



ELIZADE UNIVERSITY, ILARA-MOKIN,
ONDO STATE, NIGERIA

DEPARTMENT OF MECHANICAL ENGINEERING

SECOND SEMESTER EXAMINATIONS

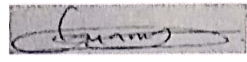
2018/2019 ACADEMIC SESSION

COURSE: GNE 502 – Engineering Economics (2 Units)

CLASS: 500 Level General Engineering

TIME ALLOWED: 2 Hours

INSTRUCTIONS: Answer Question 1 and any other 3 questions


HOD'S SIGNATURE

Date: July, 2019

Question 1

- Economics is a branch of Science and an Art, explain.
- Explain 4 steps involved in Budget control.
- Osogbo machine tools acquired 10 Lathes which they plan to replace in the future. Each machine cost ₦ 15,000.00 with a trade-in value of ₦ 11,250, ₦ 9,000 and ₦ 6200 in years 1, 2 & 3 respectively. Machine servicing and cleaning costs ₦ 1,000/lathe & ₦ 500/lathe respectively in the first year and increases at 40% (servicing) and 25% (cleaning) per year as each lathe grows older. If Osogbo machine tools has a cost of capital of 10%, using AEV recommend a replacement time for the lathes.

Question 2

- Rainoil Ltd. is to build a massive oil-tank farm that requires an investment of ₦ 200,000.00 in a riverine settlement in Oghara, Delta State. The project is expected to last for 4 years and the net worth of the plant after the number of years will be ₦ 40,000.00. If the yearly profit is as shown in Table 1, calculate the ARR.

Year	Profit (N)
1	60,000.00
2	70,000.00
3	75,000.00
4	80,000.00

- Succoth Gardens invested ₦ 120,000 on a brand new printing machine with an estimated average profit of ₦ 85,000.00 in 4 years. If the ARR is 60%, what was the net value of the machine at the end of the 4th year?
- Define the term "Budget".

Handwritten calculations for Question 1c:

Year	1	2	3
Service cost	10,000	14,000	19,600
Cleaning cost	500	625	781.25
Total cost	15,000	20,250	27,413
DF	0.909	0.826	0.751
PV of cost	13,635	16,727	20,555
Trade-in	11,250	9,000	6,200
Net cost	2,385	7,727	14,355

Question 3

- a. Define the term "Annuity".
- b. List and explain 5 types of Annuity.
- c. Total Gas Plc is to undertake a project requiring ₦ 1,000,000 outlay. What is the payback period if;
 - i. The project generates ₦ 250,000.00 annually;
 - ii. The project has the following cash flow profile

Year	Cashflow
1	200,000
2	220,000
3	230,000
4	220,000
5	195,000

Question 4

- a. Define the following terms
 - i. Amortization
 - ii. Economics (by Lionel Robbins)
 - iii. Break-Even point (6 marks)
- b. Eric Moore Ltd. took a loan from Access Bank Plc at an interest rate of 30% P.A payable in 3 years. If the annuity on the loan is ₦357,929.515;
 - i. how much was the loan collected?
 - ii. Show the amortization schedule for the loan.
- c. List and explain briefly, 2 types of replacement decision methods.

Question 5

- a. List 3 advantages and disadvantages each of Payback Period.
- b. Mrs Oni wants to know what compound rate of interest will be required to produce ₦500,000 after 5 years with an initial investment of ₦400,000. Kindly advise her on the interest rate accordingly.
- c. Fuja Motors is to invest an unknown amount of money in a profitable car venture. How long will it take for the amount invested to double itself at 10% P.A. interest rate?

Question 6

- a. Dennerby Incorporated discovered an opportunity to import Titanium Alloy for weapon manufacture for the Nigerian Army. The company as decided to invest ₦ 10,000,000.00 in the opportunity for 6 years at an interest rate of 15% P.A. Calculate the future sum if;
 - i. Interest is payable tri-annually
 - ii. Interest is payable monthly
- Rowland & Rowland Ltd. is to invest ₦ 200,000.00 in a business opportunity in the Niger-Delta region at an annual interest rate of 10%. How many months will it take for their investment to amount to ₦ 354,312.20?