Strathmore UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES

MASTER OF SCIENCE IN SUSTAINABLE ENERGY TRANSITION

MSSET: 8203: ENERGY PROJECT DEVELOPMENT, FINANCE AND MANAGEMENT

END OF SEMESTER EXAM

Date: 26TH APRIL ,2023 **Time:** 2 Hours

Instructions:

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

Question One **[20 Marks]**

a. Elaborate why energy transition experts need to understand project management processes and knowledge areas **(5 marks).**

b. Discuss, citing practical examples, three circumstances that can lead to initiation of energy transition projects **(3 marks).**

c. Discuss how the principles of diversity, equity and inclusion could best assist in meeting the goals of a community solar water pumping project **(6 marks).**

d. Outline the relationship between energy transition and energy planning, renewable energy and energy efficiency, in an energy system set up **(6 marks)**

Question Two **[20 Marks]**

a. Assess the reasons why an existing company finances energy projects using non resource financing mechanisms **(6 marks)**

b. An established flow farm, keen on energy transition, has decided to retrofit its entire pumping system, to improve the efficiency from 95 % to 98 %. The cost of implementing the project is KShs 2.3 million. Out of this, the farm owner decides to fund only KShs 625000, at a cost of 22 %. He instructs the management to obtain a loan, at a rate of 11 %. In its tax payment, the company is subjected to a corporate tax shield of 30 %, in relation to the loan 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 745000 will be saved in energy costs and that the end of project salvage value will be 0, 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. Discuss the four liquidity ratios, giving their meaning and value on the financial health of an organization **(8 marks)**
b. Explain five disadvantages of relying on ratio analysis for appraisal of special purpose vehicles to implement projects. **(5 marks)**
c. Discuss five reasons why "the shilling today is more valuable than the shilling tomorrow" **(5 marks)**
d. What is the difference between inflation and cost escalation? **(2 marks)**

Question Four **[20 Marks]**

Using specific examples in an energy management project, discuss the five project management processes.