

**FEDERAL UNIVERSITY OF TECHNOLOGY**  
**SCHOOL OF ENGINEERING AND ENGINEERING TECHNOLOGY**  
**DEPARTMENT OF CIVIL ENGINEERING**  
**RAIN SEMESTER EXAMINATION, 2021/2022 SESSION**  
**COURSE: ENG 212 ENGINEERING ECONOMY (2 units)**  
**Instructions: Attempt any four Questions: Time allowed: 2 1/2 hrs**

1x) Define the following (i) Sunk cost (ii) Opportunity Cost (iii) Fixed Cost (iv) Variable Cost (v) Incremental and Marginal Cost. (10 mks)

1b) Derive an expression for break-even volume in terms of fixed cost, unit price of product and average variable cost per unit of product. (5mks)

1c) An importer buys a machine at #3000 per unit. The fixed cost of the importing operation is #600,000 per year. The sales representative takes 25% of the selling price for each machine sold as commission. At what price should the machines be sold for the importer to break even on a total shipment of 2000 machines per year? Also, if the commission on sale is reduced to 15%, then the fixed cost should be increased by adding #150,000 for advertisement in order to sell all the 2000 machines at the same price. Would this later action produce a profit or loss? (10mks)

2a) Define the following (i) Value and Utility (ii) Equity and debt capital (iii) Consumer goods (7.5mks)

2b) (i) What is equilibrium point in demand and supply (diagram is needed) (ii) Explain physical efficiency and financial efficiency giving expressions for both. Under what condition would a business venture be successful in terms of efficiency? (7.5mks)

2c) Mr Sani buys a machine for printing slogans on T shirts. The machine costs #20,000. He buys white T shirts at # 500 each and spends additional #100 on labour for every T shirt he prints. If he sells the printed shirts for #850 each, how many must he sell to break even? (10mks)

3. The manufacturing cost of a metal security door for commercial is N70,000. The business venture is expected to yield N16,550 annually for 6yrs. If the MARR is 11%. Using internal rate of return method, deduce if the venture is feasible. **Note:** cash flow diagram is compulsory (25mks)

4. A furniture making company ventured into making of students desk with a sum of N68,000 at 10% annual returns. What is the value of the venture after 7 years if their profit return is compounded (i) annually (ii) quarterly (iii) Twice yearly. **Note:** cash flow diagram is compulsory (25mks)

5a) Differentiate between a *balance sheet* and a *profit and loss Statement*. (5mks)

b) State the cost components that make up the production cost of a product. (5mks)

c. The financial records of XY company for the month that ended December 31, 2022 presented the following information; Cost of goods sold = \$142,800, Gross income from sales \$251,200, Depreciation = \$5,000, Advertising = \$6,000, Insurance = N1,200, Rent = \$12,000, Taxation = \$8,000. Prepare the *profit and loss statement* for the month. (15mks)

6a. Distinguish between the basic concepts of straight line and declining balance methods of depreciation. (5mks)

b. Why is depreciation considered as an element of the basic accounting statements? (5mks)

c. An asset had a first cost of 60,000 with a salvage of 5,000 after 11 years. What will be i). the depreciation charge in the eighth year? (ii) book value in the eighth year. (10mks)