LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

2ND SEMESTER 2023/2024 ACADEMIC YEAR

FOURTH YEAR EXAMINATION FOR THE DEGREE BACHELOR OF SCIENCE IN ECONOMICS AND STATISTICS AND BACHELOR OF ARTS IN ECONOMICS & SOCIOLOGY

ECON 436/443: PROJECT PLANNING AND EVALUATION

STREAM: ECON-STAT/ECON-SOCI ***TIME: 2 HRS***

DAY: WEDNESDAY [2.30-4.30 P.M] ***DATE: 17/04/2024***

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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INSTRUCTIONS

1. **Answer Question One and any other TWO questions.**
2. **Clearly show your workings**

QUESTION ONE (30 MARKS)

You are tasked with planning a new project to launch a mobile application for a ride-sharing service. The project involves various tasks that need to be completed in a sequential order. Below are the tasks along with their estimated durations and dependencies:

Task A: Market Research - 5 days

Task B: Develop App Prototype - 10 days (dependent on Task A)

Task C: Design User Interface - 7 days (dependent on Task B)

Task D: Implement Backend Infrastructure - 15 days (dependent on Task B)

Task E: Test App Functionality - 8 days (dependent on Task C and D)

Task F: Launch Marketing Campaign - 12 days (dependent on Task E)

Task G: Deploy Application - 5 days (dependent on Task F)

Required:

a) Create a project network diagram illustrating the tasks and their dependencies. **(6 marks)**

b) Determine the critical path(s) in the project network and calculate the total duration of the critical path. **(6 marks)**

c) Calculate the earliest start time (ES), earliest finish time (EF), latest start time (LS), and latest finish time (LF) for each task. **(6 marks)**

d) If the project needs to be completed within 50 days, assess whether the current timeline is feasible and provide recommendations for shortening the project duration if necessary. **(6 marks)**

e) Discuss the importance of project planning in ensuring the successful execution of the ride-sharing app project. Highlight key benefits and challenges associated with effective project planning in the context of software development **(6 marks)**

QUESTION TWO (20 MARKS)

As an economist advising a firm on investment decisions, you are presented with three potential projects. Each project requires an initial investment and is expected to generate cash flows over its lifetime. Using the Net Present Value (NPV) method, analyze the economic viability of each project and provide your recommendations.

Project A:

Initial Investment: $500,000
Expected Cash Flows:
Year 1: $100,000
Year 2: $150,000
Year 3: $200,000
Year 4: $250,000
Discount Rate: 10%

Project B:

Initial Investment: $700,000
Expected Cash Flows:
Year 1: $120,000
Year 2: $160,000
Year 3: $200,000
Year 4: $240,000
Discount Rate: 12%

Project C:

Initial Investment: $900,000
Expected Cash Flows:
Year 1: $200,000
Year 2: $250,000
Year 3: $300,000
Year 4: $350,000
Discount Rate: 8%

Required

a) Calculate the NPV for each project using the provided discount rates. **(9 marks)**

b) Based on the NPV calculations, rank the projects in terms of their economic profitability.

(3 marks)

c) Provide a detailed explanation of how NPV analysis assists in investment decision-making from an economic perspective. **(3 marks)**

d) Evaluate the economic risks associated with each project and explain how risk considerations may influence investment decisions, even if a project has a positive NPV. **(5 marks)**

QUESTION THREE (20 MARKS)

As an economist advising a firm on investment decisions, you are presented with three potential projects. Each project requires an initial investment and is expected to generate cash flows over its lifetime.

Project A:

Initial Investment: $500,000
Expected Cash Flows:
Year 1: $100,000
Year 2: $150,000
Year 3: $200,000
Year 4: $250,000
Internal Rate of Return (IRR): 12%

Project B:

Initial Investment: $700,000
Expected Cash Flows:
Year 1: $120,000
Year 2: $160,000
Year 3: $200,000
Year 4: $240,000
Internal Rate of Return (IRR): 10%

Project C:

Initial Investment: $900,000
Expected Cash Flows:
Year 1: $200,000
Year 2: $250,000
Year 3: $300,000
Year 4: $350,000
Internal Rate of Return (IRR): 8%

Required

a) Calculate the Economic Rate of Return (ERR) for each project using the provided Internal Rate of Return (IRR). **(10 marks)**

b) Rank the projects in terms of their economic profitability based on the ERR calculations. **(3 marks)**

c) Provide a detailed explanation of how ERR analysis complements IRR analysis in investment appraisal, highlighting the economic perspective. **(7 marks)**

UESTION FOUR (20 MARKS)

a) Scientists at Kenya Medical Research Institute(KEMRI) have synthesized a new drug which they believe will be an effective treatment for COVID 19.
KEMRI must decide whether to proceed with the commercial development of the new drug or not.
If they decide not to develop it, no other costs will be incurred.
If they decide to develop it, they have to submit it for clinical testing before they can sell it. The probability that it will pass the tests is estimated to be 0.75.
If it fails the tests the costs incurred will be Kshs 2 million.
If it passes the test, KEMRI will have to decide whether to set up a small-scale or large scale production facility.
The money it will make from the drug depends on whether it is approved for National Health Service use.
If it is approved they will set up large scale production and will make a profit of Kshs 60 million compared to Kshs 20 million they will have to make if they set up a small scale production.
If the drug is not approved they will make a loss of Kshs 40 million if they have set up a large scale production and a profit of Kshs 15 million if they have set up a small scale production.
The probability of getting approval for National Health Service is 0.4

Required:

(i) Draw a decision tree representing the situation **(7marks)**
(ii) Determine the optimal decision path. **(8marks)**

b) Using examples, differentiate between Positive and negative externalities. **(5marks)**

QUESTION FIVE

a) Explain the steps in developing a project plan. **(12marks)**
b) Differentiate between summative and formative evaluation. **(3marks)**
c) Explain Social cost benefit Analysis. **(5 marks)**