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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2019/2020 ACADEMIC YEAR
FOURTH YEAR, SECOND SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE
BUSINESS ADMINISTRATION

Date: 10^{th} December, 2019
Time: 2.30 – 4.30pm

KFI 406: INVESTMENT ANALYSIS II

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Explain the difference between the forward price and the value of a forward contract. (4 Marks)

b) Suppose you enter into a six-month forward contract on a non-dividend paying stock when the stock price is Shs 30 and the risk free interest rate (with continuous compounding) is 12% per annum. What is the forward price? (2 Marks)

c) Using Black Scholes Model determine the value of a call option with 9 months to go before expiration when the stock currently sells for Ksh 95 and has an instantaneous standard deviation of 0.8 when the exercise price is Ksh 100 and the continuously compounded risk-free rate of return is 6%. (8 Marks)

d) A stock index currently stands at shs. 350. The risk free interest rate is 8% per annum (with continuous compounding) and the dividend yield on the index is 4% per annum. What should the futures price for a four-month contract be? (2 Marks)

e) A company is considering two mutually exclusive expansion plans. Plan A calls for the expenditure of shs. 20 million which will provide cash flows of shs 5, 097,900 per annum for 10 years. Plan B is a smaller expansion plan, it calls for an expenditure of shs 6 million and expected cash flows of shs 2, 402,505 per annum for 10 years. The company has a 10% cost of capital.

Required:

i) Calculate each plan NPV, MIRR and PI (12 Marks)

ii) Which plan should be selected and why? (2 Marks)

QUESTION TWO (20 MARKS)

a) A one - year long forward contract on a non-dividend paying stock is entered into when the stock price is Shs. 40 and the risk free rate of interest is 10% per annum with continuous compounding.

i) What is the forward price and the initial value of the forward contract? (5 Marks)

ii) Six months later, the price of the stock is Shs. 45 and the risk free rate is still 10%. What are the forward price and the value of the forward contract? (8 Marks)

b) Use the binomial model to price a call option with the following features

Exercise Price	Shs. 6
Term to Expiry	2 months
Current Share Price	Shs. 6.50
Up Factor	1.04 per month
Down Factor	1/1.04 per month
Risk free interest rate	1% per month

Use two time periods, each of 1 month (7 Marks)

QUESTION THREE (20 MARKS)

a) Explain five factors that have contributed to the slow growth of the derivatives market in Kenya.
(10 Marks)

b) Companies ABC and XYZ have been offered the following rates per annum on a Shs, 20 million five-year loan:

	Fixed Rate	**Floating Rate**
Company ABC	5.0%	LIBOR + 0.1%
Company XYZ	6.4%	LIBOR + 0.6%

Company ABC requires a floating rate loan; Company XYZ requires a fixed rate loan. Design a swap that will net a bank acting, as an intermediary, 0.1% per annum and that will appear equally attractive to both companies. (10 Marks)

QUESTION FOUR (20 MARKS)

a) In evaluating investment decisions, cash flows are considered to be more relevant than profitability associated with the project. Explain why this is the case. (3 Marks)

b) Mwamba Limited is considering replacing a production machinery at its Mtwapa plant. The existing machinery at the plant was bought 3 years ago at a cost of Sh.50 million. It is expected to have a useful life of 5 more years with no scrap value at the end of this period.

The machinery could be disposed of immediately with net proceeds of Sh.35 million after tax. The new machinery will cost Sh.80 million, with a useful life of 5 years and expected terminal value of Sh.5 million. With the introduction of the new machinery, sales are expected to increase by Sh.25 million per annum over the next 5 years. Variable costs are 60 per cent of sales and the corporate tax rate is at 30 per cent per annum.

The operation of the new machinery will also require an immediate investment of Sh.8 million in working capital, which will be recovered at the end of its useful life. Installation costs of the new machinery will amount to Sh.6 million. Assume that capital allowances are to be provided for on a straight-line basis and Mwamba Limited's cost of capital is 12 per cent per annum.

Required:

i) The initial cash outflow for the replacement decision. (6 Marks)

ii) The annual incremental after tax operating cash flows. (4 Marks)

iii) The NPV of the replacement decision and advise Mwamba Limited on whether to replace the machinery. (7 Marks)

QUESTION FIVE (20 MARKS)

The management of Afro Quatro Ltd. want to establish the amount of financial needs for the next two years. The statement of financial position of the firm as at 31st December 2018 is as follows:

	Shs '000'
Net non - current assets	124,800
Stock	38,400
Debtors	28,800
Cash	7,200
Total assets	199,200
Financed by:	
Ordinary share capital	84,000
Retained earnings	35,200
12% long-term debt	20,000
Trade creditors	36,000
Accrued expenses	24,000
	199,200

For the year ended 31 December 2018, sales amounted to Sh.240, 000,000. The firm projects that the sales will increase by 15% in year 2019 and 20% in year 2020. The after tax profit on sales has been 11% but the management is pessimistic about future operating costs and intends to use an after-tax profit on sales rate of 8% per annum. The firm intends to maintain its dividend payout ratio of 80%. Assets are expected to vary directly with sales while trade creditors and accrued expenses form the spontaneous sources of financing. Any external financing will be effected through the use of commercial paper.

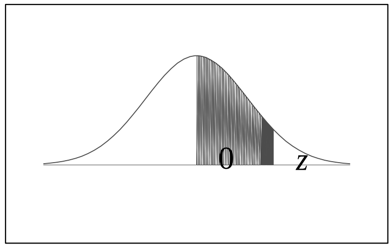
Required:

i) Determine the amount of external financial requirements for the next two years. (8 Marks)

ii) A proforma statement of financial position as at 31st December 2020. (10 Marks)

iii) State the fundamental assumption made in your computations above. (2 Marks)

Standard Normal Distribution Table



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990
3.1	.4990	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	.4993	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	.4995	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998