Time allowed: 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.
Make assumptions wherever necessary and write them down at the end of solution.

Sections	No. of Questions to attempt	Marks	Marks
A	3 out of 5 (Short Questions)	5 Marks each	3*5 = 15
B	2 out of 3 (Long Questions)	10 Marks each	2*10 = 20
C	Compulsory Case Study	15 Marks	15
		Total Marks	**50**

SECTION A

A 1. Gamn is a German infrastructure company, specializing in building toll roads across Germany. It is considering building a toll road in India.
The investment is expected to generate net income of 150 million Rupees next year, growing at 4% a year (in rupee terms), in perpetuity. Once the toll road has been built, there will be no need for additional capital expenditures or working capital investments, but all depreciation will have to be reinvested back in the road to maintain it in working condition. Gamn has a beta of one, a cost of equity of 8% and a cost of capital of 6.5%, in Euro terms, when converted in Indian Rupees, cost of equity comes out to be 15%. For this project.
Estimate the most in equity that Gamn should be willing to invest in building the toll road

A 2. You have been asked to assess the value of a finite-life asset with an expected life of 5 years and constant cash flows over that life (with no salvage value at the end). You have been given the following income statement for the asset:

	Yrs 1-5
Revenues	$1,000
- Operating Expenses	$600
EBIT	$400
- Interest expenses	$100
Taxable Income	$300

- Taxes	$105
Net Income	$195

You can assume that the firm has no capital expenditures, depreciation or working capital needs; in other words, earnings are cash flows. The effective tax rate is also the marginal tax rate. The cost of capital for the asset is 10%.
Estimate the value of the asset.

A 3 You are comparing two firms and have compiled the following information, obtained from their consolidated financial statements (in millions):

	A	B
Market value of equity	9000	14000
Book value of equity	4000	6000
Market value of debt	5000	5000
Book value of debt	4500	4500
Cash	2000	1000
Effective Tax rate	40%	20%
Net Income	600	1200
Interest expenses	500	500
Depreciation & Amortization	500	1000

On a consolidated EV/EBITDA basis, and incorporating whatever fundamentals you can, which of these firms is cheaper? (You can assume that the firms had no interest or other non-operating income. They are both in stable growth and have the same cost of capital.)

A 4. Anand Limited, a publicly traded toy manufacturing company, is considering investing in a 5-year joint venture with Reliance Entertainment a movie company, to produce animated movies. You have been provided with the following information on the cost of equity and capital of the two companies:

	Anand Limited	Reliance Entertainment.
Cost of equity	9%	12%
Cost of capital	7.50%	10%

The following are the projected cash flows for Anand' share of the joint venture:

	0	1	2	3	4	5
Revenues		$100	$110	$125	$140	$160
- COGS (includes depreciation)		$40	$44	$50	$56	$64
Operating income		$60	$66	$75	$84	$96
- Taxes		$18	$20	$23	$25	$29
EBIT (1-t)		$42	$46	$53	$59	$67
- Net cap ex	$80	$0	$0	$0	$0	$0
- Chg in WC		$5	$5	$5	$5	$5
Cash flow	-$80	$37	$41	$48	$54	$62

Estimate the value of the joint venture to Anand. (Provide your rationale for the discount rate that you use)

A 5. You have been given the task of estimating the cost of capital for a Valdeo Ltd., a company that operates in two businesses – food processing and grocery retail. The estimated values of the businesses is broken down in the table below (with the values in millions of INR):

	Values	Weights	Unlevered Beta
Value of food processing business	1,000	0.4	0.90
Value of Grocery business	1,500	0.6	0.60

The company has INR 500 million in debt but is unrated. You have estimated a synthetic rating of BBB, based on its interest coverage ratio; the default spread with that rating is 2.25% with a risk free rate of 6%. Marginal tax rate is 40%. You can assume that the company is fairly priced and has no cash. Benchmark ERP is 8%. Find the cost of capital for the company.

Section B

B 1. You have been asked to analyse and value Ajanta Limited which is in special fabrics industry and has been showing a good performance in the past. You have made following estimates:

Year	1	2	3	4th year onward
Growth rate	20%	20%	15%	5%
NOPAT (INR million)	100	120	138	144.9
Cost of Equity	15.00%	14.50%	14.00%	12.50%
Cost of Debt	10%	10%	10%	10%
Debt Ratio	10%	20%	30%	40%
Return on Capital	25%	25%	20%	15%

Marginal tax rate for the company is 40%. What is the value of the firm?

B 2. a) DCF valuation though a sound way of valuing an opportunity, may not be useful in all the business conditions. What are other value enhancement techniques you may use?

b) You have been asked to analyze the value of an oil company with substantial oil reserves. The estimated reserves amount to 10,000,000 barrels and the estimated present value of the development cost for each barrel is $48. The current price of oil is $80 per barrel and the average production cost is estimated to be $24 per barrel. The company has the rights to these reserves for the next twenty years and the twenty-

year bond rate is 6%. The annualized standard deviation in the price of the oil is 20%. What is the value of this oil company? You may use the following values:
d1: 1.961200081
d2: 1.06677289

B 3. Pepsi Electronics is currently selling for INR 38.50, with trailing 12-month earnings and dividends of INR 1.36 and 0.64, respectively. P/E is 28.3, P/B is 7.1, and P/S is 2.9. The return on equity is 27 percent, and the profit margin on sales is 10.9 percent. The Treasury bond rate is 5 percent, the equity risk premium is 7.5 percent, and beta is 1.2.
Assume that the dividend and earnings growth rates are 9 percent. What P/Es, P/Bs, and P/Ss would be justified given the required rate of return and current values of the dividend payout ratio, ROE, and profit margin? State whether Company appears to be fairly valued, overvalued, or undervalued based on fundamentals.

Section C

Management of A Ltd. Is thinking of buying out B Ltd. which is a private company in the same business line. A Ltd. assumes following performance of B Ltd. after acquisition.

	1	2	3	4	5
Revenues	690	794	913	1049	1207
Expenses	483	555	639	736	845
Depreciation	46	54	61	70	80
E B I T	161	185	213	245	282
Interest	110	100	90	80	70
P B T	51	85	123	165	212
Taxes	20	34	49	66	85
CAPEX	58	66	76	87	101
Increase in W.C.	35	40	46	52	60
Repayment of Debt	100	100	100	100	100

Purchase consideration is Rs. 1300 lakhs which will be mainly financed by debt of Rs. 1100 lakhs and balance in equity. Interest rate will be 10%, and an annual repayment of Rs. 100 lakhs will be done throughout the forecast period starting by the end of first year. Debt level left at the end of fifth year will be kept forever.
The assumed rate of corporation tax is 40% p.a. It is assumed that the cash flows received in fifth year will grow at the rate of 5% forever.
The risk free rate of interest is assumed to be 6% p.a., the return on a market portfolio is taken to be 13.5%, whilst an asset beta of 1.2 is used for purposes of the appraisal. What will you advice to A Ltd.?

Present Value Table

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

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

Discount rate (r)

Periods (n)	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
2	0·980	0·961	0·943	0·925	0·907	0·890	0·873	0·857	0·842	0·826
3	0·971	0·942	0·915	0·889	0·864	0·840	0·816	0·794	0·772	0·751
4	0·961	0·924	0·888	0·855	0·823	0·792	0·763	0·735	0·708	0·683
5	0·951	0·906	0·863	0·822	0·784	0·747	0·713	0·681	0·650	0·621
6	0·942	0·888	0·837	0·790	0·746	0·705	0·666	0·630	0·596	0·564
7	0·933	0·871	0·813	0·760	0·711	0·665	0·623	0·583	0·547	0·513
8	0·923	0·853	0·789	0·731	0·677	0·627	0·582	0·540	0·502	0·467
9	0·914	0·837	0·766	0·703	0·645	0·592	0·544	0·500	0·460	0·424
10	0·905	0·820	0·744	0·676	0·614	0·558	0·508	0·463	0·422	0·386
11	0·896	0·804	0·722	0·650	0·585	0·527	0·475	0·429	0·388	0·350
12	0·887	0·788	0·701	0·625	0·557	0·497	0·444	0·397	0·356	0·319
13	0·879	0·773	0·681	0·601	0·530	0·469	0·415	0·368	0·326	0·290
14	0·870	0·758	0·661	0·577	0·505	0·442	0·388	0·340	0·299	0·263
15	0·861	0·743	0·642	0·555	0·481	0·417	0·362	0·315	0·275	0·239

(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
2	0·812	0·797	0·783	0·769	0·756	0·743	0·731	0·718	0·706	0·694
3	0·731	0·712	0·693	0·675	0·658	0·641	0·624	0·609	0·593	0·579
4	0·659	0·636	0·613	0·592	0·572	0·552	0·534	0·516	0·499	0·482
5	0·593	0·567	0·543	0·519	0·497	0·476	0·456	0·437	0·419	0·402
6	0·535	0·507	0·480	0·456	0·432	0·410	0·390	0·370	0·352	0·335
7	0·482	0·452	0·425	0·400	0·376	0·354	0·333	0·314	0·296	0·279
8	0·434	0·404	0·376	0·351	0·327	0·305	0·285	0·266	0·249	0·233
9	0·391	0·361	0·333	0·308	0·284	0·263	0·243	0·225	0·209	0·194
10	0·352	0·322	0·295	0·270	0·247	0·227	0·208	0·191	0·176	0·162
11	0·317	0·287	0·261	0·237	0·215	0·195	0·178	0·162	0·148	0·135
12	0·286	0·257	0·231	0·208	0·187	0·168	0·152	0·137	0·124	0·112
13	0·258	0·229	0·204	0·182	0·163	0·145	0·130	0·116	0·104	0·093
14	0·232	0·205	0·181	0·160	0·141	0·125	0·111	0·099	0·088	0·078
15	0·209	0·183	0·160	0·140	0·123	0·108	0·095	0·084	0·074	0·065

Standard normal distribution table

	0·00	0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09
0·0	0·0000	0·0040	0·0080	0·0120	0·0160	0·0199	0·0239	0·0279	0·0319	0·0359
0·1	0·0398	0·0438	0·0478	0·0517	0·0557	0·0596	0·0636	0·0675	0·0714	0·0753
0·2	0·0793	0·0832	0·0871	0·0910	0·0948	0·0987	0·1026	0·1064	0·1103	0·1141
0·3	0·1179	0·1217	0·1255	0·1293	0·1331	0·1368	0·1406	0·1443	0·1480	0·1517
0·4	0·1554	0·1591	0·1628	0·1664	0·1700	0·1736	0·1772	0·1808	0·1844	0·1879
0·5	0·1915	0·1950	0·1985	0·2019	0·2054	0·2088	0·2123	0·2157	0·2190	0·2224
0·6	0·2257	0·2291	0·2324	0·2357	0·2389	0·2422	0·2454	0·2486	0·2517	0·2549
0·7	0·2580	0·2611	0·2642	0·2673	0·2704	0·2734	0·2764	0·2794	0·2823	0·2852
0·8	0·2881	0·2910	0·2939	0·2967	0·2995	0·3023	0·3051	0·3078	0·3106	0·3133
0·9	0·3159	0·3186	0·3212	0·3238	0·3264	0·3289	0·3315	0·3340	0·3365	0·3389
1·0	0·3413	0·3438	0·3461	0·3485	0·3508	0·3531	0·3554	0·3577	0·3599	0·3621
1·1	0·3643	0·3665	0·3686	0·3708	0·3729	0·3749	0·3770	0·3790	0·3810	0·3830
1·2	0·3849	0·3869	0·3888	0·3907	0·3925	0·3944	0·3962	0·3980	0·3997	0·4015
1·3	0·4032	0·4049	0·4066	0·4082	0·4099	0·4115	0·4131	0·4147	0·4162	0·4177
1·4	0·4192	0·4207	0·4222	0·4236	0·4251	0·4265	0·4279	0·4292	0·4306	0·4319
1·5	0·4332	0·4345	0·4357	0·4370	0·4382	0·4394	0·4406	0·4418	0·4429	0·4441
1·6	0·4452	0·4463	0·4474	0·4484	0·4495	0·4505	0·4515	0·4525	0·4535	0·4545
1·7	0·4554	0·4564	0·4573	0·4582	0·4591	0·4599	0·4608	0·4616	0·4625	0·4633
1·8	0·4641	0·4649	0·4656	0·4664	0·4671	0·4678	0·4686	0·4693	0·4699	0·4706
1·9	0·4713	0·4719	0·4726	0·4732	0·4738	0·4744	0·4750	0·4756	0·4761	0·4767
2·0	0·4772	0·4778	0·4783	0·4788	0·4793	0·4798	0·4803	0·4808	0·4812	0·4817
2·1	0·4821	0·4826	0·4830	0·4834	0·4838	0·4842	0·4846	0·4850	0·4854	0·4857
2·2	0·4861	0·4864	0·4868	0·4871	0·4875	0·4878	0·4881	0·4884	0·4887	0·4890
2·3	0·4893	0·4896	0·4898	0·4901	0·4904	0·4906	0·4909	0·4911	0·4913	0·4916
2·4	0·4918	0·4920	0·4922	0·4925	0·4927	0·4929	0·4931	0·4932	0·4934	0·4936
2·5	0·4938	0·4940	0·4941	0·4943	0·4945	0·4946	0·4948	0·4949	0·4951	0·4952
2·6	0·4953	0·4955	0·4956	0·4957	0·4959	0·4960	0·4961	0·4962	0·4963	0·4964
2·7	0·4965	0·4966	0·4967	0·4968	0·4969	0·4970	0·4971	0·4972	0·4973	0·4974
2·8	0·4974	0·4975	0·4976	0·4977	0·4977	0·4978	0·4979	0·4979	0·4980	0·4981
2·9	0·4981	0·4982	0·4982	0·4983	0·4984	0·4984	0·4985	0·4985	0·4986	0·4986
3·0	0·4987	0·4987	0·4987	0·4988	0·4988	0·4989	0·4989	0·4989	0·4990	0·4990

This table can be used to calculate $N(d)$, the cumulative normal distribution functions needed for the Black-Scholes model of option pricing. If $d_i > 0$, add 0·5 to the relevant number above. If $d_i < 0$, subtract the relevant number above from 0·5.

End of Question Paper