.246	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853	3.152	3.479	3.836	4.226	4.652	5.117	5.624	6.176	6.777	7.430
12	1.127	1.268	1.425	1.601	1.798	2.012	2.252	2.518	2.813	3.138	3.498	3.896	4.336	4.818	5.350	5.935	6.580	7.298	8.084	8.916
13	1.138	1.294	1.469	1.665	1.885	2.133	2.410	2.720	3.065	3.452	3.883	4.363	4.898	5.492	6.153	6.886	7.699	8.599	9.598	10.699
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797	4.310	4.887	5.535	6.261	7.076	7.988	9.007	10.147	11.420	12.839
15	1.161	1.346	1.568	1.801	2.079	2.397	2.759	3.172	3.642	4.177	4.785	5.474	6.254	7.138	8.137	9.266	10.539	11.974	13.590	15.407
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595	5.314	6.130	7.067	8.137	9.356	10.748	12.330	14.129	16.172	18.488
17	1.184	1.400	1.653	1.948	2.282	2.693	3.159	3.700	4.328	5.054	5.895	6.866	7.986	9.276	10.761	12.468	14.426	16.612	19.244	22.188
18	1.196	1.428	1.702	2.028	2.407	2.854	3.380	3.968	4.717	5.560	6.544	7.690	9.024	10.575	12.375	14.463	16.879	19.673	22.901	26.823
19	1.208	1.457	1.754	2.107	2.527	3.028	3.617	4.316	5.142	6.116	7.283	8.673	10.197	12.056	14.232	16.777	19.748	23.214	27.252	31.948
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727	8.062	9.646	11.523	13.743	16.367	19.461	23.106	27.363	32.423	38.338
25	1.282	1.641	2.094	2.668	3.386	4.292	5.427	6.848	8.623	10.835	13.685	17.000	21.231	26.482	32.979	40.874	50.658	62.669	77.388	95.398
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.093	13.268	17.448	22.392	29.860	39.116	50.950	66.212	85.850	111.055	143.374	184.675	237.376
35	1.417	2.000	2.814	3.946	5.516	7.686	10.677	14.785	20.414	28.102	38.675	52.800	72.089	96.100	133.176	180.314	243.503	327.997	440.701	590.668
40	1.488	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.239	65.001	90.051	123.782	180.884	267.864	378.721	533.858	750.378	1,051.668	1,459.772
50	1.845	2.892	4.384	7.107	11.487	18.420	29.457	46.992	74.358	117.351	184.585	288.002	450.736	700.233	1,083.657	1,670.704	2,566.275	3,927.357	5,898.914	9,100.438