MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

FOURTH YEAR SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONICS

EAE 404: ECONOMICS OF PUBLIC ENTERPRISES

DATE: 27/9/2019 **TIME: 2:00 – 4:00 PM**

INSTRUCTIONS:

Answer question ONE and any other two questions

QUESTION TWO (20 marks)

a) Outline the fundamental principles of engineering economy (5 marks)

b) List the elements of engineering economics analysis procedure. (5 marks)

c) Distinguish between the following pairs:

- i) Fixed cost and variable cost (1 mark)
- ii) Cash cost and book cost (1 mark)
- iii) Sunk cost and opportunity cost (1 mark)

d) Contrast and compare present worth (PW) and internal rate of return (IRR) as methods of evaluating engineering projects for investment. (7 marks)

QUESTION TWO (20 MARKS)

a) The following data has been developed for Crown Company, the manufacturer of an advanced line of adhesive:

State of nature	**Probability**	**Market Return** R_m	**Return for the firm** R_j
1	0.1	-0.15	-0.30
2	0.3	0.05	0.00
3	0.4	0.15	0.20
4	0.2	0.20	0.50

The risk-free rate is 6%. Find:

i) The expected market return $E(R_m)$ (3 marks)

ii) The variance of the market return $\sigma^2 (R_m)$ (3 marks)

iii) The expected return for Crown Company $E (R_1)$ (3 marks)

iv) Given that cov (R_j, Rm)= 0.0215, find B_j (3 marks)

v) Using the above information state the CAPM (3 marks)

vi) What is required for Crown Company? How does it compare with its expected return? (3 marks)

b) Clearly distinguish between ordinary annuity and annuity due (2 marks)

QUESTION FOUR (20 MARKS)

a) Given that i = 10% Show that
$FVIFAND_{i,4} = [\ FVIF_{i,3} + FVIF_{i,2} + FVIF_{i,1} + FVIF_{i,0}]\ (1+i)$ without using tables. (10 marks)

b) When valuing a firm, it's important to describe the business entity under consideration. Discuss the three important aspects that help describe a business entity (10 marks)

QUESTION FIVE (20 MARKS)

a) Discuss the different methods used to evaluate alternative projects. (10 marks)

b) A cell phone company has a fixed cost of $1,500,000 per month and a variable cost of $20 per month per subscriber. The company charges $39.95 per month to its cell phone customers.

i) What is the breakeven point for this company? (3 marks)

ii) The company currently has 73,000 subscribers and proposes to raise its monthly fees to $49.95 to cover add-on features such as text messaging , song downloads, game playing and video watching. What is the new breakeven point if the variable cost increases to $25 per customer per month? (3 marks)

iii) If 10,000 subscribers will drop their service because of the monthly fee increase in Part (b), will the company still be profitable? (4 marks)