## ASSOCIATESHIP EXAMINATION
## FINANCIAL AND QUANTITATIVE ANALYSIS FOR DECISION MAKING
## LEVEL II

## APRIL 2025

## [NEW SYLLABUS]

**NB**

1. Read carefully the instructions on the cover of the answer booklet.

2. Answer questions as follows:

**FINANCIAL ANALYSIS FOR DECISION MAKING – PART A**

SECTION A: FIFTEEN MULTIPLE CHOICE QUESTIONS (**ANSWER ALL**- 15 MARKS)

SECTION B: TWO ESSAY/SHORT NOTES QUESTIONS (**ANSWER ONE** – 15 MARKS)

SECTION C: TWO CASE/SCENARIO BASED QUESTIONS (**ANSWER ONE** – 20 MARKS)

**QUANTITATIVE ANALYSIS FOR DECISION MAKING – PART B**

SECTION A: FIFTEEN MULTIPLE CHOICE QUESTIONS (**ANSWER ALL**- 15 MARKS)

SECTION B: TWO CALCULATION QUESTIONS (**ANSWER ONE** – 15 MARKS)

SECTION C: TWO CASE/SCENARIO BASED QUESTIONS (**ANSWER ONE** – 20 MARKS)

3. Calculators, including scientific calculators may be used in this examination provided they are not programmable and cannot store or recall information. It is in the interest of candidates to show the basic figures from which their calculations are made. No aids such as books, dictionaries, notes or other foreign materials are allowed in this examination.

4. Materials provided: i. Formulae Sheet and Tables for Normal and Chi-Square Distributions. ii. Graph Sheets.

5. **Time allowed: Three Hours. An additional 15 minutes of reading time is allowed** at beginning of the examination during which time candidates may write on this paper but NOT in the answer booklet.

6. Candidates must ensure that they answer questions in the appropriate answer booklets and NOT on loose sheets which may be used only as supplementary sheets. Such answers will be cancelled.

7. DO NOT WRITE YOUR NAME ON THE ANSWER BOOKLET.

8. DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE INSTRUCTED TO DO SO.

# FINANCIAL ANALYSIS FOR DECISION MAKING - PART A
## SECTION A – MULTIPLE CHOICE QUESTIONS
## (ANSWER ALL QUESTIONS IN THIS SECTION. TOTAL: 15 MARKS)

1. What is the primary purpose of Budgeting in the Public Sector?
   A. Maximizing profits for the government
   B. Allocating scarce resources to unlimited demands
   C. Ensuring competition among ministries
   D. Increasing taxation revenue

2. Which of the following is a key difference between Public Sector and Private Sector Budgeting?
   A. Public sector budgets are considered management plans, while private sector budgets are laws
   B. Private sector budgets focus on financial control, while public sector budgets do not
   C. Public sector budgets are both management plans and laws, while private sector budgets are only management plans
   D. Private sector budgets include fiscal and monetary policies, while public sector budgets do not

3. Which of the following is not a determinant of the Sales Budget?
   A. General economic condition.
   B. The level of competition in the marketplace.
   C. Prior year sales broken down by product lines.
   D. The method of cost absorption

4. Which of the following is **not** a specific function of Government Budgeting?
   A. Assisting in policy making and planning
   B. Setting standards for evaluating performance
   C. Determining the share price of government-owned companies
   D. Coordinating government activities

5. Which of the following is a feature of a good budget?
   A. Rigid and unchangeable once approved
   B. Prepared exclusively by top executives without participation
   C. Based on established standards of performance
   D. Focused solely on past financial performance

6. What is the primary characteristic of a Zero-Based Budgeting (ZBB) system?

A. It assumes all programs and expenditures are justified automatically
B. It focuses only on past expenditures when making future budgets
C. It requires every activity to be justified before funding is allocated
D. It does not require decision-making on resource allocation

7. The primary objective of Financial Reporting is to provide information useful for making investment and lending decisions. To be useful, information must possess certain characteristics. Which of the following is **not** one of the basic characteristics that Accounting information must possess to be useful.
A. Reliability
B. An owner's equity section
C. Comparability
D. Relevance

8. The Accounting concept underlining the treatment of personal expenses of the business owner as drawings is…………………………….
A. Periodicity
B. Entity
C. Accrual
D. Materiality

9. Asset acquired is recorded by debiting………………………………
A. Asset account, crediting Cash account.
B. Cash account, crediting Asset account.
C. Purchase of Business account, crediting Sales of Business account.
D. Asset account, crediting Purchase of Business Account.

10. Which of the following is **not** revealed by a firm's Accounting records?
A. Profit of a period
B. Credit worthiness
C. Quality of labour force
D. Value of assets

11. A company sells goods on credit valued at GH₵ 5,000 to a customer. At what point in the Sales Cycle should this sale be recognized in the accounts?
A. When the customer's order is received.
B. When the goods are ready for dispatch to the customer.
C. When the goods are sent, accepted and invoiced.
D. When the customer pays.

12. Which of the following is **not** one of the three (3) components of the basic DuPont formula?
A. Net Profit Margin
B. Asset Turnover

C. Financial Leverage (Equity Multiplier)

D. Cash Flow Ratio

13. How does an increase in Financial Leverage (equity multiplier) impact Return on Equity (ROE) in the DuPont Model?

   A. It always decreases ROE

   B. It increases ROE if the company generates higher returns than its cost of debt

   C. It has no effect on ROE

   D. It automatically increases profitability

14. Why is monitoring the Sustainable Growth Rate (SGR) important for banks?

   A. It helps the bank determine how much it can grow without additional external financing

   B. It sets the maximum number of loans a bank can approve annually

   C. It helps in determining the legal reserve requirements of the bank

   D. It is only useful for investment firms, not commercial banks

15. Which of the following ratios can be used to assess the ability to meet Long-Term financial obligations of a firm?

   A. Investment Ratios

   B. Liquidity Ratios

   C. Profitability Ratios

   D. Solvency Ratios

## SECTION B: CALCULATION/SHORT NOTES QUESTIONS
## (ANSWER ONE QUESTION – 15 MARKS)

**QUESTION 1**

a. A Conceptual Framework is a statement of principles which provide generally accepted guidance for the development of new reporting practices and for challenging and evaluating the existing practices in Accounting. It generally serves as a basis for resolving disputes in practice and for setting Accounting Standards. Currently, the *International Accounting Standards Board (IASB)'s* conceptual framework has been widely accepted as the framework forming the basis of Accountancy practice.

 **Required:**

 (i) Explain the concept of the **'Going Concern'** assumption in the Conceptual Framework. How does this assumption affect the preparation of financial statements?

**(4 marks)**

(ii) Briefly discuss the significance of **'substance over form'** in Financial Reporting according to the framework. Provide an example of how it applies in practice.

**(3 marks)**

(iii) Briefly discuss the role of **'materiality'** in Financial Reporting according to the Conceptual Framework. How does materiality influence the preparation and presentation of Financial Statements?

**(3 marks)**

**b.** Every business transaction has increasing and decreasing effects on the components of the Accounting Equation (Assets, Capital and Liabilities).

| Assets | GH¢ '000 | A GH¢ '000 | B GH¢ '000 | C GH¢ '000 | D GH¢ '000 | E GH¢ '000 |
|---|---|---|---|---|---|---|
| Buildings | 900 | 900 | 900 | 900 | 1150 | 1150 |
| Motor van | 190 | 200 | 200 | 200 | 200 | 200 |
| Office equipment | 96 | 96 | 96 | 96 | 96 | 96 |
| Inventory | 220 | 220 | 220 | 220 | 220 | 220 |
| Debtors | 376 | 376 | 376 | 376 | 376 | 216 |
| Bank | 54 | 44 | 44 | 344 | 94 | 254 |
| Cash | 30 | 30 | 22 | 22 | 22 | 22 |
| | **1,866** | **1,866** | **1,858** | **2,158** | **2,158** | **2,158** |
| **Capital and Liabilities** | | | | | | |
| Capital | 1242 | 1242 | 1242 | 1242 | 1242 | 1242 |
| Loan | 400 | 400 | 400 | 700 | 700 | 700 |
| Creditors | 224 | 224 | 216 | 216 | 216 | 216 |
| | **1,866** | **1,866** | **1,858** | **2,158** | **2,158** | **2,158** |

**Required:**

From the above statements, which give the *cumulative effects* of individual transactions. You are required to state as fully as possible what transaction(s) has taken place in each case. The first column of the statements gives the opening position. Each of the other columns represents a transaction. It is these transactions (A–E) that you are to describe. There is no need to copy out the table.

**(5 marks)**

**(Total: 15 marks)**

**QUESTION 2**

a) 'Accounting information should be understandable. As some managers have a poor knowledge of Accounting, we should produce simplified financial reports to help them.'

**Required:**

To what extent do you agree with this view?

**(4 marks)**

b) When Managers are making decisions involving Capital Investments, what should the decisions seek to achieve? **(3 marks)**

c) Yaw Maame Ltd is considering two (2) mutually exclusive projects, Project Gyata and Project Danso, each requiring an initial investment of GH¢200,000. The expected cash inflows for the next 4 years are as follows:

| Year | Project Gyata (GH¢) | Project Danso (GH¢) |
| --- | --- | --- |
| 1 | 50,000 | 80,000 |
| 2 | 70,000 | 90,000 |
| 3 | 90,000 | 60,000 |
| 4 | 110,000 | 50,000 |

The company's required Rate of Return **(Discount Rate)** is 12%.

**Required:**

(i) Calculate the Net Present Value (NPV) for both projects and determine which project is more profitable. **(2 mark)**

(ii) Estimate the Internal Rate of Return (IRR) for both projects using the trial-and-error approach. **(2 mark)**

(iii) Compute the Payback Period for each project and determine which one recovers its investment faster. **(2 mark)**

(iv) Make a recommendation on which project should be selected, considering all three (3) methods. **(2 mark)**

**(Total: 15 marks)**


## SECTION C: CASE/SCENARIO BASED QUESTIONS
## (ANSWER ONE QUESTION – 20 MARKS)

**QUESTION 1**

The way to compare companies is to use standard measures. Financial Ratios are standard measures that enable analysts and other stakeholders to compare companies. Financial Ratio is a relationship between two accounting figures expressed mathematically. Presented below are ratios computed from the Financial Statements for Hayo Ltd for the year ended 31st December 2024.

| Liquidity Ratio | 2024 | 2023 | Industry Average | Tristan Ltd * 2024 |
| --- | --- | --- | --- | --- |
| Current Ratio | 3.58:1 | 3.90:1 | 4.25 | 4.49:1 |

| | | | | |
|---|---|---|---|---|
| Quick Ratio | 3.14:1 | 3.06:1 | 3.2 | 3.2:1 |
| Acid-Test Ratio | 0.09:1 | 1.26:1 | 0.56 | 0.56:1 |
| **Profitability Ratios** | | | | |
| Return on Assets | 36% | 14% | 20% | 32% |
| Asset Turnover | 0.96 times | 1.04 times | 1.00 times | 1.10 times |
| Return on Equity | 40% | 15% | 25% | 25% |
| **Investment Ratios** | | | | |
| Earnings Per Share | GHC 1.85 | GHC 0.49 | GHC 1.20 | GHC 1.60 |
| Price Earnings Ratio | 8.83:1 | 55.80:1 | 15.2:1 | 15.2:1 |
| Dividend Yield | 2.04% | 3.69% | 2.50% | 2.50% |
| **Activity/Asset Management Ratios** | | | | |
| Inventory Turnover | 5.65 times | 8.00 times | 7.00 times | 7.00 times |
| Average Collection Period | 136.09 days | 32.65 days | 40 days | 70 days |
| Average Payment Period | 40.91 days | 14.27 days | 10 days | 20 days |
| **Long-Term Solvency Ratios** | | | | |
| Debt to Equity Ratio | 0.04:1 | 0.09:1 | 0.30:1 | 0.30:1 |
| Interest Coverage Ratio | 2 times | 5 times | 20 times | 21.00 times |

**\*Tristan Ltd is a competitor of a similar size**

**Required:**
a) What is the difference between ROA and ROE, and why are both important for Financial Analysis? Comment on the Profitability of Hayo. **(5 marks)**
b) What do the Liquidity Ratios indicate about Hayo's liquidity position? **(3 marks)**
c) Do you find the Collection Period and Payment Period mix favourable to Hayo, Tristan and the industry data? Briefly explain your answer. **(3 marks)**
d) Explain two (2) main consequences of the Average Collection Period figures compared with the Average Payment Period. **(3 marks)**
e) What does this low Debt-to-Equity Ratio suggest about Hayo Ltd's Financial Risk and Capital Structure? **(3 marks)**
f) What does the P/E ratio indicate about investors' expectations for Hayo Ltd? **(3 marks)**
**(Total: 20 marks)**


**QUESTION 2**
a) It is usually seen as crucial that those responsible for the Budget-Setting Process have real authority within the organization.
**Required:**
Why would those responsible for the Budget-Setting Process need to have real authority?
**(4 marks)**

b) Nuamtakyi Ltd is preparing its Cash Budget for January, February, and March 2026. Budgeted data are as follows:

| | November | December | January | February | March |
|---|---|---|---|---|---|
| Sales (Units) | 750 | 800 | 800 | 850 | 900 |
| Production (Units) | 800 | 800 | 850 | 900 | 950 |
| Direct Labour & Variable Overhead Incurred | GH¢48,000 | GH¢48,000 | GH¢51,000 | GH¢54,000 | GH¢57,000 |
| Fixed Overhead Incurred (excluding Depreciation) | GH¢20,000 | GH¢20,000 | GH¢20,000 | GH¢20,000 | GH¢20,000 |

The Selling Price per unit is GH¢200. The Purchase Price per kg of raw material is GH¢25. Each unit of finished product requires 2kg of raw materials which are purchased on credit in the month before they are used in production. Suppliers of raw materials are paid one month after purchase.

All Sales are on credit. 80% of customers pay one month after sale and the remainder pays two (2) months after sale.

The Direct Labour Cost, Variable Overheads and Fixed Overheads are paid in the month in which they are incurred.

Machinery costing GH¢100,000 will be delivered in February and paid for in March.

Depreciation including that on the new machinery are as follows:

| Machinery and Equipment | GH¢3,500 per month |
|---|---|
| Motor Vehicle | GH¢800 per month |

The opening Cash Balance at 1 January is estimated to be GH¢15,000.

**Required:**
Prepare a Cash Budget for each of the three months January, February and March, 2026.

**(16 marks)**
**[Total: 20 marks]**

# QUANTITATIVE ANALYSES FOR DECISION MAKING – PART B

## SECTION A: MULTIPLE CHOICE QUESTIONS
### (ANSWER ALL QUESTIONS IN THIS SECTION. TOTAL: 15 MARKS)

1. Which of the following statements are correct?
   I.   Two events are mutually exclusive when the occurrence of one prevents the other event from occurring.
   II.  Events are dependent when the occurrence of one event affects the probability of occurrence of the other.

III. Two events are said to be independent of each other if the occurrence or non-occurrence of one event in any trial does not affect the occurrence of the other event in any trial

IV. If $X$ follows a Poisson distribution with parameter $\lambda$: then Mean: $E(X) = \lambda$ and Variance; $\text{Var}(X) = \lambda$ whilst for a Binomial distribution, characterized by the number of trials $n$ and the probability of success $p$: then Mean: $E(X) = n.p$ and Variance; $\text{Var}(X) = n.p.(1-p)$

    A. I, II and III only
    B. I, II and IV only
    C. II, III and IV only
    D. I, II, III and IV only

2. The following data give the savings bank accounts balances in Ghana cedis of nine (9) sample households selected in a survey.
    745, 2,000, 1,500, 68,000, 461, 549, 3750, 1800, 4795

    Find the **mean** and the **median** for this data;
    A. Mean is 9,298 and Median is 1,500
    B. Mean is 9,289 and Median is 1,800
    C. Mean is 1,800 and Median is 1,500
    D. Mean is 1,500 and Median is 9,298

3. Find the variance of a random variable $X$ that has the probability distribution.

| $x$ | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $f(x)$ | $1/12$ | $3/12$ | $1/12$ | $3/12$ | $1/12$ | $3/12$ |

    A. $137/48$
    B. $203/12$
    C. $173/12$
    D. $230/48$

4. A woman bought 4 cows and 9 hens for GHs 13,400. If she sells the cows at 10% profit and hens at 20% profit, then she earns a total profit of GHs 1,880. What is the combined cost of a cow and a hen?
    A. GHs 600
    B. GHs 2,000
    C. GHs 2,600
    D. GHs 11,520

5. In a Perfect Competition, the demand curve of a commodity is $x = 20 - 3p - p^2$ and the supply curve is $x = p - 1$ where $p$ represents the price per unit and $x$ represents the number of units per time period. Find the Equilibrium Price and Quantity.
   A. Equilibrium Price is 3 and quantity is 2
   B. Equilibrium Price is 3 and quantity is 3
   C. Equilibrium Price is 2 and quantity is 2
   D. Equilibrium Price is 2 and quantity is 3

6. Which of the following statements is correct?
   I. In Regression Analysis, the variable to be predicted is called the dependent variable and the predictor is called the independent variable, or explanatory variable
   II. A Null Hypothesis is an assertion about the value of a population parameter. It is an assertion that we hold as true unless we have sufficient statistical evidence to conclude otherwise.
   III. In the context of statistical testing, the wrong decision of rejecting a true null hypothesis is known as Type I Error whilst the wrong decision of accepting (not rejecting) a false null hypothesis is known as Type II Error.
   IV. Ghana Bank claims that more than 55% of the total account for customers are with the Head Office Branch. When provided with a sample data, the Hypotheses to verify, if the sample results underestimate the claim of Ghana Bank is;

   Null: $H_o = 0.55$        Alternate: $H_1 < 0.55$
   A. I, II and III only
   B. I, II and IV only
   C. II, III and IV only
   D. I, II, III and IV

7. All the following are characteristics of a Binomial Distribution *except*……………
   I. An experiment consists of an infinite number of repeated trials
   II. Each trial has only two possible, mutually exclusive, outcomes which are termed as a 'success' or a 'failure'
   III. The probability of a success, denoted by $p$, is known and remains constant from trial to trial. The probability of a failure, denoted by $q$, is equal to $1 - p$
   IV. Different trials are independent, i.e. outcome of any trial or sequence of trials has no effect on the outcome of the subsequent trials.

   A. I only
   B. II only
   C. III only
   D. IV only

8. In Hypothesis Testing, a Type I Error occurs when:
   A. The null hypothesis is rejected when it is actually true.
   B. The null hypothesis is not rejected when it is actually false.
   C. The alternative hypothesis is accepted when it is actually false.
   D. The sample size is too small to make a decision.

9. Given the equation of a straight line: $3x - 6y = 12$, what is the slope and y-intercept of the line?
   A. Slope: $\frac{1}{2}$,  Intercept: 2
   B. Slope: $-\frac{1}{2}$,  Intercept: -2
   C. Slope: $-\frac{1}{2}$,  Intercept: 2
   D. Slope: $\frac{1}{2}$,  Intercept: -2

10. Given that the average cost function is $C(q) = 3q + 15$ and the demand function is $P(q) = 80 - q$, what is the profit function $\pi(q)$?
    A. $\pi(q) = (80 - q^2) - (3q^2 + 15)$
    B. $\pi(q) = (80q - q^2) - (3q^2 + 15q)$
    C. $\pi(q) = (80 - q) - (3q + 15)$
    D. $\pi(q) = (80q^2 - q) - (3q^2 + 15q)$

11. Which of the following is a characteristic of a negatively Skewed Distribution?
    A. The tail of the distribution extends to the right.
    B. The mean is greater than the median.
    C. The mode is greater than the median, which is greater than the mean.
    D. The distribution is symmetric with equal tails.

12. Which of the following is a primary data collection method?
    A. Using data from a government report
    B. Conducting a survey or interview
    C. Reviewing historical records
    D. Analyzing past research studies

13. In a factory, 60% of the machines are automated and 30% are in use. The probability that a machine is automated and in use is 18%. What is the probability that a machine is in use given that it is automated?
    A. 0.3
    B. 0.18
    C. 0.5
    D. 0.6

14. In a Multiple Regression Model with two predictors, $X_1$ and $X_2$ , and a dependent variable Y, which of the following is TRUE about the interpretation of the coefficient of $X_1$ ?
   A. The coefficient of $X_1$ represents the change in $Y$ when $X_2$ changes by one unit.
   B. The coefficient of $X_1$ represents the change in $Y$ when $X_1$ changes by one unit, assuming $X_2$ remains constant.
   C. The coefficient of $X_1$ is equal to the correlation between $X_1$ and $Y$.
   D. The coefficient of $X_1$ represents the total variation in $Y$ due to $X_1$ .

15. Which of the following is true about the Moving Average forecasting method?
   A. It gives more weight to recent data points and less to older ones.
   B. It is best used for data with a strong trend component.
   C. It smooths out fluctuations in the data by averaging a fixed number of past data points.
   D. It requires the use of complex mathematical models.

## SECTION B: CALCULATION QUESTIONS
## ANSWER ONE QUESTION – 15 MARKS

**QUESTION 1**
   (a) The mean and variance of a discrete random variable $X$ are 6 and 2 respectively. Assuming $X$ to be a binomial variate, Find $P(5 \leq X \leq 7)$ **(8 Marks)**
   (b) In a binomial distribution consisting of 5 independent trials, the probability of 1 and 2 successes are 0.4096 and 0.2048 respectively. Calculate the mean and variance of the distribution. **(7 Marks)**
   **[Total: 15 Marks]**

**QUESTION 2**
   The average monthly Sales of 5,000 firms in Kejetia Dubai Market are normally distributed with mean GHS 36,000 and standard deviation GHs 10,000. Find:
   (i)     The number of firms with Sales of over GHS 40,000.        **(3 marks)**
   (ii)    The percentage of firms with Sales between GHS 38,500 and GHS 41,000.
   **(6 Marks)**
   (iii)   The number of firms with Sales between GHs 30,000 and GHS 40,000.
   **(6 Marks)**
   **[Total: 15 Marks]**

## SECTION C: CASE /SCENARIO BASED QUESTIONS
## (ANSWER ONE QUESTION – 20 MARKS)

## QUESTION 1

Suppose that Mr. Mills, a retired Fellow Chartered Banker, is facing a decision about where to invest that small fortune that remains after he has deducted the anticipated expenses for the next year from the earnings from his consultancy job. An Investment Analyst has suggested to him two (2) types of investment, and to help make the decision he obtained some rates of return from each type. He would like to know what he can expect by way of the return on his investment, as well as other types of information, such as whether the rates are spread out over a wide range (making the investment risky) or are grouped tightly together (indicating a relatively low risk). The returns for the two (2) types of investments are listed below.

| Returns on Investment A | | Returns on Investment B | |
|---|---|---|---|
| 30.00 | 6.93 | 30.33 | -18.75 |
| -2.13 | -13.24 | -18.37 | 40.00 |
| 4.30 | -18.95 | -5.61 | 39.19 |
| 25.00 | 9.43 | 29.00 | -18.23 |
| 12.89 | 1.21 | -18.01 | 4.16 |
| -18.24 | 31.76 | 0.46 | 10.03 |
| 1.20 | 11.07 | 2.07 | 10.51 |
| -2.59 | 8.47 | 29.44 | 39.04 |
| 33.00 | 36.08 | 11.00 | 24.76 |
| 14.26 | -18.95 | -18.93 | 15.28 |

If Mr Mills decides to group the returns according to classes $\overline{19}$-$\overline{10}$, $\overline{9}$-0, 1-10, 11-20, 21-30, 31-40

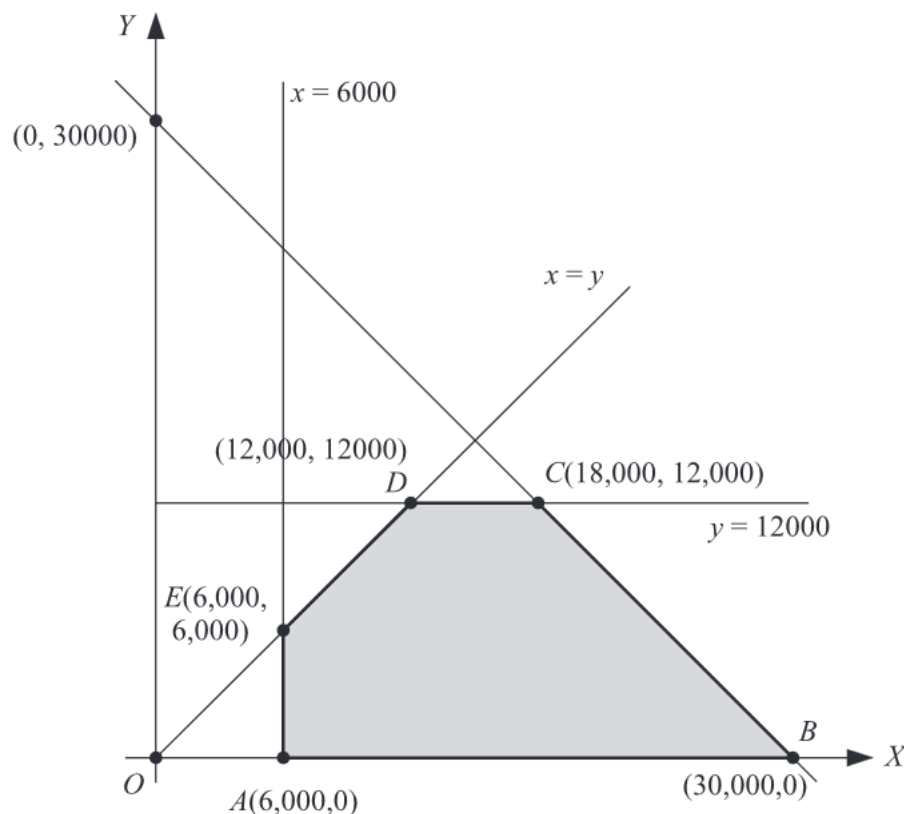**Required:**

| | | |
|---|---|---|
| a. | Construct a group Frequency Distribution for the set of returns. | **(6 Marks)** |
| b. | Draw Histograms for each set of returns. | **(4 Marks)** |
| c. | Calculate the Average Returns for the set of returns. | **(2 Marks)** |
| d. | Compute the following measures of spread for the set of returns: | |
| | (i).     Standard Deviation | **(3 Marks)** |
| | (ii).     Coefficient of Variation | **(2 Marks)** |

(e) Using your results above, which investment should Mr. Mills choose and why? (**3 Marks)**

**[Total: 20 Marks]**

## QUESTION 2

A retired couple have up to GHS 30,000 they wish to invest in Fixed Income Securities. Their Broker recommends investing in two (2) bonds: one an AAA Bond yielding 12%; the other a $B^+$ Bond paying 15%. After some consideration, the couple decide to invest at most GHS 12,000 in the $B^+$ rated bond and at least GHS 6,000 in the AAA Bond. They also want the amount invested in the AAA Bond to exceed or equal the amount invested in the $B^+$ Bond. The couple engaged you as a financial consultant at the Chartered Institute of Bankers, Ghana to analyze the options available and advise on which securities they should invest in order to maximize the return on their investment. Using the Graphical Method of Linear Programming, you produce the results displayed on the graph below after a detailed analysis.



**Required:**

a. Formulate this problem as a Linear Programming Model.                    **(10 Marks)**

b. What investment option(s) should you recommend to the couple, if the couple want to maximize their return on investment?                    **(10 Marks)**

**[Total: 20 Marks]**