



**STRATHMORE BUSINESS SCHOOL**

MASTER OF SCIENCE IN DEVELOPMENT FINANCE

**END OF SEMESTER EXAMINATION**

**MDF 8109: PROJECT FINANCE AND MANAGEMENT**

**Date:** Friday, 25<sup>th</sup> August 2023

**Time:** 3 Hours

**Instructions:**

1. This examination consists of FIVE questions.
2. Answer Question **ONE** and ANY OTHER **THREE** questions.
3. You are expected to work independently.
4. Question one is **31 marks**, and all other questions carry **23 marks**

**Question 1 (31 Marks)**

Fusion Engineering Inc. is designing a new product for welding two different alloys. The company has limited time and resources to complete the project. The following activity information is available.

Activity	Immediate Predecessor(s)	Normal Time (Days)	Normal Cost (\$)	Crash Cost / Day (\$)	Crash Time (Days)
A		4	400	125	3
B	A	5	800	200	4
C	A	4	520	150	2
D	B	3	600	225	2
E	C	3	255	100	2
F	B, E	4	600	175	2

- a) Draw the project network. **( 7 marks)**

- b) Find the critical path. **(3 marks)**
- c) Find the project completion time and the corresponding cost. **(3 marks)**
- d) What is the total cost, if the project deadline is 13 days? **(7 marks)**
- e) Assume the project deadline is 10 days. The company has to bear \$170 for each day of delay. Find the optimal number of days to crush the project. **(11 marks)**

### **QUESTION 2 (23 Marks)**

- a) Define a project and project management and illustrate with practical examples **(4 marks)**
- b) Emotional intelligence, power and politics must all be balanced for the success of projects. With reference to the above statement, discuss why the three elements are recommended in project management. **(5 marks)**
- c) Aligning organizational strategy with project governance is recommended in project management. With reference to the above statement, as a project management expert, explain five reasons why it is important to align organizational strategy with project governance. **(9 marks)**
- d) Setting the appropriate context (framing) at the start of Decision and Risk Management in project management is a significant step. In line with the above statement, discuss how defining the frame may be undertaken to understand the decision. **(5 marks)**

### **Question 3 (23 Marks)**

- a) In the context of project management and citing a relevant example, explain the term “risk management”. **(4 marks)**
- b) Discuss briefly five sins of Decision and Risk Management (DRM) in project management. **(9 Marks)**
- c) Examine five considerations which could be considered while designing a stakeholder management plan in project planning. **(5 marks)**
- d) Define the following basic Decision Risk and Management terminologies.
  - I. Decision and Risk Management **(1 Mark)**
  - II. Risk **(1 Mark)**
  - III. Consequence **(1 Mark)**
  - IV. Black Swan **(1 Mark)**
  - V. Yellow Rhinoceros **(1 Mark)**

**Question 4 (23 Marks)**

a) Answer the following:

i) Briefly explain using practical examples what is meant by **turnkey** and **non-turnkey** contracts in project management. **( 4 marks)**

ii) By using practical examples, explain under what circumstances a **turnkey** and **non-turnkey** contract will be entered into. **( 6 marks)**

b) The **cost of capital** is the rate of return that a firm must earn on the projects in which it invests to maintain the market value of its stock. It can also be thought of as the rate of return required by the market suppliers of capital to attract their funds to the firm. If risk is held constant, projects with a rate of return above the cost of capital will increase the value of the firm, and projects with a rate of return below the cost of capital will decrease the value of the firm. The cost of capital is an extremely important financial concept. It acts as a major link between the firm's long-term investment decisions and the wealth of the owners as determined by investors in the marketplace. It is in effect the "magic number" that is used to decide whether a proposed corporate investment will increase or decrease the firm's stock price. Because of its key role in financial decision-making, the importance of the cost of capital cannot be overemphasized.

i) Bamburu Cement Corporation has a 40% tax rate. Assuming there is a 9.4% before-tax debt cost and using one of the equations familiar to you in project finance course, find an after-tax cost of debt  $K_i$  **( 4 marks )**

ii) Typically, the explicit cost of long-term debt is less than the explicit cost of any of the alternative forms of long-term financing, what might be the possible explanation? **( 1 mark)**

c)

Bamburu Cement Corporation wishes to determine its cost of common stock equity,  $k_s$ . The market price,  $P_0$ , of its common stock is \$50 per share. The firm expects to pay a dividend,  $D_1$ , of \$4 at the end of the coming year, 2004. The dividends paid on the outstanding stock over the past 6 years (1998–2003) were as follows:

YEAR	DIVIDEND
2003	\$3.80
2002	3.62
2001	3.47
2000	3.33
1999	3.12
1998	2.97

Assuming the annual growth rate of dividends  $g$ , is 5.05%, determine the cost of common stock equity  $K_s$  **( 4 marks )**

d) Bamburu Cement Corporation now wishes to calculate its cost of common stock equity,  $k_s$ , by using the capital asset pricing model. The firm's investment advisers and its own analyses indicate that the risk-free rate,  $RF$ , equals 7%; the firm's beta,  $b$ , equals 1.5; and the market return,  $km$ , equals 11%. Compute  $k_s$  ( 4 marks)

### Question 5 (23 Marks)

a) **Project finance** is the financial analysis of the complete life-cycle of a project. Typically, a cost-benefit analysis is used to determine if the economic benefits of a project are larger than the economic costs. The analysis is particularly important for long-term projects of growth CAPEX. In many parts of Africa, there are instances of projects financed either by public funds or by Public Private Partnership (PPP) that the economic costs have been too high.

i) What is **due diligence** in project finance? (3 marks)

ii) Briefly explain how due diligence in project finance is carried out (7 marks)

b) Africa is a continent rich in natural resources and boasts of a largely young, ambitious, and entrepreneurial-minded population. Harnessed properly, these endowments and advantages could usher in a period of sustained economic growth and increased well-being for all Africans.

However, a lack of modern infrastructure is a major challenge to Africa's economic development and constitutes a significant impediment to the achievement of the Sustainable Development Goals.

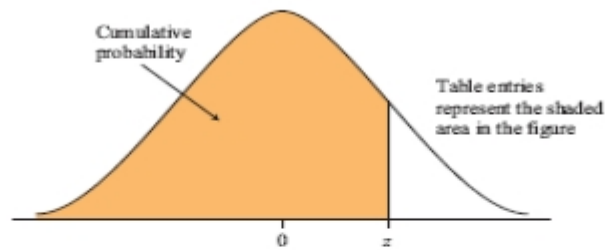
Facing the dearth of infrastructure funding, an increasing number of countries in Africa, are turning to Public-Private Partnerships (PPPs) in order to tap private capital. Although PPPs cannot fully solve this problem, they can provide significant financing where viable projects are carved out. Yet PPPs in Sub-Saharan Africa remain a very small market, with projects concentrated in only a few countries namely, South Africa, Nigeria, Kenya, and Uganda.

i) List and explain three (3) critical factors needed for the success of PPPs in a country such as Kenya. (6 marks)

ii) List and explain three (3) roles the government of Kenya needs to play so as to guarantee success in PPP projects in the country. (6 marks)

iii) Indicate three (3) benefits of PPPs in Kenya, elaborating in each case why this is a significant benefit attributable to the PPP form of procurement. (3 marks)

### Cumulative Probabilities for the Standard Normal Distribution



FIRST DIGIT OF $z$	SECOND DIGIT OF $z$									
	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990