Strathmore UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES

MASTER OF SUSTAINABLE ENERGY TRANSITION

MSSET: 8203: ENERGY PROJECT DEVELOPMENT, FINANCE AND MANAGEMENT

END OF SEMESTER EXAM

Date: 17th December, 2024 **Time:** 18:00-20:30 Hours

Instructions:

1. This Examination consists of **FOUR** questions
2. Attempt any three of them

Question One [20 Marks]

a. Explore the relationship between the masters of sustainable energy transition course and the course unit of Energy Project Development, Finance and Management **(10 marks).**

b. Discuss four reasons why both the public and private sectors have been initiating energy transition projects worldwide **(4 marks).**

c. Discuss how the principles of diversity, equity and inclusion could have been used in the Adani and Ketraco PPP for the transmission lines **(6 marks).**

Question Two **[20 Marks]**

a. The Strathmore University solar power plant was financed off the university's books of account. Explain the advantages of this financing model **(6 marks)**

b. Base Titanium, a titanium oxide firm in Kwale, decided to retrofit its entire pumping system, to improve the mining efficiency. This would averagely improve the pumping efficiency from 95 % to 98.5 %. The cost of implementing the project is KShs 3.6 million. Out of this, the farm owner decides to fund only KShs 625000, at a cost of 22 %. He instructs the management to obtain the rest from a loan arrangement from two banks. The first bank, Sisi kwa Sisi Bank, offered to finance KShs 1.5 million, at a rate of 11 %. The other loan was obtained from Walenisi Bank, at 9.5 %. In its tax payment, the company is subjected to a corporate tax shield of 30 %, in relation to the loans obtained.

i. Determine the weighted average cost of capital for this project **(4 marks)**

ii. If the WACC is considered the nominal discounting factor, use it to compute the real discounting factor, **as accurately as possible**, using inflation rate of 7.8 %. **(4 marks)**

iii. Assuming that the economic life of the project is 5 years and in each year, KShs 867,000 will be saved in energy costs, compute the discounted cash flows for the five years. Use your calculator and *the real discounting factor computed in (ii)* **(6 marks).**

Question Three **[20 Marks]**

a. Describe at least 5 knowledge areas that a project manager should be equipped with when managing projects **(10 marks)**

b. Discuss five reasons why "the shilling today is more valuable than the shilling tomorrow" **(10 marks)**

Question Four **[20 Marks]**

In energy transition, a project manager has "things he/she should do" and "things he/she should know", to achieve transition goals. Using examples in a practical energy transition project, describe the process areas in project management.