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: 14th September 2022 **Time:** 2 Hours

Instructions:

This exam has **four questions**. Attempt any three of them

QUESTION ONE (20 MARKS)

a. Discuss the relationship between the energy transition problem and project management? **(8 marks)**

b. Name and define any three core principles of Energy Justice **(6 marks)**

c. Define the following terms as used in energy transition **(6 marks)**

Diversity

Equity

Inclusion

QUESTION TWO (20 MARKS)

State and discuss the four models used in public private partnership (PPP) projects in public sector. In each model, give a real example, even if it is outside the energy sector.

QUESTION THREE (20 MARKS)

a. State six advantages of using project finance mechanisms for energy projects

(6 marks)

b. A firm has been advised that it needs to make a capital investment of KShs 2.3 million in order to cut on its energy costs. The firm management decides to fund the project, with a funding arrangement of KShs 625000 equity, and debt for the remaining component. The cost of equity is 22 % and the cost of debt is 11 %. The applicable corporate tax shield in Kenya is 30%.

i. Calculate the weighted average cost of capital **(4 marks)**

ii. Assuming the value computed in (i) above is the nominal discounting factor for the project, use it to compute the real discounting factor, using inflation rate of 7.8 % (it has gone really high this year). Any of the two methods for computing real discounting factors is just fine **(4 marks)**

iii. Assuming that the project will last for 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 FOUR (20 MARKS)

Using an example of any energy project (hypothetical cases are allowed), discuss the project management processes, from initiation to closing. Be sure to give a definition, the relevant activities and the example in energy project.