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: 7th December, 2023 **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. Explain the relationship between the sustainable energy transition course and the course unit of Energy Project Development, Finance and Management **(10 marks).**

b. Describe four circumstances under which energy transition projects can be initiated **(4 marks).**

c. Discuss how the principles of diversity, equity and inclusion could be employed in a community biogas plant project **(6 marks).**

Question Two **[20 Marks]**

a. Assess the reasons why a company would prefer financing energy projects using non-recourse 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.

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

i. 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)**

ii. 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. 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]**

Using a solar photovoltaic energy project, discuss the process of project management.