



**THE INSTITUTE OF CHARTERED
ACCOUNTANTS OF NIGERIA**

INSIGHT

**MARCH 2023 ATSWA EXAMINATIONS
PART II**

Question Papers

Suggested Solutions

and

Examiners' Comments

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THE ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA



ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA

MARCH 2023 EXAMINATIONS (PART II)

FINANCIAL ACCOUNTING

PLEASE READ THESE INSTRUCTIONS BEFORE COMMENCEMENT OF THE PAPER

EXAMINATION INSTRUCTIONS

1. All solutions should be in ink. Any solution in pencil will not be marked.
2. Read all instructions on each part of the paper carefully before answering the questions.
3. Ensure that you do not answer more than the number of questions required for **Section B (The Essay Section)**.
4. Check your pockets, purse, mathematical set, etc, to ensure that you do not have prohibited items such as telephone handset, electronic storage device, wrist watches, programmable devices or any form of written material on you in the examination hall. You will be stopped from continuing with the examination and liable to further disciplinary actions including cancellation of examination result if caught.
5. Do not enter the hall with anything written on your docket.
6. Insert your examination number in the space provided above.

TUESDAY, 28 MARCH, 2023

DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2023**

FINANCIAL ACCOUNTING

Time Allowed: 3 hours

SECTION A: PART I MULTIPLE-CHOICE QUESTIONS (30 Marks)

ATTEMPT ALL QUESTIONS IN THIS SECTION

Write ONLY the alphabet (A, B, C, D or E) that corresponds to the correct option in each of the following questions/statements

1. Which of the following is the underlying assumption for the preparation of financial statements?
 - A. Relevance
 - B. Going concern basis
 - C. Historical cost
 - D. Prudence
 - E. Maternity

2. Which of the following is **NOT** an example of entity's income?
 - A. Dividend received on investments
 - B. Gain from sale of equipment
 - C. Fees earned from providing services
 - D. Cash due on sales of goods to customers
 - E. Premium from issue of shares

3. Costs of inventory include the following, **EXCEPT**
 - A. Storage cost necessary in the production process
 - B. Non-refundable taxes
 - C. Import duties
 - D. Salary of production staff
 - E. Carriage outwards

4. The criteria required for incorporating assets, liability, income or expense into the financial statements are met, if it satisfies the
 - A. Criteria of understandability and verifiability
 - B. Criteria of relevance and faithful representation
 - C. Definition of an element and it can be measured reliably
 - D. Definition of capital maintenance concept
 - E. Criteria of comparability and consistency.

5. The estimated price at which an asset is bought or sold when both the buyer and seller agreed on a price is
- A. Disposal value
 - B. Net realisable value
 - C. Historical cost
 - D. Present value
 - E. Fair value
6. In the preparation of financial statements, which of the following line-items will **NOT** be included in operating activities?
- A. Revenue
 - B. Cost of goods sold
 - C. Administration expenses
 - D. Distribution expenses
 - E. Finance costs

7. The following information is extracted from the accounts of Afara Limited for the year ended March 31, 2022

	GHC'000
Sales	5,000
Cost of goods sold	3,500
Cash collected from customers	4,000
Gain from sale of motor vehicle	200
Returns on goods sold	400

How much revenue would be reported in the statement of comprehensive income of Afara Limited?

- A. GHC1,000,000
 - B. GHC3,600,000
 - C. GHC4,200,000
 - D. GHC4,600,000
 - E. GHC4,800,000
8. Which of the following method is **NOT** permitted to be used for determination of the cost of inventory under IFRS?
- A. Specific identification method
 - B. First-In-First-Out
 - C. Weighted Average method
 - D. Last-In-First-Out
 - E. Both Last-in-First out and specific identification method

9. When closing inventory is overstated, what are the effects on profit and current asset?

	Profit	Current asset
A.	Overstated	Understated
B.	Overstated	No effect
C.	Understated	No effect
D.	Understated	Understated
E.	Overstated	Overstated

10. In partnership accounts, cash drawings to a partner is

- A. A charge to profit or loss
- B. An addition to profit for the period
- C. A debit to the partner's current account
- D. A credit to the partner's capital account
- E. A credit to the partner's current account

11. Deferred revenue is an example of

- A. Liability
- B. Asset
- C. Income
- D. Expenses
- E. Equity

12. According to IAS 7, which of the following may be recognised as either cash inflow from operating activities or cash inflow from investing activities?

- A. Dividends paid
- B. Dividends received
- C. Cash paid to acquired plant and equipment
- D. Salary paid to employees
- E. Cash received from issue of shares

13. On dissolution of a partnership, one of the partners took over a motor vehicle with a carrying amount of ₦240,000 at an agreed value of ₦177,000. Which of the following statement is correct?

- A. Debit cash account with ₦240,000
- B. Credit the partner's capital account with ₦177,000
- C. Credit the partner's account with ₦240,000
- D. Debit the partner's capital account with ₦177,000
- E. Debit the partner's capital account with ₦240,000

14. The rules and regulations guiding the formation and operations of companies are contained in the
- A. International Financial Reporting Standards
 - B. The Finance Act
 - C. The Companies and Allied Matters Act/Company Act
 - D. The Financial Reporting Council Act
 - E. Securities and Exchange Commission Act
15. Which of the following is **NOT** a consequence of unethical behaviour in financial reporting?
- A. Loss of job by employees
 - B. Law suit against the entity
 - C. Increased tax revenue
 - D. High cost of capital
 - E. Lack of investor's confidence
16. A professional accountant is likely to prepare financial statements that faithfully represents what it purports to represent if it has
- A. Financial incentives
 - B. No financial incentives
 - C. Motivation
 - D. Familiarity with the company
 - E. Motivation and financial incentives
17. In a computerised accounting system, the source document used for accounting for goods return to supplier is referred to as
- A. Debit note
 - B. Receipt note
 - C. Rejection out
 - D. Credit note
 - E. Rejection in
18. An important purpose of full disclosure regulations is to
- A. Provide information to investors so that they can make informed decision
 - B. Enable government to generate more tax revenue
 - C. Enable entities to learn the strategy of one another
 - D. Prevent the market price of shares from falling
 - E. Guide entities against paying penalties for unethical behaviour

19. The most appropriate test of a company's liquidity is it's
- Trade receivables period
 - Inventory period
 - Acid test ratio
 - Trade Payable period
 - Asset turnover ratio
20. During the year ended June 30, 2022, Hajah Limited reported revenue of Le245 million, profit for the period is Le137 million, increase in inventory is Le36 million while decrease in trade receivables is Le38million. How much cash was collected from customers during the period?
- Le207 million
 - Le283 million
 - Le243 million
 - Le319 million
 - Le382 million
21. The following information is extracted from the financial records of Ebrima Enterprises for the year ended June 30, 2022
- | | GMD'000 |
|----------------------------|----------------|
| Inventory at July 1, 2021 | 1,400 |
| Inventory at June 30, 2022 | 540 |
| Revenue | 6,900 |
- Gross profit margin is $33\frac{1}{3}\%$
The purchases for the entity during the year is
- GMD1,840,000
 - GMD3,740,000
 - GMD4,300,000
 - GMD4,600,000
 - GMD5,460,000
22. A receivables ledger control account had a closing balance of ~~N~~84,750. It included a contra entry to the payables' ledger of ~~N~~2,000 which had been entered on the wrong side of the receivables' ledger control account. What should be the correct balance in the control account?
- ~~N~~80,750
 - ~~N~~82,750
 - ~~N~~86,750
 - ~~N~~88,750
 - ~~N~~90,750

23. Lamin's Limited trial balance shows an overestimate in respect of income tax for the previous year of GMD25,000 and the tax estimate for the current year is GMD141,000. The tax charge to be reported in the statement of profit or loss and tax liability in the statement of financial position in the current year are

	Tax charge GMD	Tax liability GMD
A.	141,000	116,000
B.	116,000	141,000
C.	141,000	141,000
D.	141,000	166,000
E.	166,000	141,000

24. A manufacturing company preparing financial statements according to the requirements of IAS 1 "Presentation of financial statements" will present the following financial statements for publication, **EXCEPT**

- A. Manufacturing account
- B. Statement of Profit or Loss and other comprehensive income
- C. Statement of financial position
- D. Statement of changes in equity
- E. Statement of cash flows.

25. The double entry for recording profit on revaluation in a partnership account is to

	DR.	CR.
A.	Partners' current account,	Revaluation account
B.	Statement of income distribution,	Revaluation account
C.	Partners' Drawings accounts,	Revaluation
D.	Revaluation account,	Partners' current account
E.	Revaluation account	Partners' capital account

26. The double entries to be made by the company, when potential shareholders paid cash for shares that will be issued in future date is to

	DR.	CR.
A.	Share capital account,	Cash account
B.	Cash account,	Share capital account and share premium account
C.	Share capital and share premium account,	Cash account
D.	Cash account,	Deposit for shares account
E.	Deposit for shares account,	Share capital account

27. Which of the following accounts or statements of a not-for profit organisation will record both revenue and capital items?
- A. Statement of Profit or loss
 - B. Income and expenditure account
 - C. Receipts and payment account
 - D. Subscriptions account
 - E. Statement of financial position
28. The following information relates to Mesah& co.
- I. Trade receivables balance at year ended December 31, 2021 was GH¢1,000,000.
 - II. Allowances for doubtful receivables b/d on January 1, 2021 was GH¢40,000
 - III. Allowances for doubtful receivables for the year ended December 31, 2021 is to be made at 2½% on trade receivables balance.
- How much doubtful receivables is to be recognised in the statement of profit or loss during the year?
- A. GH¢15,000 Debit
 - B. GH¢15,000 Credit
 - C. GH¢25,000 Debit
 - D. GH¢25,000 Credit
 - E. GH¢40,000 Debit
29. In which of the components of financial statements is proposed dividends reported?
- A. Changes in equity
 - B. Notes to the financial statements
 - C. Financial position
 - D. Comprehensive income
 - E. Changes in equity and Financial position
30. For which of the following ratios would a decrease be considered as improved performance?
- A. Debt/equity
 - B. Interest cover
 - C. Return on equity
 - D. Current ratio
 - E. Acid test ratio

SECTION A: PART II

SHORT-ANSWER QUESTION

(20 MARKS)

ATTEMPT ALL QUESTIONS

Write the correct answer that best completes each of the following questions/statements

1. According to the IASB Conceptual Framework for financial reporting, the two main attributes of relevance arevalue and value.
2. According to IASB Conceptual Framework, the process of incorporating assets, liabilities, income and expenses into financial statements is called
3. The process of determining the monetary amount at which elements of financial statements are included in the financial statement is called
4. After initial recognition, an entity must measure its Property, Plant and equipment at cost less and
5. The specific principles, bases, rules, conventions and practices applied in the presentation of financial statements are called
6. Qualitative characteristics that neutrality contributes to, is.....
7. The unrealised gains and losses that are reported in the statement of changes in equity is called
8. Depreciation on property, plant and equipment commences when the asset
9. The formula for calculating working capital is.....
10. Amount due from a customer is income and
11. Malam Limited received rent of ₦2,800,000 in the year ended December 31, 2021; monthly rent from tenants is ₦200,000. The current asset or current liability in respect of the transaction at the year ended December 31, 2021 is
12. An entity bought a plant for ₦1,500,000 on January 1, 2019. The asset's useful life is 10 years, with no residual value and to be depreciated using straight line method. On December 31, 2020, the useful life of the plant was reviewed to 3

more years. The adjustment required under IAS 8 is referred to as a change in accounting.....

Use the following information to answer questions 13 and 14

Oke bought 300 pairs of shoes at ₦2,000 per pair for cash and paid transport fare of ₦15,000 to bring them to his shop. During the period Oke sold 220 pairs of the shoes for ₦1,282,000.

13. The cost of goods sold is
14. The accounting basis used to calculate the cost of goods sold is
15. At the reporting date, the bank balance in the books of Shaye PLC was ₦15,040,000 before reconciliations. The following differences were discovered from the bank statement; uncredited cheques ₦1,200,000, bank charges ₦170,000, unpresented cheques ₦2,500,000.

The bank balance that would be reported in the statement of financial position is
16. Saro and Kwame are in partnership sharing profits equally; they admitted Edet for $\frac{1}{5}$ share of profits. The new profit-sharing ratio for the partners is
17. Cost of repair and maintenance should be disclosed in which statement?
18. The capital structure of a company comprises of equity and
19. The accounting concept followed when a business records the cost of a non-current asset in its books even though it does not legally own the asset, is called
20. An extended trial balance is used to prepare

SECTION B:**ATTEMPT ANY FOPUR QUESTIONS****(50 MARKS)****QUESTIONS 1**

The financial statements of Batata Limited for the year ended December 31, 2021 are as follows:

Statement of profit or loss for the year ended December 31, 2021

	L\$`000
Revenue	1,136
Cost of sales	<u>(620)</u>
Gross profit	516
EXPENSES:	
Administrative	(96)
Distribution	(140)
Depreciation	<u>(36)</u>
Net profit for the year	<u>244</u>

Statement of financial position as at December 31, 2021

Assets	L\$'000	L\$'000
Non- current assets	1,280	
Depreciation-accumulated	<u>(300)</u>	980
Current assets		
Inventories	364	
Receivables	184	
Cash and cash equivalents	<u>256</u>	<u>804</u>
Total assets		<u>1,784</u>
Equity and liabilities:		
Share capital		600
Retained earnings		432
Current liabilities		<u>752</u>
Total equity and liabilities		<u>1,784</u>

Additional information:

The ratios of Papaya Limited which operates in the same industry as Batata Limited are as follows:

Gross profit margin	50.5%
Net profit margin	15.4%

Asset turnover ratio	63.9%
Current ratio	1.2: 1
Quick ratio	0.3:1
Receivable collection period	89.8 days

Required:

- Calculate the comparative ratios for Batata Limited (6 Marks)
 - Compare and comment on the performance of both companies (6½ Marks)
- (Total 12½ Marks)**

QUESTION 2

- State the disclosure requirements in the notes to the financial statements in accordance with IAS 16 for each class of property, plant and equipment. (2½ Marks)
- State the contents of sets of financial statements of an SME. (2½ Marks)
- The following information were contained in the non-current assets register of Ivory Products Limited on December 31, 2020.

	COST	ACCUMULATED DEPRECIATION
	₦ 'M	₦ 'M
Freehold buildings	680	54
Motor vehicles	120	48
Plant and equipment	340	136
Construction in progress	280	-

Additional Information:

- During the year the company acquired a ware house for ₦65m on April 30, 2021.
- The sum of ₦35m was incurred on the construction in progress and this resulted in the completion of a plant costing ₦95m, put into use by the company on June 30, 2021.
- A delivery van which was purchased at a cost of ₦32m was disposed on March 15, 2021. The carrying amount of the van on January 1, 2021 was ₦20.6m.
- Freehold buildings are to be depreciated over 50 years while motor vehicles and plant & equipment at the rate of 20% and 15% per annum respectively. Full year depreciation is to be granted in the year of acquisition with no depreciation charge in the year of disposal.

Required:

Prepare the non-current assets schedule for the year ended December 31, 2021.

(7½ Marks)

(Total 12½ Marks)

QUESTION 3

- a. Distinguish between Batch and Real time processing of financial transactions. (3 Marks)
- b. Define;
- i. Manual Accounting
- ii. Computerised accounting (2 Marks)
- c. What are the key differences between manual accounting and computerised accounting system? (7½ Marks)

(Total 12½ Marks)

QUESTION 4

- a. Matching concept is especially important in the application of accrual basis. Explain the importance of this concept and how it is applied to cost of goods sold and services rendered in a period. (5 Marks)
- b. The qualitative characteristics are attributes that make information provided in the financial statements useful to users but there are certain constraints over relevance and faithful representation.

You are required to explain THREE of the constraints.

(7½ Marks)

(Total 12½ Marks)

QUESTION 5

The information extracted from the books of Zealot Enterprises as at December 31, 2021 were:

	N
Trade Payables Control Account Balance	438,930
Payables ledger balance	481,190
Trade receivables control Account balance	188,050
Trade receivables ledger balance	162,960

Examination of the accounting records revealed that:

- (i) The sales day book had been overcast by ₦4,000 on one occasion and ₦2,000 on another.
- (ii) The purchases day book was undercast by ₦30,000 on one occasion and over cast by ₦18,000 on another.
- (iii) Discounts allowed of ₦400 posted to the sales ledger was omitted from the cash book
- (iv) A cash book total of ₦54,290 was posted to the control account as ₦45,290
- (v) Balance of ₦3,520 was omitted from the list of Trade receivables
- (vi) The credit side of Trade receivable account was overcast by ₦2,000
- (vii) Bad debts of ₦4,880 have been written off in the sales ledger but no entry has been made in the general ledger
- (viii) A balance of ₦18,810 was omitted from the list of trade payables
- (ix) An account of ₦6,930 in the trade payable ledger set off against a contra account in the sales ledger, but not recorded in the general ledger
- (x) Discounts allowed amount to ₦800 was entered in the cash book, but not posted to the customer's account
- (xi) An item of ₦3,720 in the sales day book was posted as ₦1,560 in the customer's account
- (xii) Pro-forma invoice on goods worth ₦65,000 was posted in the payables ledger. The goods were yet to be supplied.

You are required:

Show the adjustments necessary to the trade receivables and payables balances in the general and subsidiary ledgers.

(Total 12½ Marks)

QUESTION 6

- a. You have just been appointed as the treasurer of your social club. The former treasurer had been preparing the final accounts of the club on an accrual basis, but you are of the opinion that it is not proper to do so, rather the account have been prepared under the "cash basis".

Required:

Explain the difference between accrual basis and cash basis in the preparation of club accounts

(4 Marks)

b. Fountain of Hope Social Club has the following information in its books for the year ended September 30, 2021

(i) Subscription account balances:

On October 1, 2020 in advance Le32,000 and in arrears Le50,000
 September 30, 2021 in advance Le14,000 and in arrears Le100,000
 Amount received during the years:

Le	
2019	400,000
2020	3,100,000
2021	37,500

(ii) Assets and Liabilities

	1 October, 2020	30 Sept., 2021
	Le	Le
Bar Inventories	99,200	105,000
Bar suppliers outstanding	588,000	680,000
Bar expenses owing	50,000	72,000
Bank balance	1,048,000	-
Bar Wages Outstanding	-	185,000

(iii)

	Le
Receipts and Payments	
Donation received	240,000
Bar attendant wages	350,000
Bar expenses	234,000
Bar takings	2,500,000
Ticket takings	8,750,000
Payment for bar supplies	1,500,000
Payment for ticketing exp	<u>6,492,400</u>

You are required to prepare the club's:

- i. Subscription account
 - ii. Bar account
 - iii. Ticket account
- (show all workings)**

(3½ Marks)

(4 Marks)

(1 Mark)

(Total 12½ Marks)

SECTION A: PART 1

MULTIPLE-CHOICE SOLUTIONS

1. B
2. E
3. E
4. C
5. E
6. E
7. D
8. D
9. E
10. C
11. A
12. B
13. D
14. C
15. D
16. B
17. C
18. A
19. C
20. B
21. B
22. A
23. B
24. A
25. E
26. D
27. C
28. B
29. B
30. A

Examiner's comment

Being compulsory questions, they were attempted by all candidates, but performance was above average.

Tutorials to MCQ

7. Only the sales minus the returns on goods sold are relevant in the calculation of revenue in this question, that is, GH¢5,000,000 -GH¢400,000.
13. When a partner takes over the asset of the partnership, the partner's capital account is debited with the agreed value.
20. Decrease in trade receivables will increase cash from customers, that is, Le245 + Le38) million.
21. Gross profit $33\frac{1}{3}\% \times \text{GMD } 6,900 = 2,300$; cost of sales is $\text{GMD}4,600$ Purchases = cost of sales + closing inventory – opening inventory = $4600 + 540 - 1400 = \text{GMD } 3,740$
22. Receivables balance ₦84,750
Payable set-off wrongly debited to receivables control ₦2000 x 2 (4,000)
80,750
23. Tax estimate for current year GMD 141,000
Overestimate for previous year (25,000)
Tax expense for current year 116,000

The estimate for the current year is the tax liability to be reported in the statement of financial position, since company income tax is paid on a prior year basis, it would be paid the following year at the agreed amount with the tax authority.

SECTION A: PART II

SHORT-ANSWER SOLUTIONS

1. Predictive, confirmatory.
2. Presentation.
3. Measurement.
4. Accumulated depreciation, and accumulated impairment losses.
5. Accounting Policies.
6. Faithful representation.
7. Revaluation Surplus or fair value gain or reserve.
8. Available for use.
9. Current assets minus current liabilities.
10. Receivables.
11. ₦400,000 current liability.

12. Estimate.
13. ₦451,000, $(15,000 \div 300 = 50 + 2000 * 220) = 451,000$
14. Accrual basis.
15. ₦14,870,000 $(\text{₦}15,040,000 - 170,000) = \text{₦}14,870,000$
16. Ratio 2:2:1
17. Statement of profit or loss.
18. Debt.
19. Substance over form or reality over legality.
20. Statement of profit or loss, statement of financial position, statement of changes in equity, Adjusted/Final Trial Balance.

Examiner's comment

As compulsory questions too, all the candidates attempted the questions, but performance was average.

SECTION B

SOLUTION 1

a. Calculation of comparative ratios of Batata Nig Ltd

a)

Batata Limited

Computation of Comparative Ratios for the year ended December 31, 2021

		Batata Limited	Papaya Limited
Gross Profit Margin =	$\frac{\text{Gross Profit} \times 100}{\text{Revenue}}$	$\frac{516 \times 100}{1,136}$	45.4%
		1,136	50.5%
Net Profit Margin =	$\frac{\text{Net Profit} \times 100}{\text{Revenue}}$	$\frac{244 \times 100}{1,136}$	21.5%
		1,136	15.4%
Asset Turnover =	$\frac{\text{Revenue}}{\text{Capital Employed}}$	$\frac{1,136 \times 100}{1,032}$	110.1%
		1,032	63.9%
Current ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$	$\frac{804}{752}$	1.1:1
		752	1.2:1
Quick ratio =	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$	$\frac{804 - 364}{752}$	0.6:1
		752	0.3:1
Receivable Collection Period =	$\frac{\text{Trade Rec.} \times 365 \text{ days}}{\text{Revenue}}$	$\frac{184 \times 365 \text{ days}}{1,136}$	59.1 days
		1,136	89.8 days

b. Comments on the performance of Batata Nigeria Ltd and Papaya Ltd

- i. The gross profit margin is high for both companies. The greater sales volume could have allowed papaya Ltd to take better advantage of trade discounts.
- ii. As both companies operate in the same industry, it is possible that geographical location might have also caused a difference in their gross profit margin.
- iii. As for the net profit margin Batata Ltd net profit margin (21.5%) is higher than that of Papaya Ltd (15.4%). This could be as a result of better cost control by Batata Ltd or efficient management of its operating expenses.
- iv. The asset turnover shows that Batata Ltd made more efficient use of assets than Papaya Ltd, as it is generating proportionally more sales from assets.
- v. The current ratio of both companies is greater than one with Papaya Ltd having a slight edge. These ratios indicate that the companies have sufficient current assets to meet their current liabilities.
- vi. The quick ratios are, however, not too good as both are less than one. It shows that most of their current assets are tied up in inventory. Papaya Ltd with a very low quick ratio might have more liquidity problems than Batata Ltd.
- vii. The receivable collection period is higher for Papaya Ltd (89.8 days). This shows that Papaya Ltd takes a longer time to collect its debts from customers and therefore needs to pay more attention to its credit control when compared with Batata Ltd.

In conclusion, Papaya Ltd has a higher gross profit margin, it has a liquidity problem, it is less efficient in credit control while Batata Ltd is, therefore, a better company.

Examiner's Comment

The question tested the candidates understanding and interpretation of financial ratios. About 75% of the candidates that attempted the question scored above 50% of the allocated marks.

The major pitfall in the question is the asset turnover ratio which many of them did not get correctly.

SOLUTION 2

a) Disclosure requirements of IAS 16 – Property, plant and equipment

- (i) Measurement bases (cost or revaluation model)
- (ii) Depreciation methods
- (iii) Useful lives or depreciation rates used
- (iv) Gross carrying amount and accumulated depreciation at the beginning and end of the period
- (v) Assets classified as held for sale.
- (vi) Addition during the year.
- (vii) Increase or decrease arising from revaluation, impaired losses, and reversal thereof.
- (viii) Assets pledged as security for liabilities
- (ix) Assets in the course of construction. For assets that are revalued, the following need to be disclosed.
 - The effective date for valuation
 - Whether an independent valuer was involved
 - Methods and significant assumption used in assessing the fair value.
 - For each class of asset revalued, the carrying amount that would have been recognised if the assets had not been revalued.
 - The revaluation surplus stating the change for the period and any restriction in distribution to shareholders.
- (x) A reconciliation between the opening and closing values for gross carrying amount and accumulated depreciation showing;
 - Additions
 - Disposals
 - Acquisitions through business combinations (IFRS 3&10)
 - Increases/decreases during the period from revaluations and from impairment losses
 - Impairment losses recognized in profit or loss
 - Impairment losses reversed in profit or loss
 - Depreciation
 - Net exchange differences (from translation of statements of foreign entity)
 - Any other movements.

b) **Complete set of financial statements for SMEs:**

- (i) Statement of financial position as at the reporting date
- (ii) Single statement of comprehensive income for the reporting period and expenses recognised during the period.
- (iii) A statement of changes in equity for the period
- (iv) A statement of cashflow for the period
- (v) Notes comprising of summary of significant accounting policies and other explanatory information

c) **Ivory Products Limited**

Schedule of Non-Current Assets for the year ended December 31, 2021.

	Freehold Buildings	Motor Vehicles	Plant & Equipment	Construction in Progress	Total
Cost:	₦'m	₦'m	₦'m	₦'m	₦'m
Balance as at January 1	680.0	120.0	340.0	280.0	1,420.0
Additions	65.0	-	-	35.0	100.0
Reclassifications	-	-	95.0	(95.0)	-
Disposal	-	(32.0)	-	-	(32.0)
Balance as at Dec. 31	<u>745.0</u>	<u>88.0</u>	<u>435.0</u>	<u>220.0</u>	<u>1,488.0</u>
Accumulated Depr.					-
Balance as at January 1	54.0	48.0	136.0	-	238.0
Current year charges	14.9	17.6	65.25	-	97.8
Disposal	-	(11.4)	-	-	(11.4)
Balance as at Dec. 31	<u>68.9</u>	<u>54.2</u>	<u>201.25</u>	-	<u>324.35</u>
Carrying Amount:					-
Balance as at Dec. 31	<u>676.1</u>	<u>33.8</u>	<u>233.75</u>	<u>220.0</u>	<u>1,163.65</u>
Balance as at January 1	<u>626.0</u>	<u>72.0</u>	<u>204.0</u>	<u>280.0</u>	<u>1,182.0</u>

Workings–Depreciation

WK

- Free hold Building = $745 \times 20\% = 14.9$
- Motor Vehicle = $88 \times 20\% = 17.6$
- Plant & Equipment = $435 \times 15\% = 65.25$
- Motor Vehicle Disposal = $32 - 20.6 = 11.4$

Examiner's comment

The question was on disclosure requirement of IAS16 - PPE and schedule of non-current assets. About 70% of the candidates attempted the question. The performance on the A and 'C' part of the question was poor while the 'B' part served as a boost for them as most of them got the part correctly.

SOLUTION 3

a) Differences between batch and real time processing

Batch Processing System: This is a system whereby transactions are accumulated over a period of time and processed as a single unit or batch. For example, a store may update its sales records of transaction every day after the store closes. Whatever the time period in a batch system, there is some time delay between the actual event and the processing of the transaction to update the records of the organisation.

Real Time Processing; is a system whereby transactions are processed immediately as they occur without any delay to accumulate transactions. Real time is also referred to as online transaction processing or OLTP. In this case, the records in the system always reflect the current status. A good example of Real time processing system would be airline reservations. When you book a ticket and select a seat, that booking is made right away and nobody else can get the same seat.

b) Define manual Accounting and Computerised Accounting

Manual Accounting: This is the paper-based accounting system in which journals, ledgers, registers, vouchers, account books are used to store, classify and analyze financial transactions of an organisation. It is often used by small businesses, like sole trader, shopkeeper etc. due to lower cost. An advantage of the manual accounting is its easy accessibility. It is characterised by confidentiality which makes the sensitive information hacking free. However, it has its limitations depending on the knowledge of the accountant doing the bookkeeping. Also, it is susceptible to human errors.

Computerised Accounting: This is an accounting system that uses computer system and pre-packaged, customised or tailored accounting software to keep records of financial transactions and generate financial statements. This system relies on a database. The accounting database is systematically maintained with active interface wherein accounting application programs and reporting system are used. It also requires front- end interface, back-end database, database processing and reporting system to store data in a database- oriented application. The merits of computerized accounting rely on its speed, accuracy, reliability, up-to-date information and reports.

- c) What are the key differences between manual accounting and computerised accounting?

Basis of Comparison	Manual Accounting	Computerised Accounting
Meaning	Manual accounting is a system of accounting that uses physical registers and account books for Keeping financial records.	Computerised Accounting is an accounting system that uses software for recording financial transactions electronically.
Recording	Recording is possible through Book of original entry.	Data content is recorded in Customised database.
Calculation	All the calculations are performed manually.	Only data input is required. The calculations are performed by computer system Automatically.
Speed	Slow	Comparatively faster
Adjusting Entries	It is made for the rectification of errors.	It cannot be made for Rectification of errors
Back up	Not possible	Entries of transactions can be Saved and backed up.
Trial Balance	Prepared when necessary	Instant trial balance is provided on daily basis.
Financial Statement	It is prepared at the end of the Period or quarter	It is provided at the click of a button.

Examiner's comment

The 'A' part of the question tested candidates understanding of real time and batch processing. The 'B' and 'C' parts tested candidates' understanding of manual and computerised accounting.

The question was well attempted by about 70% of the candidates and performance was good.

SOLUTION 4

a) Matching Concept:

Matching concept is related to accrual basis. The concept holds that for any accounting period, revenue earned should be matched with the cost that earned them. If revenue is deferred from one period to another, all elements of cost relating to it will be carried forward.

The concept is applied to products where the cost can be related directly to the products. For instance, cost of goods sold is recognised for units of products sold during the year, while the value of units not yet sold is reported as closing inventory at the end of the period.

The concept is applied in relation to time period where the cost cannot be related to the product. For instance, only the expired portion of rent received in advance will be recognised as income during the reporting period, while the rental income not yet used by the tenant will be recognised as liability.

b) The constraints over relevance and faithful representation are

- i. Timeliness
- ii. Balance between benefits and costs
- iii. Materiality

Timeliness: Information must be reported in a timely manner. A piece of information will lose relevance if there is delay in the reporting of the information. However, management would require balancing between timeliness and faithful representation.

A premature disclosure of information without judging all aspect may turn out to be unfaithfully represented whereas too much delay in the reporting may make the information useless.

Balance between benefit and cost: The benefit of obtaining information should exceed the cost of obtaining it. It is necessary to evaluate whether one or some of the enhancing qualitative characteristics will be given up in order to reduce cost.

Materiality: Materiality is said to be one of the constraints on financial reporting because it affects all the qualitative characteristics. Materiality is the level of an omission or misstatement of financial reporting information which could influence the decision of users. Materiality is based on the size and nature of the item judged in the light of surrounding circumstances. In order to provide a faithful representation and relevant information, materiality level should be established so as to detect material misstatement to avoid incomplete, biased, or not free from error in financial reporting information.

Examiner’s comment

The ‘A’ part of the question was on matching concept while the ‘B’ part was on constraints on qualitative characteristics of information provided on financial statements.

It was the least attempted question as about 25% of the candidates attempted it. The performance was very poor particularly on the ‘B’ part.

SOLUTION 5

Zealot Enterprises

Trade Payables Control Account

	₦		₦
Discount Received Undercast	9,000	Balance b/f	438,930
Set Off	6,930	Purchases Day book Undercast	30,000
Purchases Day book Overcast	18,000		
Balance c/d	<u>435,000</u>		
	<u>468,930</u>		<u>468,930</u>
		Balance b/d	435,000

Trade Payable Ledger Account

	₦		₦
Goods not yet received	65,000	Balance b/f	481,190
Balance c/d	<u>435,000</u>	Payable balance omitted	<u>18,810</u>
	<u>500,000</u>		<u>500,000</u>
		Balance b/d	435,000

Trade Receivable Control Account

	₦		₦
Balance b/f	188,050	Sales Day book overcast	4,000
		Sales Day book overcast	2,000
		Discount allowed omitted	400
		Bad debt written off	4,880
		Set Off	6,930
		Balance c/d	<u>169,840</u>
	<u>188,050</u>		<u>188,050</u>
Balance b/d	169,840		

Trade Receivable Ledger Account

	₦		₦
Balance b/f	162,960	Discount allowed	800
Receivable balance omitted	3,520		
Credit Sales Undercast	2,160		
Credit side overcast	<u>2,000</u>	Balance c/d	<u>169,840</u>
	<u>170,640</u>		<u>170,640</u>
Balance b/d	169,840		

Examiner's comment

The question was on Trade Payable and Receivable controls accounts. Few candidates attempted the question just about 30%. The performance was poor.

SOLUTION 6

- a) When cash basis is adopted, there would be no need adjusting for subscriptions in advance and in arrears. Subscription collected is regarded as income in the year of collection, while subscription in arrears and in advance are ignored.

When accrual basis is adopted, subscription is recognised as income no matter when they are collected, then the subscription in-advance and in-arrears should be considered. Subscriptions in advance are current liabilities, while subscription in arrears are current assets in the Statement of Financial Position at the end of the year. Bringing in unpaid subscription as assets contravenes the convention of conservatism, because many members who owe

subscription may cease to be members of the club without notice and never pay the amount owing. Assumed income and assets are not allowed in financial accounting.

For this reason, many not-for-profit organisations ignored unpaid subscriptions and make no provision for it in the financial statements. Memorandum of outstanding subscription may be kept for record purposes. When subscription in-arrears are eventually paid, they are recognised as income in the year of receipt irrespective of the period covered by the subscription.

bi

Fountain of Hope Social Club

Subscription Account

	Le		Le
Subscription due b/f	50,000	Subscription in advance b/f	32,000
Income & Expend. (Bal. Fig.)	3,168,000	Receipt and Payment	3,100,000
Subscription in advance c/d	<u>14,000</u>	Subscription Due c/d	<u>100,000</u>
	<u>3,232,000</u>		<u>3,232,000</u>
Subscription Due b/d	100,000	Subscription in advance b/d	14,000

Alternative Solution

Subscription Account

	Le		Le
Subscription Due b/f	50,000	Subscription in advance b/f	32,000
Income & Expend. (Bal. Fig.)	105,500	Receipt and Payment	37,500
Subscription in advance c/d	<u>14,000</u>	Subscription Due c/d	<u>100,000</u>
	<u>169,500</u>		<u>169,500</u>
Subscription Due b/d	100,000	Subscription in advance b/d	14,000

ii

Fountain of Hope Social Club

Bar Statement of Profit or Loss for the year ended September 30,2021

	Le	Le
Bar Takings		2,500,000
Cost of Sales:		
Bar Inventory at Start	99,200	
Bar Purchases	<u>1,592,000</u>	
Available for Sales	1,691,200	
Bar Inventory at End	<u>(105,000)</u>	
Cost of Inventory Sold		<u>(1,586,200)</u>
Bar Gross Profit		913,800
Less Bar Operating Expenses:		
Bar Expenses	256,000	
Bar Wages	535,000	
Total Bar Operating Expenses	<u>(791,000)</u>	
Bar Net Profit	<u>122,800</u>	

iii

Ticket Account

	Le
Ticket takings	8,750,000
Payment for ticketing expenses	<u>(6,492,400)</u>
Income & Expenditure (Bal. Fig)	<u>2,257,600</u>

Working Notes

Bar Suppliers Account

	Le		Le
Receipt and Payment	1,500,000	Balance b/f	588,000
Balance c/d	<u>680,000</u>	Income & Expend. (Bal. Fig.)	<u>1,592,000</u>
	<u>2,180,000</u>	Owing b/d	<u>2,180,000</u>
			680,000

Bar Expenses Account

	Le		Le
Receipt and Payment	234,000	Balance b/f	50,000
Balance c/d	<u>72,000</u>	Income & Expend. (Bal. Fig.)	<u>256,000</u>
	<u>306,000</u>	Owing b/d	<u>306,000</u>
			72,000

Bar Wages Account

	Le		Le
Receipt and Payment	350,000	Balance b/f	-
Balance c/d	<u>185,000</u>	Income & Expend. (Bal. Fig.)	<u>535,000</u>
	<u>535,000</u>	Owing b/d	<u>535,000</u>
			185,000

Examiner's comment

The question was on not-for-profit organisation account. It was well attempted as about 80% of the candidates attempted the question and performance was good.

THE ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
MARCH 2023 EXAMINATIONS (PART II)****PUBLIC SECTOR ACCOUNTING**

PLEASE READ THESE INSTRUCTIONS BEFORE COMMENCEMENT OF THE PAPER

EXAMINATION INSTRUCTIONS

1. All solutions should be in ink. Any solution in pencil will not be marked.
2. Read all instructions on each part of the paper carefully before answering the questions.
3. Ensure that you do not answer more than the number of questions required for **Section B (The Essay Section)**.
4. Check your pockets, purse and mathematical sets, etc to ensure that you do not have prohibited items such as telephone handset, electronic storage device, wrist watches, programmable devices or any form of written material on you in the examination hall. You will be stopped from continuing with the examination and liable to further disciplinary actions including cancellation of examination result if caught.
5. Do not enter the hall with anything written on your docket.
6. Insert your examination number in the space provided above.

WEDNESDAY, 29 MARCH, 2023

DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS –MARCH 2023**

PUBLIC SECTOR ACCOUNTING

Time Allowed: 3 hours

SECTION A: PART I MULTIPLE-CHOICE QUESTIONS(30 Marks)

ATTEMPT ALL QUESTIONS

Write ONLY the alphabet (A, B, C, D or E) that corresponds to the correct option in each of the following questions/statements.

1. The Traditional Budgeting approach used by government is also known as
 - A. Zero – Based Budgeting
 - B. Incremental Budgeting
 - C. Planning, Programming and Budgeting System
 - D. Line - Item Budgeting
 - E. Cash Basis Budgeting

2. The Executive controls government expenditure through the following, **EXCEPT**
 - A. Compilation and tentative approval of Nation's budget
 - B. Issuance of budgetary guidelines
 - C. Introduction of 'due process' guidelines
 - D. Introduction of Public Procurement and Fiscal Responsibility Acts, 2007
 - E. Introduction of guidelines for banking operations

3. Which of the following is **NOT** an objective of Medium Term Expenditure Framework (MTEF)?
 - A. To make public expenditure more efficient and effective
 - B. To increase greater political accountability for expenditure outcomes through good decision making
 - C. To improve inter and intra sectoral resource allocation by effective prioritising all expenditures
 - D. To improve macroeconomic balance, fiscal discipline through good estimates of available resources
 - E. To ensure accounting officers have enough to spend by using increments methods

4. Which of the following is **NOT** part of the steps that should be followed when using the Chart of Accounts for budgeting?

- A. Identify the economic items that would be executed during the fiscal year
 - B. Identify the functions intended to be performed by government institutions (revenue and cost centres)
 - C. Identify the programmes intended to be carried out by the government institutions
 - D. Determine the sources of financing the budgeted amount for each budget line
 - E. Determine the balance in the cash book on monthly basis
5. The Ministry of Finance and Planning (or the Ministry of Finance at the State level) receives from the Presidency (or the State Governor) before the issuance of the budget preparation guidelines.
- A. Circular letter
 - B. Budget pronouncement
 - C. Policy pronouncement
 - D. Spending pronouncement
 - E. Warrant letter
6. The overhead cost budget of a ministry consists of the following items, **EXCEPT**
- A. Travelling and transport
 - B. Basic salary and allowance
 - C. Utility services
 - D. Miscellaneous expenses
 - E. Motor vehicle maintenance
7. The Money Laundering Prohibition Act 2011, section 8 stipulates that a financial institution shall preserve and keep at the disposal of the authorities the record of a customer's identity for a period of at least ----- after the closure of accounts or severance of relations.
- A. 5 years
 - B. 7 years
 - C. 10 years
 - D. 12 years
 - E. 15 years
8. What is the meaning of the acronym 'PPP' in the context of government expenditure?
- A. Principal Partners Plan

- B. Private Public Plan
 - C. Public Private Partnership
 - D. Public Practice Partners
 - E. Perfect Public Partners
9. Financial Regulations of January 2009 stipulates the functions of the Auditor General for the Federation of Nigeria. This include
- I. Value for money audit
 - II. Audit of the Accountant General's yearly financial statement
 - III. Ensuring that funds are utilised as appropriated by the National-Assembly
- A. I,II and III
 - B. I and III
 - C. II and III
 - D. I
 - E. II
10. The document used by the auditor when conducting an audit and could be tendered in the court in case of litigation is known as
- A. Value for money Paper
 - B. Litigation Paper
 - C. Audit working paper
 - D. Audit calculation Paper
 - E. Forensic Paper
11. Subject to the provision of the Code of Conduct Bureau and Tribunal Act, third schedule, a person holding the office of the Chairman or member of the Tribunal shall vacate office when he attains the age of
- A. 55 years
 - B. 60 years
 - C. 65 years
 - D. 70 years
 - E. 75 year
12. The composition of the Code of Conduct and Tribunal Bureau shall consist of
- A. 5(five) other members
 - B. 9 (Nine) other members
 - C. 12 (Twelve) other members
 - D. 14 (Fourteen) other members
 - E. The Chairman and 2(Two) other members
13. The Board of Survey that is mostly convened at the end of the financial year is by
- A. The President of the Federation

- B. Post-Master-General for the Federation
 - C. Auditor-General for the Federation
 - D. Accountant-General of the Federation
 - E. National Assembly
14. Which of the following **CANNOT** be regarded as purpose of allocated stores?
- A. To acquire stores of standard design and in constant demand
 - B. To design store register
 - C. To reduce overall cost
 - D. To save storage space by holding minimum stocks requirement
 - E. To make the stocks immediately available when required for a project or service
15. Which of the following **CANNOT** be taken as a factor that causes changes in the net asset of a government entity?
- A. Asset revaluation
 - B. Correction of prior year errors
 - C. Disclosure of legal form of entity
 - D. Surplus / deficit during the year
 - E. Significant changes in accounting policies
16. Which of the following is **NOT** a statutory deduction from the employee payroll under Integrated Payroll and Personal Information System (**IPPIS**) platform?
- A. National Housing Funds (N H F)
 - B. Contribution Pension Scheme
 - C. Thrift and advance due
 - D. Pay as you Earn (P A Y E)
 - E. National Health Insurance Scheme (N H I S)
17. Which of the following is **NOT** an inventory valuation method?
- A. Simple average
 - B. Last – in – First – Out (LIFO)
 - C. Weighted Average
 - D. First – In -First – Out (FIFO)
 - E. Reorder level
18. Which of the following is **NOT** a key information that must be clearly displayed in the financial statements?
- A. Name of the reporting entity
 - B. Currency presentation

- C. Reporting date and the period covered
 - D. Name of Tax Controller
 - E. Accounting policies applied
19. The composition of the Board of Survey consists of the following members
- A. The President and not less than six members
 - B. The President and not less than four members
 - C. The President and not less than two members
 - D. The President and not less than three members
 - E. The President and not less than seven members
20. The regulatory agency in-charge of pension in Nigeria is
- A. National Pension Commission
 - B. National Pensioners' Commission
 - C. National Pensioners' Corporation
 - D. National Pensioners' Council
 - E. Nation Pension Commissions
21. Which of the following are included in the Pension Reform Act 2014 employee's pension contribution computation?
- I. Basic salary or emolument
 - II. Housing allowance
 - III. Transport allowance
 - IV. Rent allowance
 - V. Utility allowance
- A. I, II and IV
 - B. V, IV and III
 - C. IV, III and II
 - D. I, II and III
 - E. II, III and IV
22. The age that an employee accesses his or her retirement savings accounts is
- A. Before the age of 60 years' old
 - B. Near the age of 50 years' old
 - C. On attaining the age of 50 years' old
 - D. On or before the age of 55 years' old
 - E. After the age of 60 years' old
23. The following serves as control over the payroll prepared by the IPPIS Section:
- I. Cash Book
 - II. Payroll Sheet
 - III. Variation Control Advice

- A. I and II
 - B. I, II and III
 - C. II and III
 - D. II
 - E. I
24. Which of the following is **NOT** a characteristic of government parastatals?
- A. Governed by an Enabling Act
 - B. Governed by the Companies and Allied Matters Act 1990
 - C. Provide welfare services
 - D. Have supervising ministries
 - E. They incur expenses which are divided into capital and recurrent expenditure
25. The International Public Sector Accounting Standard (IPSAS) which treats the Preparation and Presentation of Financial Reports of government is
- A. IPSAS 1
 - B. IPSAS 2
 - C. IPSAS 3
 - D. IPSAS 4
 - E. IPSAS 5
26. In line with the 1999 Constitution of Nigeria (as amended), the sources of inflows into the Development Fund include:
- I. Contributions from the Consolidated Revenue Fund
 - II. External grants
 - III. External loans
- A. I and II
 - B. I, II and III
 - C. II and III
 - D. II
 - E. I
27. Public sector transactions are expected to comply with the provisions of the following, **EXCEPT**
- A. Financial Regulations
 - B. Companies and Allied Matters Act, Cap C20, LFN 2004
 - C. Appropriation Act

- D. Fiscal Responsibility Act
 - E. Public Procurement Act
28. Which of the following is **NOT** the mission of International Federation of Accountants (IFAC) while serving the public interest and strengthening the accounting profession?
- A. Contributing to the development, adoption and implementation of high-quality international standards and guidance
 - B. Contributing to the development of strong professional accountants
 - C. Promoting the value of professional accountants' world-wide
 - D. Engaging governments on the implementation of their annual budgets
 - E. Speaking out on accounting public interest issues
29. Which of the following accounting concept is applicable in the public sector?
- I. Periodicity
 - II. Duality
 - III. Entity
 - IV. Historical Cost
 - V. Going Concern
- A. I, II, III, IV & V
 - B. I
 - C. II, III & IV
 - D. I, II & V
 - E. II, III & V
30. Public sector accounting has been defined as 'a process' which involves the following:
- I. Recording,
 - II. Communicating,
 - III. Summarising,
 - IV. Analysing and classifying
 - V. Interpreting
- A. I
 - B. I, II and IV
 - C. I, II, III and IV
 - D. I, III, IV and V
 - E. I, II, III, IV and V

SECTION A: PART II SHORT-ANSWER QUESTIONS (20 MARKS)

ATTEMPT ALL QUESTIONS

Write the correct answer that best completes each of the following

questions/statements

1. The is an officer who is saddled with the responsibility of collecting some specified forms of revenue on behalf of the Government.
2. The Federation Accounts Allocation Committee (FAAC) meeting is normally divided into two institutional sessions, namely..... and
3. A memorandum book used for monitoring government expenditure and ensuring that there is no extra-budgetary spending is known as
4. Not later than ninety days following the end of each year, the distribution from Federation Account shall be rendered to both Houses of National Assembly by the.....
5. For a country, state or local government to achieve a reasonable level of success in accountability, transparency, performance evaluation and adherence to Appropriation Act, the application of unified Chart of Accounts is optional. **(TRUE or FALSE)**
6. Sections ----- and ----- of the Constitution sets out the laws guiding the audit of public accounts of the federation and all the courts of the federation.
7. A formal exit conference at the end of an audit exercise in the public sector may be held at the instance of -----
8. International Standard on Auditing (ISA) number.....provides for communicating deficiencies in Internal control to those charged with governance and management.
9. With the automation of the budget cycle using GIFMIS, budgets are electronically compiled from units and departments and aggregated on line Ministry/Agency level for consolidation by the Budget Office for the approval of----- and presentation to the National Assembly.
10. The Commission responsible for compelling any person or government institution to disclose information relating to public revenue and expenditure is known as-----
11. New Pension Reform Act 2014 allow an officer to withdraw from retirement savings account (RSA) on attaining the age ofyears

12. The statement which shows funds transferred from the consolidated Revenue Fund and other borrowings to finance Capital projects is called
13. The stock valuation method at which the price of the oldest batch of stock in store are fully issued, until the next price of the oldest is issue is called
14. In public sector, stores are classified into two main classesand
15. The imprest that is retired immediately the purpose for which it is set, is achieved is referred to as.....
16. In line with the Pension Reform Act 2014, all retirees are provided with two options for investing their retirement benefits, and they areand
17. Where an employee is less than the minimum age of retirement, what is the percentage required from withdrawing from his or her retirement savings accounts?
18. The account established by the Constitution into which all funds accrued or received or brought into the Federal Government are credited and all expenditure debited is known as.....
19. The audit technique adopted to ensure the existence of assets and liabilities and their valuations as at a particular date is known as.....
20. Unallocated stores should not be issued on.....

SECTION B: ATTEMPT ANY FOUR QUESTIONS (50 MARKS)

QUESTION 1

- a. In line with Pension Reform Act 2014, State precisely and concisely the meaning of the following abbreviations:
 - i. CPS
 - ii. PTAD
 - iii. PFA
 - iv. PFC
 - v. RLA
 - vi. PW

(3 Marks)
- b. You are a newly inducted Associate Accounting Technicians (AAT), responsible for the pension and gratuity in the Federal Ministry of Agriculture.

You are required to:

- i. Outline **SIX** Pension Fund Assets (3 Marks)
- ii. State the categories of persons exempted from the contributory pension scheme as contained in the new Pension Reform Act 2014 S.5 (1). (2 ½ Marks)
- c. As the Officer in-charge of Pension and Gratuity Section in your organisation.

You are required:

In accordance with PRA 2014, design a specimen for IPPIS Payroll or Payslip indicating employee and employer minimum pension contribution to PFA

(4 Marks)

(Total 12½ Marks)

QUESTION 2

- a. By its nature, public sector accounting has a number of distinct features. Enumerate **FIVE** of such characteristics. (5 Marks)
- b. Professional pronouncements on public sector accounting are made with certain objectives in mind. Enumerate these objectives (4½ Marks)
- c. Performance and Performance measurement in the public sector is hindered by a number of factors.

List **THREE** of such factors

(3 Marks)

(Total 12½ Marks)

QUESTION 3

The Sub – Committee of Federation Accounts Allocation Committee developed a comprehensive and standard chart called “National Chart of Account”

Required:

- a. Define National Chart of Account. (2½ Marks)
- b. State **FIVE** objectives of National Chart of Account. (5 Marks)
- c. State **FIVE** features of National Chart of Accounts (5 Marks)

(Total 12½ Marks)

QUESTION 4

The second schedule, part 1 of the Code of Conduct Bureau and Tribunal Act (CCB&T) was established by the Federal Government of Nigeria to deal with complaints of corruption by public servants and other breaches of its provisions.

- a. What is the main objective of CCB&T (1½ Marks)
- b. List **FIVE** powers and functions of the bureau (5 Marks)
- c. Second Schedule (section 7) of CCB&T Act clearly state the category of officers for the purpose of the Act.

List **SIX** of such officers (6 Marks)

(Total 12½ Marks)

QUESTION 5

The Midex State Government has consistently complied with the extant guideline and provisions stipulated by the IPSAS accrual basis in preparing its Annual Financial Statement since adopted in 2016.

The following information relating to the budget was made available as at 31st December, 2020;

Receipts

Initial budget

	N
Receipt from loans	24,383,248
Investment income	750,000
Capital receipts	78,588,111
Grants	17,172,115
Federal transfers	46,247,000
Taxes	125,000,000

Actual budget

	N
Receipt from loans	58,997,206
Investment income	178,890
Capital receipts	19,999,257
Grants	9,225,607
Federal transfers	45,829,652
Taxes	89,192,908

Payments

Initial budget

	N
Facility repayment	46,424,750
Overhead cost	36,601,674
Capital expenditure	131,333,495
Personnel cost	41,976,653
Debt charges	9,923,034

Subvention overhead	25,880,868
---------------------	------------

Actual budget

	N
Facility repayment	37,458,158
Overhead cost	25,067,733
Capital expenditure	76,234,148
Personnel cost	42,689,427
Debt charges	12,718,652
Subvention overhead	16,952,372

Budget adjusted for all reserves, carry over amounts, transfer, allocations, supplementary of appropriations and other authorised legislative, or similar authority, changes applicable to the budget period provided by the State are as follows:

Receipts	N
Receipt from loans	27,000,914
Investment income	525,000
Capital receipts	66,724,903
Grants	15,993,931
Federal transfers	32,372,400
Taxes	87,500,000

Payments/	
Facility repayment	21,746,321
Overhead cost	34,127,039
Capital expenditure	105,019,094
Personnel cost	41,536,109
Debt charges	3,417,873
Subvention overhead	24,270,712

Required:

In line with IPSAS 24, you are required to prepare the statement of comparison of budget and actual amount. **(Total 12½ Marks)**

QUESTION 6

Statement of financial performance shows income and expenses incurred by a Government Business Entity (GBE).

Required:

- a. List **EIGHT** line items contained in the statement of financial performance. (8 Marks)

- b. State **THREE** differences between General Purpose Financial Statement (GPFS)
– Cash and GPFS-Accrual.

(4½ Marks)

(Total 12½ Marks)

SECTION A: PART 1

MULTIPLE CHOICE QUESTIONS

1. B
2. E
3. E
4. E
5. C
6. B
7. C
8. C
9. C
10. C
11. D
12. B
13. D
14. B
15. C
16. C
17. E
18. D
19. C
20. A
21. D
22. C
23. C
24. B
25. A
26. B
27. B
28. D
29. A
30. E

Examiner's comments

This is a 30 -marks multiple-choice questions that covers the entire syllabus. It requires the candidates to write only the alphabet that corresponds to the correct option in each questions/statements.

More than 99% of the candidates attempted the question and above 80% scored 50% of total marks obtainable.

The commonest pitfall was the inability of some candidates to follow instructions. Candidates are advised to make adequate use of the past-questions of previous diets' examinations. They should also cover the entire syllabus and make adequate utilisation of ICAN study text in subsequent examinations.

SECTION A: PART II

SHORT-ANSWER SOLUTIONS

1. Revenue Collector
2. Technical Session & Plenary Section
3. Departmental Vote Expenditure Allocation Book (Vote Book)
4. Minister of Finance
5. False
6. 85 & 87
7. Auditee/Organisation
8. ISA 265
9. Federal Executive Council
10. Fiscal Responsibility Commission
11. 50 Years
12. Statement of Capital Development/Development Fund
13. First-in-first-Out (FIFO)
14. Allocated and Unallocated
15. Special Imprest
16. Programmed Withdrawal (PW) and Retiree Life Annuity (RLA)
17. 25% of Retirement Savings Accounts Balance
18. Consolidated Revenue Funds
19. Verification Techniques
20. Loan

Examiner's comment

This is a 20-marks short-answer questions which covers the entire syllabus. It requires candidates to write the correct answer that best completes each question/statement.

More than 99% of the candidates attempted the question, and about 70% scored 50% of total marks obtainable.

The commonest pitfall was as a result of less preparation for the examination by not covering the entire syllabus.

Candidates are advised to cover every area of the syllabus and also familiarise themselves with the past-questions of previous diets' questions.

Candidates are advised to make use of the ICAN Study Text to prepare for future examinations.

SECTION B

SOLUTION 1

a.

- i. CPS - Contributory Pension Scheme
- ii. PTAD - Pension Transitional Arrangement Directorate
- iii. PFA - Pension Fund Administrator
- iv. PFC - Pension Fund Custodian
- v. RLA - Retiree Life Annuity
- vi. PW - Programmed Withdrawal

bi. **Pension Fund Assets**

- i. Bonds, debentures, redeemable preference shares and other debt instruments issued by corporate entities and listed on a Stock Exchange registered under the investments and Securities Act;
- ii. Ordinary shares of public limited companies listed on a Securities Exchange registered under the Investments and Securities Act;
- iii. Bank deposits and bank securities;
- iv. Investment certificates of a closed-end investment funds or hybrid investment funds listed on a securities exchange registered under the investments and Securities Act with good track records of earning;
- v. Units sold by open-end investment funds or specialist open-end investment funds registered under the Investments and Securities Act;
- vi. Real estate development investments; or
- vii. Specialist investment funds and such other financial instruments as the Commission may approve from time to time;

- viii. Bonds, bills and other securities issued or guaranteed by the Federal Government and the Central Bank of Nigeria;
 - ix. Bonds, bills and other securities issued by the states and local governments.
- bii. Exemption from the new Pension Reform Act 2014- S 5 (1)
The categories of persons exempted from the Contributory Pension Scheme are:
- a) The categories of persons mentioned in Section 291 of the Constitution of the Federal Republic of Nigeria 1999 (as amended) including the members of the Armed forces, the intelligence and Secret Services of the Federation;
 - b) An employee who is entitled to retirement benefits under any Pension Scheme existing before the 25th day of June 2004 and has 3 or fewer years to retire (i.e., Fully Funded Pension Scheme);
 - c) Any person who falls within provisions of (a) and (b) above shall continue to derive retirement benefit under such existing pension scheme as provided for in the Second Schedule to this Act.
 - d) Where an officer exempted under (b) above dies in service or in the course of duty, the Federal Government Pension Transitional Arrangements Directorate shall cause to be paid, en-bloc, his next-of-kin or designated survivors, a gratuity and pension to which the officer would have been entitled at the date of his death calculated on the basis of applicable computations under the existing Pay-As-You-Go Pension Scheme of the Public Service of the Federation and Federal Capital Territory.
- c. The specimen for IPPIS Payroll or Payslip indicating employee and employer minimum pension contribution to PFA is as follows:

Specimen for IPPIS Payroll

- i. Employer (Organisational) Name:
- ii. Employee Name:
 - IPPIS Number:
 - Date of First Appointment:
 - Date of Birth:
 - Gender:
 - TIN:
 - Tax Authority:

- iii. **Contributory Pension Information:**
 - PFA:
 - Pension PIN:
- iv. **Bank Information Details**
 - Bank Name:
 - Accounts Number:

PAYSLIP

v.	Payment:	Current Month	Last Month
	• Basic Emolument		Xx
	• Employer PenCom (10%)	xx	Xx
	• NHIS	<u>xx</u>	<u>Xx</u>
	• Total Payment (Earns)	<u>Xx</u>	<u>Xx</u>
vi.	Deduction:		
	• Employer PenCom (10%)	xx	Xx
	• Employee PenCom (8%)	xx	Xx
	• PAYE	xx	Xx
	• NHF	xx	Xx
	• Union Due	xx	Xx
	• NHIS	<u>xx</u>	<u>Xx</u>
vii.	Total Payment:	<u>xx</u>	<u>Xx</u>
viii.	Net Payment:	<u>xx</u>	<u>Xx</u>

Examiner's comment

The question test candidates' knowledge and understanding of certain acronyms commonly used in line with Pension Reform Act 2014. It also required candidates to outline Pension Fund Assets, to state categories of persons exempted from Contributory Pensions as well as to design a specimen for IPPIS Payroll or Payslip.

About 55% of the candidates attempted the question. And about 20% scored 50% of total marks obtainable.

The commonest pitfall was the inability of some candidates to concisely state the abbreviations and failure to design a specimen for IPPIS payroll or payslip.

Candidates are advised to make efforts to cover the entire syllabus and also make use of past questions of the previous diets' examination.

Candidates are further required to make adequate use of the ICAN Study Text and other relevant reference materials in preparation for future examinations.

SOLUTION 2

- a. Characteristics of public sector accounting
- i. Budgeting largely determines the structure of Public Sector Accounting
 - ii. Fiscal policy,
 - iii. Accounting methods and
 - iv. Sources of revenue
 - v. Cohesive and standardised measurement approaches and rules.
 - vi. Fund accounting
 - vii. The Government Accounting System is maintained on "Accrual Basis."
 - viii. Government assets are no longer written off at the point they are paid for.
 - ix. Government statement of Financial Position now contains information on tangible assets.
 - x. Depreciation is presently charged on expenditure accounts.
- b. Professional pronouncements on public sector accounting have the following objectives:
- i. To develop and harmonise public sector financial reporting, accounting and auditing practices;
 - ii. To put into practice the same accounting standards throughout the world, in order to make comparisons possible and meaningful;
 - iii. To make guidelines available for practitioners, in order to maintain high reporting standards.
- c. Factors hindering performance and its measurement in the public sector include:
- i. Lack of profit motive,
 - ii. Multiple objectives and
 - iii. Presence of intangible services, whose benefits are difficult to quantify.

Examiner's comment

This question tests the candidates' knowledge and understanding of the following areas:

- i. Characteristics of the distinct features of Public Sector Accounting.
- ii. Objectives of professional pronouncements on public sector accounting.
- iii. Factors hindering performance and performance measurement in the public sector.

About 80% of the candidates attempted the question. And about 25% scored 50% of total marks obtainable. The commonest pitfall was the inability of some candidates to state correctly the objectives of professional pronouncements on Public Sector accounting.

Candidates are advised to prepare well for future examinations. They should endeavour to cover all the syllabus and make use of ICAN past questions of previous diets' examinations.

Candidates are further enjoined to make adequate use of the ICAN study text and other relevant reference materials.

SOLUTION 3:

a. Definition of National Chart of Account (NCOA)

National Chart of Account (NCOA) can be defined as a complete list of budget and accounting items, where each item is uniquely represented by a code and grouped into tables of related data for the purpose of tracking, managing, and reporting budgetary and accounting items in an orderly, efficient and transparent manner.

b. Objectives of National Chart of Account:

1. To give ample opportunity for Comparability.
2. Unification and harmonization of coding, budgeting, accounting, and reporting system.
3. To bring about global interpretation of Nigeria General Purpose Financial Statements (GPFS).
4. Nationally Consistent Financial Reporting.
5. Improvement in transparency and accountability.
6. To facilitate ease of computerisation of accounting system.

c. Features of National Chart of Account:

- i. Each item has a unique code
- ii. Expandable / flexibility
- iii. Used for both budgeting and accounting.
- iv. IPSAS Cash and accrual basis compliance
- v. Compliance with the classification of functions of government (COFOG).
- vi. Government financial statistics (G F S) 2001 compliant.
- vii. National Chart of Account was designed after due consultation with all Local government Councils, States and federal government of Nigeria taking into consideration their peculiar needs.

Examiner's comment

The question tests candidates' knowledge and understanding of the National Chart of Account (NCOA). It required candidates to define National Chart of Account and also to state its objectives and features.

About 90% of the candidates attempted the question. And about 40% scored 50% of total marks obtainable.

The commonest pitfall was the poor preparation of some candidates for this diets' examination.

Candidates are advised to cover all areas of the syllabus and also, familiarise themselves with past questions of previous diets' examinations.

Candidates are further enjoined to make adequate use of the ICAN Study Text and other relevant reference materials for future diets' examinations.

SOLUTION 4

- a. Shall be to establish and maintain a high standard of morality in the conduct of government business and to ensure that the actions and behaviour of public officers conform to the highest standards of public morality and accountability.
- b.
 - i. To receive asset declaration by Public Officers in accordance with the provisions of the Act.
 - ii. To examine asset declaration and ensure that they comply with the requirements of the Act.
 - iii. To take and retain custody of such asset declarations.
 - iv. To receive complaint about non compliance with or breach of the Act.
 - v. To refer cases of non compliance (complaint) to the code of conduct Tribunal established by section 20 of this Act.
 - vi. To appoint, promote, dismiss and exercise disciplinary control over staff of CCB in accordance with the provisions of the Act of National Assembly.
 - vii. To carry out such other functions as may be referred upon it by the National Assembly
- c.
 - i. The President of the Federation
 - ii. The Vice President of the Federation
 - iii. The President and deputy President of the Senate
 - iv. Speakers and Deputy Speakers of the house of Representatives and the houses of assembly of states and all members and staff of Legislative houses.
 - v. Governors and Deputy Governors of States

- vi. Chief Justice of Nigeria, Justices of the Supreme Court, President and Justices of the High Court of Appeal, all other judicial officers and all staff of the courts of law
- vii. Attorney General of the Federation and Attorney General of each state
- viii. Ministers of the Government of the Federation and Commissioners of the Government of the States.
- ix. Chief of Defence Staff, head of Army, Navy, Airforce and all members of the Armed Forces of the Federation
- x. Inspector General of Police, Deputy Inspector General of Police, and all members of the Nigerian Police Force and other government security agencies established by law.
- xi. Secretary to the Government of the Federation, Head of civil Service, Permanent Secretaries, Director General and all other persons in the civil service of the federation or of the States
- xii. Ambassadors, High Commissioners and other Officers of Nigerian mission abroad.
- xiii. Chairman and other members of staff of the code of conduct bureau and Tribunal
- xiv. Chairmen and other members of staff of Local Government Councils
- xv. All staff of universities, colleges, and institutions owned and financed by the Federal or State government and Local government councils.
- xvi. Chairmen and other members and staff of permanent commissions or councils appointed on full time basis.

Examiner's comment:

This is on contemporary issues that tests candidates' knowledge and understanding of the Code of Conduct Bureau and Tribunal Act (CCB&T). It specifically required Candidates to state its main objective, its powers and functions as well as the category of officers for the purpose of the Act.

About 80% of the candidates attempted the question. And about 35% scored 50% of total marks obtainable.

The commonest pitfall was the inability of some candidates in correctly stating main objective of CCB&T, powers and functions of the bureau.

Candidates are advised to endeavour to cover all areas of the syllabus and make use of past questions of previous diets' examinations.

Candidates are further required to make use of the ICAN Study Text and other relevant reference materials in their preparation for subsequent examinations.

SOLUTION 5

Note	BUDGETED Final N	Initial N	Actual on Comparable Basis N	Difference Final Budget & Actual Budget N
Receipts				
Revenue from Non-exchange Transactions;				
Taxes	87,500,000	125,000,000	89,192,908	(1,692,908)
Grants	15,993,931	17,172,115	9,225,607	6,768,324
Capital Receipts	66,724,903	78,588,111	19,999,257	46,725,646
Federal Transfers	32,372,400	46,247,000	45,829,652	(13,457,252)
Revenue from Exchange Transactions;				
Investment Income	525,000	750,000	178,890	346,110
Receipt from loans	203,116,234	267,757,226	164,426,314	38,689,920
	27,000,914	24,383,248	58,997,206	(31,996,292)
TOTAL RECEIPTS	230,117,148	292,140,474	223,423,520	6,693,628
N				
PAYMENTS				
Personnel Cost	41,536,109	41,976,653	42,689,427	(1,153,318)
Overhead Cost	34,127,039	36,601,674	25,067,733	9,059,306
Capital Expenditure	105,019,094	131,333,495	76,234,148	28,784,946
Facility Repayments	21,746,321	46,424,750	37,458,158	(15,711,837)
Debt Charges	3,417,873	9,923,034	12,718,652	(9,300,779)
Subvention O/H	24,270,712	25,880,868	16,952,372	7,318,340
TOTAL PAYMENTS	230,117,148	292,140,474	211,120,490	18,996,658
Net Receipts	Nil	Nil	12,303,030	12,303,030

Examiner's comment:

The question tests candidates' knowledge and understanding on the extent guideline and provisions stipulated by the IPSAS accrual basis in preparing Annual Financial Statement. It specifically required candidates to prepare the statement of comparison of budget and actual amount.

About 80% of the candidates attempted the question. And about 55% scored 50% of total marks obtainable.

The commonest pitfall is the inability of some candidates to correctly compute the Difference Final Budget and Actual Budget.

Candidates are advised to cover every area of the syllabus, as well as to familiarise themselves of past questions of previous diets' examinations.

Candidates are further enjoined to make adequate use of the ICAN Study Text and other relevant reference materials.

SOLUTION 6

A. Line items in the statement of financial performance:

- i. Revenue from operating activities. Finance cost
- ii. Surplus or deficit from operating activities.
- iii. Share of net surplus or deficit of associates and joint ventures accounted for using equity method.
- iv. Extraordinary items.
- v. Net Surplus or deficit for the period.
- vi. Minority interest share of net surplus or deficit.
- vii. Surplus or deficit from ordinary activities.

B. Differences between General Purpose financial Statement (GPFS) – Cash and General purpose financial statement (GPFS) – Accrual

1. Under Accrual basis, transactions and other events are recognized when they occur, while Cash basis recognised transactions and other events when cash or it equivalent is received or paid.
2. Accrual based GPFS discloses information on tangible assets, accounts receivables, and payables, while Cash based GPFS does not disclose them.
3. Accrual based GPFS differs from Cash based GPFS in terms of its components. Principal Statements in Accrual based GPFS are different from Cash based GPFS.

Examiner's comment

The question tests candidates' knowledge and understanding on the Statement of financial performance by Government Business Entity (GBE). It specifically required the candidates to list items in the statement of financial performance, as well as to state the difference between the Cash basis and Accrual basis in the General Purpose Financial Statement (GPFS).

About 90% of the candidates attempted the question. And about 40% scored 50% of total marks obtainable.

The commonest pitfall was the inability of some candidates to correctly list the line items as contained in the statement of financial performance.

Candidates are advised to prepare well in future examinations by covering every area of the syllabus.

Candidates are further enjoined to practice past questions of previous diets' examination. They should also adequate use of the ICAN Study Text in preparation for future examinations.

THE ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
MARCH 2023 EXAMINATIONS (PART II)
QUANTITATIVE ANALYSIS****PLEASE READ THESE INSTRUCTIONS BEFORE COMMENCEMENT OF THE PAPER****EXAMINATION INSTRUCTIONS**

1. All solutions should be in ink. Any solution in pencil will not be marked.
2. Read all instructions on each part of the paper carefully before answering the questions.
3. Ensure that you do not answer more than the number of questions required for **Section B (The Essay Section)**.
4. Check your pockets, purse and mathematical sets, etc to ensure that you do not have prohibited items such as telephone handset, electronic storage device, wrist watches, programmable devices or any form of written material on you in the examination hall. You will be stopped from continuing with the examination and liable to further disciplinary actions including cancellation of examination result if caught.
5. Do not enter the hall with anything written on your docket.
6. Insert your examination number in the space provided above.

WEDNESDAY, 29 MARCH, 2023**DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO**

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2023**

QUANTITATIVE ANALYSIS

Time Allowed: 3 hours

SECTION A: PART I MULTIPLE-CHOICE QUESTIONS

(30 Marks)

ATTEMPT ALL QUESTIONS

Write ONLY the alphabet (A, B, C, D or E) that corresponds to the correct option in each of the following questions/statements:

1. The following are the advantages of close-ended questions in a questionnaire, **EXCEPT**
 - A. It helps to get rid of irrelevant questions
 - B. It is easier and quicker for respondents to answer
 - C. It facilitates processing and coding
 - D. Respondents are more likely to answer sensitive questions
 - E. The answers from different respondents are easier to compare

2. The following table shows the weekly profit of 50 randomly selected small-scale enterprises in some West African cities in thousands of Naira

Profit (N'000)	Number of enterprises
180-189	6
190-199	10
200-209	20
210-219	14

Calculate the third quartile

- A. ~~N~~212,571.13
 - B. ~~N~~211,071.33
 - C. ~~N~~210,571. 43
 - D. ~~N~~210,051.73
 - E. ~~N~~209,571.93
-
3. The probabilistic component of times series is the
 - A. Secular
 - B. Cyclical
 - C. Irregular
 - D. Circular
 - E. Seasonal

4. Type II error means the probability of
- Accepting Null hypothesis when Null hypothesis is true
 - Rejecting Null hypothesis when alternative hypothesis is false
 - Accepting Null hypothesis when Null hypothesis is false
 - Rejecting Null hypothesis when Null hypothesis is true
 - Accepting alternative hypothesis when alternative hypothesis is true
5. The following table shows the cost per congo and the number of congos of three types of food stuff supplied by a food vendor to ADID private school boarding facility for two consecutive months in year 2020:

Food	February		March	
	Price per congo	Quantity (No. of congos)	Price per Congo	Quantity (No. of congos)
Garri	6	5	8	6
Semovita	8	4	10	5
Wheat	10	3	12	2

Use February as the base month to calculate the simple aggregate price index.

- 105%
 - 125%
 - 135%
 - 145%
 - 155%
6. Which of the following sequences is used to generate frequency table in SPSS?
- Analyse → Regression → Multiple → Frequencies
 - Analyse → Correlation → Partial → Frequencies
 - Analyse → Descriptive → Statistics → Frequencies
 - Analyse → Correlation → Bivariate → Frequencies
 - Analyse → Regression → Simple → Frequencies
7. Which of the following does **NOT** belong to the important bases for classifying statistical data?
- Intuition
 - Qualitative
 - Geographical
 - Chronological
 - Quantitative

8. The following group frequency distribution shows the cost involved in setting up travel policy

Claims

Travel claims cost (Le)	No. of claims
150 - 160	4
160 - 170	8
170 - 180	12
180 - 190	6
190 - 200	5

Calculate the modal travel claim from the table above

- A. Le164
 - B. Le168
 - C. Le170
 - D. Le174
 - E. Le176
9. Given that $P(A) = 0.5$, $P(B) = 0.4$ and $P(A/B) = 0.2$. Find the $P(A \cup B)$
- A. 0.52
 - B. 0.62
 - C. 0.72
 - D. 0.82
 - E. 0.92
10. The x-coordinate of the point of intersection of “Less than” ogive and the “More than” ogive is the
- A. First Decile
 - B. First Quartile
 - C. Median
 - D. Mode
 - E. Fifth percentile

11. Which of the following is **NOT** applicable in the estimation of parameters of the model described as $y = a + \beta x$?

A. $\bar{y} = \frac{\sum y}{n}$

B. $\bar{x} = \frac{\sum x}{n}$

C. $\hat{a} = \bar{y} - \hat{\beta}\bar{x}$

D. $\hat{a} = \bar{x} - \hat{\beta}\bar{y}$

E. $\hat{\beta} = \frac{n\sum xy - \sum x \sum y}{n\sum x^2 - (\sum x)^2}$

12. A schedule in statistics refers to

- A. A set of questions used to gather information and filled by the investigator himself/herself
- B. Examination timetable
- C. A set of questions used to gather information which is filled by an informant or respondent
- D. Paper used by bankers to carry out investigation
- E. A set of past questions

13. The graphical method of solving linear programming problems only applies where the decision problem involves

- A. Only one decision variable
- B. Three decision variables
- C. Two constraints
- D. Two decision variables
- E. Three constraints

14. The level of stock at which a further replenishment order should be placed is called

- A. Economic order quantity
- B. Re-order level
- C. Replenishment order
- D. Replacement order
- E. Order level

15. A step-by-step project management technique for process planning that defines critical and non-critical tasks/activities with the goal of preventing time-frame problem and process bottleneck is known as
- Project Evaluation and Review Technique
 - Project Management Technique
 - Critical Path method
 - Least squares method
 - Critical evaluation method
16. Which of the following conditions is **NOT** a useful characteristic of an unbalanced transportation problem?
- Excess demand
 - Demand is not equal to supply
 - Demand is equal to supply
 - Dummy creation
 - Excess supply
17. The method that reduces the cost matrix to the extent of having at least one zero in each row and column so as to make optional assignment without having to make a direct comparison of every assignment option is called
- Simplex method
 - Hungarian method
 - Least cost method
 - Least squares method
 - Vogel's approximation method

18. Given the transportation problem table below

	Destination				Supply
	1	2	3	4	
Source 1	X_{11} 10	X_{12} 4	X_{13} 20	X_{14} 11	20
2	X_{21} 12	X_{22} 7	X_{23} 9	X_{24} 20	25
3	X_{31} 6	X_{32} 14	X_{33} 16	X_{34} 18	15
Demand	10	15	15	20	-

The location at the end of first iteration of Vogel's Approximation method is obtained as

- A. 5
- B. 10
- C. 15
- D. 20
- E. 25

19. Given the table below

Source				Supply
A	15	18	14	50
B	16	16 <i>y</i>	13	40
C	13	19	16	60
Demand	20	95	35	150

Determine the value of cell *y* in the above table using NWCM?

- A. 20
- B. 30
- C. 40
- D. 50
- E. 60

20. The failure rates of computer components are given in the table below

Month	1	2	3	4	5
Probability of failure	0.15	0.25	0.20	0.25	0.15

If 800 components are fixed for use at a time and each costs GH¢15, find the number of components failing at the end of second month?

- A. 240
- B. 238
- C. 232
- D. 228
- E. 218

21. In a queuing system, the average waiting time of customers before service is 3.65 minutes, and average service time is 6.28 minutes. Find the time a customer spends in the system
- 2.36 minutes
 - 2.63 minutes
 - 4.96 minutes
 - 9.39 minutes
 - 9.93 minutes
22. ESTs and LSTs along critical path are
- Not equal
 - Equal
 - Complex
 - Integers
 - Discrete
23. Find the dual of the following Linear programming problem
 Minimise; $Z = 20x_1 + 15x_2$
 Subject to:
- $$x_1 + 3x_2 \geq 10$$
- $$2x_1 - 5x_2 \geq 6$$
- $$x_1, x_2 \geq 0$$
- Maximise, $Z = 10a + 6b$
 Subject to:
 $a + 2b \leq 20$
 $3a - 5b \leq 15$
 $a, b \geq 0$
 - Minimise, $Z = 10a + 6b$
 Subject to:
 $a + 2b \leq 20$
 $3a - 5b \leq 15$
 $a, b \geq 0$
 - Maximise, $Z = 10a + 6b$
 Subject to:
 $2a + b \leq 15$
 $3a - 5b \leq 20$
 $a, b \geq 0$

D. Minimise, $Z = 6a + 10b$

Subject to:

$$a + 2b \geq 20$$

$$3a - 5b \geq 15$$

$$a, b \geq 0$$

E. Maximise, $Z = 6a + 10b$

Subject to

$$2a + b \leq 15$$

$$3a - 5b \leq 20$$

$$a, b \geq 0$$

24. A simulation method that uses random numbers to predict system behaviour is the

- A. Stochastic simulation
- B. Random variable simulation
- C. Monte Carlo simulation
- D. Box-Jenkins simulation
- E. Markov chain simulation

25. A department of Accounting in a certain institution has 30 Lecturers out of which 20 teach Business Statistics and 15 teach Financial Accounting. Find the number of Lecturers who teach the two courses

- A. 7 Lecturers
- B. 6 Lecturers
- C. 5 Lecturers
- D. 3 Lecturers
- E. 2 Lecturers

26. If the cost and revenue functions of a computer firm are respectively $100 - 10x + 20x^2$ and $80x + 50$, determine the break-even quantity greater than 1 for the firm

- A. 8 units
- B. 4 units
- C. 3 units
- D. 2 units
- E. 1 units

27. Given the demand and cost functions of YED (Nigeria Limited): $D = 9600 - 8x^2$ and $C = 1000 - 25000x$, where x is the quantity produced and sold. Determine the marginal profit function when $x = 10$
- 22,200
 - 32,200
 - 42,200
 - 52,200
 - 62,200
28. If the demand function for a commodity is given by $y = 112 + 3x - 3x^2$ Find the consumer's surplus when $x_0 = 4$
- 101
 - 102
 - 103
 - 104
 - 105
29. If the list price of product is L\$8,500, and there is a 25% discount on it, calculate the price at which the customer can buy it.
- L\$6,375
 - L\$5,375
 - L\$4,525
 - L\$4,025
 - L\$2,125
30. The demand and supply equations for a product are $x + 12$ and $40 - 6x$ respectively. Determine the quantity at equilibrium.
- 7
 - 6
 - 5
 - 4
 - 3

SECTION A: PART II

SHORT -ANSWER QUESTIONS

(20 MARKS)

ATTEMPT ALL QUESTIONS

Write the correct answer that best completes each of the following questions/statements:

- The type of data used by the person who actually collects the data for the purpose of Statistical inquiry, is called
- Mode is an example of the measure of

3. The mean deviation and the Coefficient of Variation of the following amounts of money: ₦5, ₦4, ₦3, ₦7 and ₦1 are and
4. The type of statistical test for population mean for small sample sizes less than 30 is
5. Data are lost at the beginning and at the end of the series is one of the disadvantages of
6. The Laspeyre index is 110% and Paasche index 128%, calculate the Fisher Ideal index.
7. The method of fitting the trend equation by minimizing the sum of squares of the deviations of the estimate regression values from the observed values of the series is known as
8. The table below shows the course of study and employment status of 200 graduates of a certain Polytechnic:

Course	Employed	Not Employed
Banker	40	25
Accountant	70	65

One of the graduates is to be selected for a programme. Find the probability that the chosen graduate is an employed Banker.

9. A sugar manufacturing company spends GH¢1.6 million to purchase a machine to produce a certain brand of sugar. It costs GH¢560 to produce one item of this brand and its sale price is GH¢1,560. The break-even quantity for the company is
10. The demand function for a certain product is $d = 174,000 - 3q^2$, where q is the quantity produced and sold. The marginal revenue when $q = 100$ is
11. A private car dealer marked up the cost of a car at 20% in an attempt to make 20% gross profit. Due to enhanced value of naira, he now placed 20% discount on the car. What profit or loss percent will he make?
12. If GH¢500 is invested today and generates GH¢600 in one year's time, determine the internal rate of return?
13. The policy where an en-masse replacement of item is made is known as
14. In Operations Research, PERT and CPM, written fully are respectively and

15. Express the following linear programming problem in standard form:

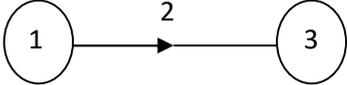
$$\text{Minimise } Z = 2x + 4y$$

Subject to:

$$3x - 2y \leq 40$$

$$5x + y \leq 50$$

$$x, y \geq 0$$

16. , notations 1 and 2 are respectively known as.....
and

17. A maximisation problem with objective function $Z = 8x + 4y$ has the following corner points of the boundary of the feasible region: $P(0,1)$, $Q(15,10)$, $R(20,35)$ and $T(20,40)$. The point that gives the maximum solution and the maximum value are respectively and

18. When a consumer pays less than what he already prepares to pay for an item is known as

19. If the supply capacities are given as $S_1=125$, $S_2=75$, $S_3=55$, and the demand capacities are given as $D_1=115$, $D_2=75$, $D_3 =95$ and $D_4=105$, then the amount of dummy capacity to add to is

20. The **FOUR** major assumptions of a typical linear programming problem are additivity, divisibility, and

SECTION B: ATTEMPT ANY FOUR QUESTIONS IN THIS SECTION (50 MARKS)

QUESTION 1

In the 2015 entrance examination held at a certain centre, it was discovered that 90 candidates sat for Mathematics, 80 Physics and 70 took Chemistry. Of these numbers, 22 took both Mathematics and Physics, 25 took Mathematics and Chemistry, 30 took Physics and Chemistry and 15 candidates sat for all three papers.

a. Draw the appropriate Euler-Venn diagram to show the above information. (5 Marks)

b. Determine the following:

i. The number of candidates at the centre; (1½ Marks)

ii. The number of candidates that sat for Mathematics and Chemistry only; (1½ Marks)

- iii. The number of candidates that sat for Physics and Chemistry only;
(1½ Marks)
 - iv. The number of candidates that sat for Mathematics and Physics only;
(1½ Marks)
 - v. The number of candidates that sat for EACH of these subjects only;
Mathematics, Chemistry and Physics.
(1½ Marks)
- (Total 12½ Marks)**

QUESTION 2

- a. A Consulting firm will need ₦17,000 in 5 years' time to replace some of its computer hardware.

Determine the periodic deposits, to an annuity paying quarterly interest at a 9% annual rate that will achieve the above goal. (6 Marks)
 - b. Suppose a Financial Group Institution can make an investment of ₦80m presently and receives ₦120m in 4 years' time, estimate the internal rate of return. (6½ Marks)
- (Total 12½ Marks)**

QUESTION 3

A professional Tuition Academy prepares seven candidates for a diet of ICAN examination in Quantitative Analysis. The number of days spent (X) by each candidate at the academy to prepare for the examination and his/her corresponding scores obtained in percentage (Y) are given in the table below:

No. of days spent X	Scores obtained in percentage (%) Y
40	55
50	60
60	50
20	35
25	40
35	45
30	20

You are required to:

- a. Determine the equation of best line of fit of y on x using the least squares method. (8½ Marks)
 - b. Estimate the score of a candidate who spent 70 days at the academy. (2 Marks)
 - c. Estimate the number of days spent at the academy by a candidate who scored 75 percent. (2 Marks)
- (Total 12½ Marks)**

QUESTION 4

A company Director of Budget and Planning preparing for his retirement within the next 6 years, decided to invest quarterly in the purchase of shares either by private placement or through public offers. The table below shows his quarterly investments (L&'000) in 1990, 1991, 1992 and 1993.

Year	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4
1990	10	8	12	6
1991	10	5	7	8
1992	9	10	11	12
1993	9	12	15	10

Estimate the trend by least squares method. Hence, compute the seasonal variation based on multiplicative model. **(Total 12½ Marks)**

QUESTION 5

Three refineries with maximum daily capacities of 20, 25 and 12 million gallons of oil supply four distribution areas with daily demands of 10, 15, 15 and 20 million gallons. Oil is transported to the four distribution areas through a network of pipes and the cost per 100 gallons per mile of transporting oil from refinery to distribution areas are summarised in the table below

	To/Source	1	2	3	4	Supply
Refinery	1	10	4	20	11	20
	2	12	7	9	20	25
	3	6	14	16	18	15
	Demand	10	15	15	20	

- a. Use the North-West Corner Method and the Least Cost Method to find the initial basic feasible cost of the transportation problem. **(11½ Marks)**
- b. Comment on your results in part (a). **(1 Mark)**
(Total 12½ Marks)

QUESTION 6

- a. The daily demand distributions of company's product and their corresponding probabilities are shown in the table below:

Daily demand	0	5	10	15	20
Probability (%)	0.02	0.23	0.25	0.3	0.2

- i. Simulate the demand for the next 8 days using the following sequence of random numbers: 30, 40, 35, 10, 08, 80, 45 and 60. **(6½ Marks)**

ii. Estimate the daily average demand for the product based on the stimulated data. (1 Mark)

b. Yafson Group of Companies has four salesmen and four sales districts. After considering the capabilities of the salesmen and the nature of each district, the company manager estimates the profit per week (in thousands of Naira) for each salesman in each district as shown below. (5 Marks)

Salesman	District			
	A	B	C	D
1	5	30	20	5
2	25	35	30	25
3	15	25	20	10
4	15	5	30	15

Determine the assignment of salesmen to districts that will maximise profit. (Total 12½ Marks)

FORMULAE

$$\text{Sample variance, } s^2 = \frac{\sum (x - \bar{x})^2}{n - 1}$$

Economic Order Quantity

$$Q = \sqrt{\frac{2cd}{n}}$$

$$Z_{\text{cal}} = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Slope of a regression equation

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$\text{Elasticity of demand, } e = \left(-\frac{p}{q} \right) \left(\frac{dq}{dp} \right)$$

The 95% confidence interval for μ

$$= \bar{x} \pm t_{\alpha, n-1} \frac{s}{\sqrt{n}}$$

The trend equation, $y = a + bt$, where $t = x_i - x_m$

$$b = \frac{\sum ty}{\sum t^2} \cdot a = \bar{y} - bx_m, \quad x_m = \text{median of } x \text{ values}$$

$$\text{SARPI} = \frac{\sum \left(\frac{P_n}{P_o} \times 100 \right)}{N}$$

$$\text{SAPI} = \frac{\sum P_{ni}}{\sum P_{oi}} \times 100$$

$$t = \frac{p}{\sqrt{\frac{pq}{n}}}$$

EOQ with stock-out

$$Q = \sqrt{\frac{2cd}{h}} \times \sqrt{\frac{h+c_s}{c_s}}$$

$$\text{LPI} = \frac{\sum p_1 q_o}{\sum p_o q_o} \times 100$$

$$Z = \frac{p - \hat{p}}{\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}}$$

$$Q_i = L_{Q_i} + \left(\frac{\frac{iN}{4} - \sum f_{Q_i}}{f_{Q_i}} \right) c$$

$$D_i = L_{D_i} + \left(\frac{\frac{iN}{10} - \sum f_{D_i}}{f_{D_i}} \right) c$$

$$P_i = L_{P_i} + \left(\frac{\frac{iN}{100} - \sum f_{P_i}}{f_{P_i}} \right) c$$

Spearman's rank correlation coefficient

$$r = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

EOQ with gradual replenishment

$$Q = \sqrt{\frac{2cd}{h\left(1 - \frac{d}{r}\right)}}$$

$$\text{Length of Inventory cycle} = \frac{Q}{d}$$

$$\text{Number of production runs} = \frac{d}{Q}$$

Production cost = Ordering cost + Holding cost

$$\text{Mode} = L_{mo} + \left(\frac{\Delta_1}{\Delta_1 + \Delta_2} \right) c$$

SECTION A: PART I

MULTIPLE-CHOICE SOLUTIONS

1. D
2. C
3. C
4. C
5. B
6. C
7. A
8. D
9. D
10. C
11. D
12. A
13. D
14. B
15. C
16. C
17. B
18. B

- 19. C
- 20. E
- 21. E
- 22. B
- 23. A
- 24. C
- 25. C
- 26. B
- 27. B
- 28. D
- 29. A
- 30. D

WORKINGS TO MULTIPLE-CHOICE QUESTIONS

2.

Class	<i>f</i>	<i>cf</i>
180-189	6	6
190-199	10	16
200-209	20	36
210-219	14	50
	50	

3.

$$Q_3 \text{ Position} : \frac{3}{4} N = \frac{3}{4} \times 50 = 37.5$$

$$\therefore Q_3 = 209.5 + \left[\frac{37.5 - 36}{14} \right] \times 10 = 209.5 + 1.071428 = 210.571428$$

Then third quartile is ~~₦~~210,571.43 (C)

5. Using February as the base month

February		March	
<i>p</i> ₀	<i>q</i> ₀	<i>p</i> ₁	<i>q</i> ₁
6	5	8	6
8	4	10	5
10	3	12	2
$\sum p_0 = 24$		$\sum p_1 = 30$	

$$\text{Simple Aggregate Price Index (SAPI)} = \frac{\sum p_1}{\sum p_0} \times 100 = \frac{30}{24} \times 100 = 125\% \quad \text{(B)}$$

8.

Travel claims (Naira)	Number of claims
150-160	4
160-170	8
170-180	12
180-190	6
190-200	5

$$\text{Mode} = L_1 + \left(\frac{f_m - f_b}{(f_m - f_b) + (f_m - f_a)} \right) \quad (D)$$

Where L_1 = lower class boundary of the modal class

f_m = Modal class frequency

f_b = Frequency immediately before the modal class frequency

f_a = Frequency immediately after the modal class frequency

$$\therefore \text{Mode} = 170 + \left(\frac{12 - 8}{(12 - 8) + (12 - 6)} \right) 10 = 170 + \frac{40}{4 + 6}$$

$$= 170 + 4 = 174 \quad (D)$$

9. $P(A/B) = \frac{P(A \cap B)}{P(B)}$

$$P(A \cap B) = P(B) \cdot P(A/B) = 0.4 \times 0.2 = 0.08$$

$$P(A \text{ or } B) = P(A \cup B) = 0.5 + 0.4 - 0.08 = 0.82 \quad (D)$$

18. NWCM

	Destination				Supply	Row penalty
	1	2	3	4		
Source 1	10	4	20	11	20	6
2	12	7	15	8	20	1
3	6	14	16	18	15	8
Demand	10	15	15	20	60	
Column penalty	4	3	8	7		

$$x_{31} = 10 \text{ or } x_{23} = 10$$

(B OR C)

19

Source	X	Y	Z	Supply
A	20	15 30	18 14	50
B		16 40	16 13	40
C		13 25	19 35	60
Demand	20	95	35	150

y is in cell BY = 40 (C)

20. At the end of 1st month, $N_1 = N_o P_1 = 800 \times 0.15 = 120$

At the end of 2nd month, $N_2 = N_o P_2 + N_1 P_1$
 $N_2 = (800 \times 0.25) + (120 \times 0.15) = 200 + 18 = 218$ (E)

21. $3.63 + 6.28 = 9.93$ min utes (E)

23. Minimize $Z = 10a + 6b$
 Subject to:
 $a + 2b \leq 20$
 $3a - 5b \leq 15$
 $a, b \geq 0$ (A)

25. $n(BS) = 20, n(FA) = 15, n(BS \cup FA) = 30$
 $n(BS \cap FA) = 20 + 15 - 30 = 5$ (C)

26. For break even
 $C(x) = R(x)$
 $100 - 10x + 20x^2 = 80x + 50$
 $20x^2 - 10x - 80x + 100 - 50 = 0$
 $20x^2 - 90x + 50 = 0$
 $2x^2 - 9x + 5 = 0$
 $x = \frac{-(-9) \pm \sqrt{9^2 - 4(2)(5)}}{2(2)} = \frac{9 \pm \sqrt{81 - 40}}{4}$
 $= \frac{9 \pm \sqrt{41}}{4} = \frac{9 \pm 6.4}{4} = \frac{9 - 6.4}{4} \text{ or } \frac{9 + 6.4}{4}$
 $= \frac{2.6}{4} \text{ or } \frac{15.4}{4} = 0.65 \text{ or } 3.85 = 1 \text{ or } 4$ (B OR E)

27. Marginal Profit function is obtained as follows:

$$\text{Profit} = \text{Demand} \times x - \text{Total cost} = (9600 - 8x^2)x - (1000 - 25000x)$$

$$\text{Profit} = -8x^3 + 34,600x - 1000$$

$$\frac{dp}{dx} = -24x^2 + 34,600$$

$$\begin{aligned} \text{At } x = 10, \frac{dp}{dx} &= -24(10^2) + 34,600 \\ &= -2400 + 34,600 \\ &= 32,200 \end{aligned}$$

(D)

28.

$$y = 112 + 3x - 3x^2$$

$$\text{if } x_0 = 4$$

$$\text{then } y_0 = 112 + 3(4) - 3(16)$$

$$= 112 + 12 - 48$$

$$= 76$$

$$(x_0, y_0) = (4, 76)$$

Consumers surplus

$$= \int_0^4 (112 + 3x - 3x^2) dx - x_0 y_0$$

$$= 112x + \frac{3x^2}{2} - \frac{3x^3}{3} - 304 \Big|_0^4$$

$$= 112(4) + 3(8) - \frac{3(64)}{3} - 304$$

$$= 448 + 24 - 64 - 304 = 104$$

(D)

29. Discount on price list

$$= \frac{25}{100} \times 8500 = 2125$$

$$\text{Actual selling price} = 8,500 - 2125 = \text{N}6,375$$

(A)

30. For equilibrium demand is equal to supply.

$$x + 12 = 40 - 6x$$

$$x + 6x = 40 - 12$$

$$7x = 28$$

$$x = 4$$

(D)

Examiner's comment

This part (Multiple Choice Questions) tests virtually all the aspects of the syllabus. All the 30 questions are compulsory.

The average score is 20 marks out of 30 maximum marks obtainable. All the 30 questions in this part are straight forward and an average candidate should be able to secure a pass mark.

SECTION A: PART II

SHORT-ANSWER SOLUTIONS

1. Primary data or primary
2. Location or centre or central tendency
3. ~~₹~~1.60, 50% (in that order)
4. *t* – test or *t* ort-distribution test
5. Moving Averages Method or MA
6. 118.66% or 118.7% or 119%
7. Least squares method
8. $\frac{1}{5}$ or 0.2 or 20%
9. 1600 units
10. 84,000
11. 4% loss
12. 0.2 or 20%
13. Group or mass replacement policy
14. Project or programme evaluation and review techniques, critical path method (n that order)
15. Mininise: $Z = 2x + 4y + OS_1 + OS_2$
 Subject to: $3x - 2y + S_1 + OS_2 = 40$
 $5x + y + OS_1 + S_2 = 50$
 $x, y, S_1, S_2 \geq 0$
16. Node or event, activity (in that order)
17. *T* or *T*(20,40), 320 (in that order)
18. Consumer's surplus

19. Supply or source or capacities, 135 (in that order)

20. Linearity, non-negativity (in any order)

WORKINGS TO SHORT-ANSWER QUESTIONS

3. Mean = $\frac{5+4+3+7+1}{5} = \frac{20}{5} = 4$

X	$ x - \bar{x} $
5	1
4	0
3	1
7	3
1	3
	8

Mean Deviation = $\frac{\sum |x - \bar{x}|}{5} = \frac{8}{5} = 1.6$ or 1.60

Variance = $\sum \frac{(x - \bar{x})^2}{n} = \frac{20}{5} = 4$

S.D = $\sqrt{4} = 2$

C.V = $\frac{S.D}{\bar{X}} \times 100 = \frac{2}{4} \times 100 = 50\%$

6. Fisher Ideal Index = $\sqrt{110 \times 128} \times 100 = 118.66\%$

8. $P(B \cap E) = \frac{40}{200} = \frac{1}{5}$ or 0.2

9. $R(x) = 1560$

$C(x) = 1,600,000 + 1560x$

For the break-even situation

$R(x) = C(x)$

i.e $1560x = 1,600,000 + 560x$

i.e $1000x = 1,600,000$

$\therefore x = 1,6000$

10. Total Revenue = $q(174,000 - 3q^2)$
 $= 174,000q - 3q^3$
 $\therefore \frac{dT(R)}{dq} = 174,000 - 9q^2$
 $\therefore q = 100$ then $\frac{dTR}{dq} = 174,000 - 9(100)^2 = 174,000 - 90,000 = \text{N}84,000$
 \therefore Marginal Revenue = ~~N~~84,000.00

11. Let CP = 100%
 Marked up Price = 120 of CP
 Discount = $\frac{20}{100} \times 120$ of CP = 24 of CP
 SP = (120 - 24)% of CP = 96% of Cp
 Loss = (96% - 100%) of CP = 4% of CP

12. PV of Cost = PV of benefits
 $500 = \frac{600}{1+r}$
 $1+r = \frac{600}{500}$
 $r = 1.2 - 1 = 0.2$ or 20%

15. Minimise $Z = 2x + 4y + OS_1 + OS_2$
 Subject to: $3x - y + S_1 + OS_2 = 40$
 $5x + y + OS_1 + S_2 = 50$
 $x, y, S_1, S_2 \geq 0$

17
 $Z = 8x + 4y$
 $P(0,1) = 4$
 $Q(15,10) = 8(15) + 4(10) = 160$
 $R(20,35) = 8(20) + 4(35) = 280$
 $T(20,40) = 8(20) + 4(40) = 320$
 The maximum value is 32 and it occurs at point T(20,40)

19. Source: $125 + 75 + 55 = 255$
 Demand: $115 + 75 + 95 + 105 = 390$
 Dummy capacity to be added to source
 Source = $390 - 255 = 135$
 i.e supply (source), 135

Examiner's comment

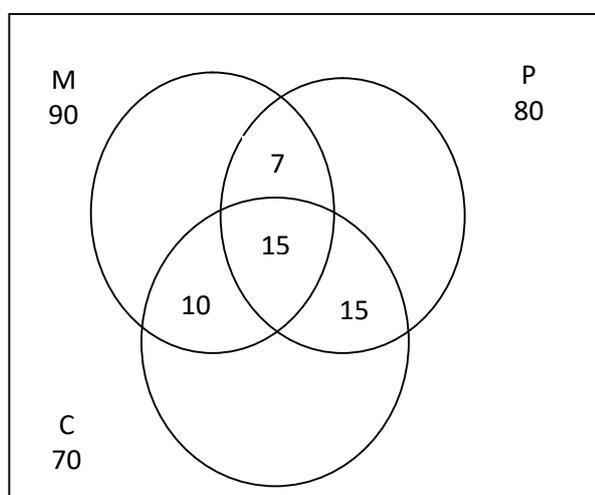
This part covers the major area of the syllabus as well. All the 20 questions are compulsory.

The average score here is 12 marks out of 20 maximum marks available. All the 20 questions are within the knowledge of candidates who have prepared for the examination.

SECTION B

SOLUTION 1

a.



b(i)

$$n(M) = 90$$

$$n(P) = 80$$

$$n(C) = 70$$

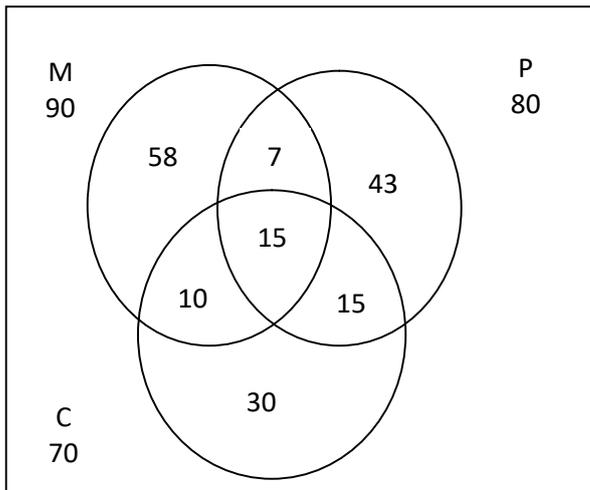
$$n(M \cap P) = 22$$

$$n(M \cap C) = 25$$

$$n(P \cap C) = 30 \text{ and } n(M \cap P \cap C) = 15$$

$$\begin{aligned} n(M \cup P \cup C) &= n(M) + n(P) + n(C) - n(M \cap P) - n(M \cap C) - n(P \cap C) \\ &\quad + n(M \cap P \cap C) \\ &= 90 + 80 + 70 - 22 - 25 - 30 + 15 \\ &= 178 \end{aligned}$$

Venn diagram for 1b



- (ii) The number of candidates that sat for Mathematics and Chemistry only = 10
- (iii) The number of candidates that sat for Physics and Chemistry only = 15
- (iv) The number of candidates that sat for Mathematics and Physics only = 7
- (v) The number of candidates that sat for Mathematics only = 58
The number of candidates that sat for Chemistry only = 30
The number of candidates that sat for Physics only = 43

Examiner's comment

This question tests candidates' mastery of set theory, precisely the use of Euler-Venn diagram in tackling real world scenario.

About 90% of the candidates attempted the question. The average score of the candidates is 9 marks out of the 12.5 marks maximum obtainable. The pitfall identified is the candidates' inability to separate the entries in the three intersecting circles. It is recommended that candidates should be familiar with the set theory problems solved via Euler-Venn Diagram.

SOLUTION 2

- a. To find the sinking fund payment,
Future value $FV = \text{N}17,000$

$$\text{Annual rate } r = 9\% = \frac{9}{100} = 0.09$$

$$\text{Term } n = 5$$

$$\text{Number of periodic per year } k = 4$$

$$\text{Periodic rate } i = \frac{r}{k} = \frac{0.09}{4} = 0.0225$$

$$\begin{aligned} P &= \frac{FVi}{(1+i)^{kn} - 1} \\ &= \frac{(17,000)(0.0225)}{(1+0.0225)^{4 \times 5} - 1} \\ &= 682.42 \end{aligned}$$

Quarterly payments of N682.42 will accumulate to N17,000 in 5 years.

b.
$$NPV = -80,000,000 + \frac{120,000,000}{(1+i)^4}$$

IRR is the value that makes the $NPV = 0$

$$-80,000,000 + \frac{120,000,000}{(1+i)^4} = 0$$

$$\frac{120,000,000}{(1+i)^4} = 80,000,000$$

$$80,000,000(1+i)^4 = 120,000,000$$

$$(1+i)^4 = \frac{120,000,000}{80,000,000}$$

$$1+i = \frac{3}{2} = 1.5^{0.25}$$

$$i = 1.5^{0.25} - 1 = 1.107 - 1 = 0.107$$

$$\text{IRR} = 0.107$$

Examiner's comment

The question tests candidates' knowledge of Mathematics of Finance, precisely sinking fund and internal rate of return.

About 60% of the candidates attempted the question with an average score of 8 marks out of 12.5 marks maximum obtainable. Identified pitfalls of the candidates include the following: that the required Internal Rate of Return (IRR) is the value obtained when Net Present value is zero; that the expression for the NPV could not be recalled by the candidates. It is recommended that the expression/formular for a typical NPV should be supplied to candidates.

SOLUTION 3

a.

x	y	xy	x^2
40	55	2200	1600
50	60	3000	2500
60	50	3000	3600
20	35	700	400
25	40	1000	625
35	45	1575	1225
30	20	600	900
260	305	12,075	10,850

The equation of the best line of fit of y on x is given as

$$y = \hat{a} + \hat{b}x$$

Where,

$$\hat{b} = \frac{n \sum xy - (\sum x)(\sum y)}{n \sum x^2 - (\sum x)^2} = \frac{7(12,075) - (260)(305)}{7(10,850) - (260)^2} = \frac{84,525 - 79,300}{75,950 - 67,600}$$

$$= \frac{5,225}{8,350} = 0.6257$$

$$\hat{a} = \bar{y} - \hat{b}\bar{x} = \frac{305}{7} - (0.6257)\left(\frac{260}{7}\right)$$

$$= 43.5714 - (0.6257)(37.1429)$$

$$= 43.5714 - 23.2403$$

$$= 20.3311$$

The equation of the best line of fit is

$$y = 20.3311 - 0.6257x$$

ALITER for QUESTION 3a

x	y	$x - \bar{x}$	$y - \bar{y}$	$(x - \bar{x})(y - \bar{y})$	$(x - \bar{x})^2$
40	55	2.857	11.429	32.6527	8.1624
50	60	12.857	16.429	211.2277	165.3024
60	50	22.857	6.429	146.9477	522.4424
20	35	-17.143	-8.571	146.9327	293.8824
25	40	-12.143	-3.571	43.3627	147.4524
35	45	-2.143	1.429	-3.0623	4.5924
30	20	-7.143	-23.571	168.3677	51.0224

$\sum x = 260$	$\sum y = 305$			$\sum (x - \bar{x})(y - \bar{y}) =$ 746.4289	$\sum (x - \bar{x})^2 =$ 1,192.8508
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$$\bar{x} = \frac{\sum x}{n} = \frac{260}{7} = 37.143$$

$$\bar{y} = \frac{\sum y}{n} = \frac{305}{7} = 43.571$$

The equation of the best line of fit of y on x is given as

$$y = \hat{a} + \hat{b}x$$

Where,

$$\hat{b} = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2} = \frac{746.4289}{1192.8508} = 0.6254$$

$$\hat{a} = \bar{y} - \hat{b}\bar{x} = 43.571 - (0.6254)(37.143) = 43.571 - 23.2292 = 20.3418$$

The equation of the best line of fit of y on x is

$$y = 20.3418 + 0.6254x$$

b. when,

$$x = 70, \quad y = 20.3311 + (0.6257)(70) \\ = 64.13\%$$

c. when,

$$y = 75, \quad x = \frac{75 - 20.331}{0.6257} \\ = \frac{54.6689}{0.6257} = 87.37 \approx 87 \text{ days}$$

Examiner's comment

In this question, candidates' mastery of regression analysis for prediction of future events, based on data gathered from present or past event, is tested. The emphasis is on the deployment of Least Squares Method.

The candidates are expected to apply the model obtained to make predictions of either independent or dependent variable. About 85% of the candidates attempted the question with an average score of 8 marks out of the 12.5 marks maximum obtainable. The candidates found it easy to determine the regression line and they used it to estimate the values of x and y as required. The only pitfall identified is the approximation errors.

SOLUTION 4

x	y_t	x^2	xy_t	$Trend = 7.7283 + 0.2529x$	$SV = \frac{y_t}{T} \times 100$
0	10	0	0	7.7283	129.40
1	8	1	8	7.9812	100.24
2	12	4	24	8.2341	145.74
3	6	9	18	8.4870	70.70
4	10	16	40	8.7399	114.42
5	5	25	25	8.9928	55.60
6	7	36	42	8.2457	75.71
7	8	47	56	9.4986	84.22
8	9	64	72	9.7515	92.29
9	10	81	90	10.0043	99.96
10	11	100	110	10.2573	107.24
11	12	121	132	10.5102	114.18
12	9	144	108	10.7631	83.62
13	12	169	156	11.0160	108.93
14	15	196	210	11.2689	133.11
15	10	225	150	11.5218	86.79
120	154	1240	1241	-	-

The trend equation is given as

$$Trend = \hat{a} + \hat{b}t$$

Where,

$$\begin{aligned} \hat{b} &= \frac{n \sum xy_t - \sum x \sum y_t}{n \sum x^2 - (\sum x)^2} = \frac{16(1241) - 120(154)}{16(1240) - 120^2} \\ &= \frac{19856 - 18480}{19840 - 14400} \\ &= \frac{1376}{5440} \\ &= 0.2529 \end{aligned}$$

But $\hat{a} = \bar{y}_t - \hat{b}\bar{x}$

$$\bar{x} = \frac{\sum x}{n} = \frac{120}{16} = 7.5$$

$$\bar{y}_t = \frac{\sum y}{n} = \frac{154}{16} = 9.625$$

$$\begin{aligned} \hat{a} &= 9.625 - (0.2529)(7.5) \\ &= 7.7283 \end{aligned}$$

Hence, $Trend = 7.7282 + 0.2529x$

NOTE:

For the trend line equation, $Trend = 7.375 + 0.3x$

x	$Trend = 7.375 + 0.3x$
0	7.375
1	7.675
2	7.975
3	8.275
4	8.575
5	8.875
6	9.175
7	9.475
8	9.775
9	10.075
10	10.375
11	10.675
12	10.975
13	11.275
14	11.575
15	11.875

ALITER for Question 4

x	$t = x - x_m = x - 8.5$	y	t^2	ty
1	-7.5	10	56.25	-75
2	-6.5	8	42.25	-52
3	-5.5	12	30.25	-66
4	-4.5	6	20.25	-27
5	-3.5	10	12.25	-35
6	-2.5	5	6.25	-12.5
7	-1.5	7	2.25	-10.5
8	-0.5	8	0.25	-4
9	0.5	9	0.25	4.5
10	1.5	10	2.25	15
11	2.5	11	6.25	27.5
12	3.5	12	12.25	42
13	4.5	9	20.25	40.5
14	5.5	12	30.25	66
15	6.5	15	42.25	97.5
16	7.5	10	56.25	75
	$\sum t = 0$	$\sum y = 154$	$\sum t^2 = 340$	$\sum ty = 86$

$$x_m = \frac{8+9}{2} = 8.5 \quad (\text{median of the } x \text{ values})$$

The trend equation is given as

$$Trend = \hat{a} + \hat{b}t$$

Where,

$$\hat{b} = \frac{\sum ty}{\sum t^2} = \frac{86}{340} = 0.2529$$

And

$$\hat{a} = \bar{y} = \frac{\sum y}{n} = \frac{154}{16} = 9.625$$

The trend equation is

$$Trend = 9.625 + 0.2529t$$

Examiner's comment

The question tests candidates' knowledge on the use of Least Squares Method for getting a trend line for a time series data, collected quarterly over a period of time. Therefore, the candidates are to compute the corresponding seasonal variation based on Multiplication Model.

About 65% of the candidates attempted the question with an average score of 6 marks out of the 12.5 marks allocated to the question. Candidates demonstrated good understanding of the first part of the question although most of them lacked the ability to fit the trend line as required. Most of them were unable to calculate the required seasonal variation based on Multiplication Model. The question should have been made easier for the candidates and the Assessors if a common origin has been specified.

SOLUTION 5

NORTH WEST CORNER METHOD (NWCM)

	1	2	3	4	Supply
1	10	4	20	11	20 0
2	12	7	9	20	25 20 5 0
3	6	14	16	18	15 0
Demand	10 0	15 5 0	15 0	20 15 0	

Initial basic feasible total transportation cost

$$\begin{aligned}
 &= 10(10) + 4(10) + 7(5) + 9(15) + 20(5) + 18(15) \\
 &= 100 + 40 + 35 + 135 + 100 + 270 \\
 &= \text{N}680
 \end{aligned}$$

LEAST COST METHOD (LCM)

	1	2	3	4	Supply
1	10	4	20	11	20 5 0
2	12	7	9	10	25 10 0
3	6	14	16	18	15 5 0
Demand	10 0	15 0	15 0	20 10 5 0	

Initial basic feasible total transportation cost

$$\begin{aligned}
 &= 4(15) + 11(5) + 9(15) + 10(10) + 6(10) + 18(15) \\
 &= 60 + 55 + 135 + 100 + 60 + 90 \\
 &= \text{N}480
 \end{aligned}$$

- (b) The least cost method gave a transportation cost lesser than the North West Corner Method. That is LCM is having a minimum transportation cost which means the LCM is a better method compared to NWCM.

Examiner's comment

This question tests candidates' mastery of Transportation Model in order to estimate the cost of shipment of goods and services at the smallest possible cost. Candidates should be able to identify the problem as an unbalanced transportation problem. Hence, there is the need to introduce a horizontal dummy. The candidates are expected to compare the two initial basic transportation costs obtained for North West Corner Method and Least Cost Method.

About 80% of the candidates attempted the question, scoring an average mark of 10 out of 12.5 allocated to the question. Most of those who attempted the question did not know that the question is an unbalanced problem. Hence, they failed to introduce the required horizontal dummy to balance the supply with the demand.

SOLUTION 6

a(i)

Daily Demand	Prob.	Cum. Prob.	Random number interval
0	0.02	0.02	00 - 01
5	0.23	0.25	02 - 24
10	0.25	0.50	26 - 49
15	0.3	0.80	51 - 79
20	0.2	1.00	81 - 99

Days	Random number	Demand
1	30	10
2	40	10
3	35	10
4	10	5
5	08	5
6	80	20
7	45	10
8	60	15
		85

(ii) Expected daily average demand = $\frac{85}{8}$
= 10.625 \approx 11 units

- b. This is a maximization problem; it has to be reduced to minimization type before solving it in usual way. This is achieved by subtracting all the elements of the matrix from the highest element in it. The highest element is 35, thus the resulting gable is as follows;

STEP 1

	DISTRICT			
Salesman	A	B	C	D
1	5	30	20	5
2	25	35	30	25
3	15	25	20	10
4	15	5	30	15

Highest = 35, Subtracting each element in table from 35 to get

STEP 2 (conversion to minimisation problem)

	DISTRICT			
Salesman	A	B	C	D
1	30	5	15	30
2	10	0	5	10
3	20	10	15	25
4	20	30	5	20

STEP 3 (Row reduction)

	DISTRICT			
Salesman	A	B	C	D
1	25	0	10	25
2	10	0	5	10
3	10	0	5	15
4	15	25	0	15

STEP 4 (column reduction)

	DISTRICT			
Salesman	A	B	C	D
1	15	0	10	15
2	0	0	5	0
3	0	0	5	5
4	5	25	0	5

STEP 5 (covering of all zeros with minimum lines in such a way that the number of lines drawn is equal to number of rows or columns)

	DISTRICT			
Salesman	A	B	C	D
1	15	0	10	15
2	0	0	5	0
3	0	0	5	5
4	5	25	0	5

STEP 6 (ALLOCATION after meeting the required number of lines drawn from step 5 above)

Salesman	District	Profit
1	B	30
2	D	25
3	A	15
4	C	30
		100

Maximum profit is ₦100,000.00

ALITER FOR QUESTION 6b

STEP 1

	DISTRICT			
Salesman	A	B	C	D
1	5	30	20	5
2	25	35	30	25
3	15	25	20	10
4	15	5	30	15

Highest = 35, Subtracting each element in table from 35 to get (This is to convert the maximization problem to a minimisation problem)

STEP 2 (conversion to minimisation problem)

	DISTRICT			
Salesman	A	B	C	D
1	30	5	15	30
2	10	0	5	10
3	20	10	15	25
4	20	30	5	20

STEP 3 (Column reduction)

Salesman	DISTRICT			
	A	B	C	D
1	20	5	10	20
2	0	0	0	0
3	10	10	10	15
4	10	30	0	10

STEP 4 (Row reduction)

Salesman	DISTRICT			
	A	B	C	D
1	15	0	5	15
2	0	0	0	0
3	0	0	0	5
4	10	30	0	10

STEP 5 (covering of all zeros with minimum lines in such a way that the number of lines drawn is equal to number of rows or columns)

Salesman	DISTRICT			
	A	B	C	D
1	15	0	5	15
2	0	0	0	0
3	0	0	0	5
4	10	30	0	10

STEP 6 (ALLOCATION after meeting the required number of lines drawn from step 5 above)

Salesman	District	Profit
1	B	30
2	D	25
3	A	15
4	C	30
		100

Maximum profit is ₦100, 000.00

Examiner's comment

This question tests candidates' knowledge of simulation model in Operations Research and Assignment Model. Candidates are expected to forecast demand of goods and services and also be able to assign salesman to distinct area or district with minimum cost or maximum returns implications. This is based on Hungarian Method.

About 80% of the candidates attempted the question with about 50% of them scoring 6 out 12.6 marks allocated to the question. The identified pitfalls of the

candidates include the inability of the candidates to accurately create the random number intervals for the Part (a) of the question. In Part (b), they failed to convert the maximisation problem to minimisation by subtracting all the entries from the largest element which is 35 in this case.

Generally and overall, the candidates' performance was very good. The highest score was 85.5 while the lowest score was Zero.

THE ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
MARCH 2023 EXAMINATIONS (PART II)****INFORMATION TECHNOLOGY**

PLEASE READ THESE INSTRUCTIONS BEFORE COMMENCEMENT OF THE PAPER

EXAMINATION INSTRUCTIONS

1. All solutions should be in ink. Any solution in pencil will not be marked.
2. Read all instructions on each part of the paper carefully before answering the questions.
3. Ensure that you do not answer more than the number of questions required for **Section B (The Essay Section)**.
4. Check your pockets, purse and mathematical sets, etc to ensure that you do not have prohibited items such as telephone handset, electronic storage device, wrist watches, programmable devices or any form of written material on you in the examination hall. You will be stopped from continuing with the examination and liable to further disciplinary actions including cancellation of examination result if caught.
5. Do not enter the hall with anything written on your docket.
6. Insert your examination number in the space provided above.

TUESDAY, 28 MARCH, 2023

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**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS –MARCH 2023**

INFORMATION TECHNOLOGY

Time Allowed: 3 hours

SECTION A: PART I MULTIPLE-CHOICE QUESTIONS (30 Marks)

ATTEMPT ALL QUESTIONS IN THIS SECTION

Write ONLY the alphabet (A, B, C, D or E) that corresponds to the correct option in each of the following questions/statements.

1. Which of the following is an Application software?
 - A. Word processor
 - B. Utility program
 - C. Loader
 - D. Groupware
 - E. Linkage Editor

2. Which of the following is the binary conversion of the denary number 2019?
 - A. 10101011101
 - B. 11000111111
 - C. 01110110110
 - D. 11111100011
 - E. 11100110011

3. A computer processor is made up of which of the following components
 - A. CPU and motherboard
 - B. Memory and CPU
 - C. Memory and control unit
 - D. Memory and ALU
 - E. Control unit and ALU

4. Which of the following is **NOT** an example of a secondary storage device?
 - A. Hard disk drive
 - B. Optical disk drive
 - C. Soft disk drive
 - D. Floppy disk drive
 - E. Zip Drive

5. Which of the following is **NOT** a classification of printers?
- A. Plot printer
 - B. Page printer
 - C. Character printer
 - D. Line printer
 - E. Ink – jet printer
6. A word of storage in a computer is made up of which of the following number of bits?
- A. 2
 - B. 8
 - C. 16
 - D. 32
 - E. 64
7. The ability of an operating system to execute users' tasks simultaneously is known as
- A. Surfing
 - B. Multithreading
 - C. Scavenging
 - D. Multitasking
 - E. Multiprocessing
8. Walkie-Talkie is an example of which of the following modes of data transmission?
- A. Asynchronous
 - B. Half Duplex
 - C. Duplex
 - D. Synchronous
 - E. Simplex
9. The relationship between a computer in a branch office and the HOST computer at the company's head office can be regarded as
- A. Star Configuration
 - B. Peer-to-Peer configuration
 - C. Local Area Network
 - D. Client- Server configuration
 - E. Ring Configuration
10. The fact-finding technique for gathering data in a uniform manner during system investigation is known as
- A. Interview
 - B. Observation
 - C. Reward inspection
 - D. Examination of record
 - E. Questionnaire

11. The electronic breaking into a computer system for selfish aim is regarded as
- A. Scavenging
 - B. Ciphering
 - C. Hacking
 - D. Piracy
 - E. Pranking
12. Which of the following is **NOT** an adverse effect on the health of employees using computers and communication technology?
- A. Repetitive strain injuries
 - B. Eye strain
 - C. Headache
 - D. Back and neck pain
 - E. Stomach pain
13. Which of the following is **NOT** a computer crime prevalent in a computer environment?
- A. Impersonation
 - B. Computer virus
 - C. Spooling
 - D. Spoofing
 - E. Scavenging
14. Which of the following is **NOT** an internet-based application?
- A. Web portal
 - B. Accounting Application
 - C. Electronic mail
 - D. Electronic commerce
 - E. Electronic government
15. Which of the following is **NOT** involved in general control?
- A. Segregation of duties
 - B. Control over operation
 - C. File control
 - D. Fire precaution and standby arrangement
 - E. Control over input conversion
16. Which of the following is **NOT** a way of avoiding viruses or worms?
- A. Regular update of anti-virus software
 - B. Download materials from well-known and reputable sources only
 - C. Use of storage media on the computer
 - D. Guard e-mail in-box especially attachments
 - E. Contact ISP about virus scanning

17. The act of listening to private voice or data transmission usually using a wire tape is called
- A. Eaves dropping
 - B. Hacking
 - C. Data leakage
 - D. Denial of services
 - E. Data dialing
18. The end-product of system design during system development is
- A. Project report
 - B. System Specification
 - C. Requirement Specification
 - D. Physical design
 - E. Logical design
19. The major area of assessing system feasibility are operational, social, technical and feasibility.
- A. Cost
 - B. Technology
 - C. System
 - D. Economic
 - E. Cultural
20. Which of the following is **NOT** a functional requirement of a system?
- A. Probability
 - B. Processing
 - C. Availability
 - D. Control
 - E. Storage
21. Which of the following is **NOT** a service provided by cloud computing?
- A. Infrastructure as a service
 - B. Platform as a service
 - C. Human wave as a service
 - D. Function as a service
 - E. Software as a service
22. The main benefit of a transaction processing system is
- A. Availability
 - B. Speed
 - C. Completeness
 - D. Efficiency
 - E. Pay-off

23. The interconnection of computers in an integrated system is achieved through which of the following?
- A. Local Area Network
 - B. Intranet
 - C. Internet
 - D. Hub
 - E. Dialing
24. In order to cope with the strategic business challenges of Information Technology, organisations need to
- A. Expand their human capital base
 - B. Increase their market share
 - C. Improve on their IT technical expertise
 - D. Decrease their market share
 - E. Use IT to stay competitive
25. Which of the following controls is most likely to protect an organisation's information system from computer hackers?
- A. Card-key locks
 - B. Virus detection program
 - C. Encryption of programs
 - D. Hard- to- determine passwords
 - E. Fire walls
26. The different variations of microchip-based digital devices include the following, **EXCEPT**
- A. Palmtop computer
 - B. Mainframe computers
 - C. Laptop computers
 - D. Desktop computer
 - E. Handheld computer
27. Which of the following is **NOT** true about client-server model of computing?
- A. It does not support distributed processing
 - B. It is a user centric system that emphasizes users interaction with the central data store
 - C. It splits processing between client and server system with each assigned functions
 - D. It provides for robust and scalable information system
 - E. It supports sharing of computer resources

28. Which of the following is **NOT** a softcopy output?
- A. Display on the monitor
 - B. The information transmitted by a MODEM
 - C. The result of processing from a graph plotter
 - D. The sound from a computer when a keyboard is depressed
 - E. The sound by a computer loudspeaker during computer operations
29. The storage of working media in fireproof locations or devices is known as
- A. Logical security
 - B. Deterrent measure
 - C. Recovery measure
 - D. Physical security
 - E. Preventive measure
30. Which of the following is a common cause of data problem in Management Information system?
- A. Inadequate supervision
 - B. Malicious damage
 - C. Human error
 - D. Poor documentation
 - E. Recovery measure

SECTION A: PART II SHORT ANSWER QUESTIONS (20 MARKS)

ATTEMPT ALL QUESTIONS

Write the correct answer that best completes each of the following questions/statements

1. A well organised set of entities that operate together to accomplish a purpose or goal is called
2. The monitoring and evaluation of feedback to determine whether a system is moving towards the achievement of its goal is called
3. The process of making sure that data conforms to rules guiding its completeness is called
4. is a string of characters and numbers that a user signs to an electronic document before being sent by his/her computer
5. The techniques of disguising information in order to preserve its confidentiality during transmission and when stored is called
6. The preventive measures taken to prevent physical, logical and procedural damages to computer system is called

QUESTION 2

- a. State one major distinction between Real-time and Batch Processing Systems. (2 Marks)
- b. Enumerate **THREE** advantages and **THREE** disadvantages of real – time processing system (4 Marks)
- c. Computer Network is a form of distributed data processing.

You are required to:

- i. Define Computer Network Topology (2 Marks)
 - ii. List **FIVE** types of Network Topology (2½ Marks)
 - iii. Enumerate **TWO** lapses of Computer Network (2 Marks)
- (Total 12½ Marks)**

QUESTION 3

- a. A Computer storage device consists of a number of cells for storing data and programs.

You are expected to:

- i. Define Direct Access Storage Device (1 Mark)
 - ii. List **FIVE** examples of Direct Access Storage Device (2½ Marks)
 - iii. Enumerate **THREE** benefits and **TWO** lapses of using Direct Access Storage Device (5 Marks)
- b. State **FOUR** major reasons for deploying Computer Forensics (4 Marks)
- (Total 12½ Marks)**

QUESTION 4

- a. What is Electronic mail? (1½ Mark)
 - b. Enumerate **THREE** benefits and **THREE** lapses of electronic mail (6 Marks)
 - c. State **FIVE** legal obligations that the employer in an organisation must provide to safeguard healthy and safe workplace for employees (5 Marks)
- (Total 12½ Marks)**

QUESTION 5

- a. State **FIVE** physical security measures that can be put in place to protect hardware, software, data and information in Information System environment (5 Marks)
 - b. Enumerate **FOUR** methods of preventing Computer Fraud (4 Marks)
 - c. List **SEVEN** services available on the Internet (3½ Marks)
- (Total 12½ Marks)**

QUESTION 6

- a. State **FIVE** functions of a steering Committee constituted by Management of an organisation when a new system is to be developed (5 Marks)
 - b. Enumerate **FIVE** reasons why a new/proposed Information System should be reviewed after implementation (5 Marks)
 - c. List **FIVE** activities involved in the implementation of new/proposed information system (2½ Marks)
- (Total 12½ Marks)**

SECTION A – PART 1

MULTIPLE-CHOICE SOLUTIONS

1. A
2. D
3. E
4. C
5. A
6. C
7. D
8. B
9. D
10. E
11. C
12. E
13. C
14. B
15. D
16. C
17. A
18. C
19. D
20. A
21. C
22. B
23. C
24. C
25. D
26. B
27. A
28. C
29. D
30. C

Examiner's comment

This section consists of thirty (30) compulsory Multiple-Choice Questions and the spread covers the entire syllabus. The quality of the questions is good and the solution options are within the knowledge of the students. The performance is very good as about 60% of the students scored about 50% of the allotted marks.

SECTION A: PART II

SHORT-ANSWER SOLUTIONS

1. System
2. Control
3. Validation
4. Digital Signature
5. Encryption
6. System Security
7. Segmentation
8. Query
9. Suspected User
10. Word Processor
11. Wireless
12. Database
13. Information Technology
14. Projector
15. American Standard Code for Information Interchange
16. Coupling
17. Corrective Action
18. E-business
19. Audio
20. Surfing

Examiner's comment

This section consists of twenty compulsory questions that require short answers. The spread covers the entire syllabus. The performance is poor as over 50% of the candidates scored less than 40% of the allotted marks.

In subsequent examinations, candidates need to get more familiar with the technical terms used in Information Technology.

SECTION B

SOLUTION 1

ai. Web browser is a software application used to enable computer users to locate and access webpages.

OR

Web browser is a software that enables a user to interact with information on the internet using links to the computer, listing the computer websites containing the requested information. It retrieves and display the information on user's computer.

ii. **Examples of Web browser include:**

- Mozilla Fire Fox
- Netscape Navigator
- Microsoft Internet Explorer
- Google Chrome
- Safari
- Opera
- Spry's mosaic
- Mac Web
- Konqueror
- Lynx
- Vivaldi
- Torch
- Brave

b. **Benefits of using computers for data processing include:**

- It is easier to update or modify data
- It reduces the rate of error
- It can process large volume of data
- It produces a more accurate result
- It leads to savings in labour
- It is consistent in its mode of operation
- It is interactive
- It saves storage space
- It provides faster access and retrieval of data
- It is very cheap
- It allows sharing of resources

Lapses of using computers for data processing include;

- High cost of implementation
- High cost of maintenance
- System breakdown may affect business activities
- Its operation requires some level of computer literacy
- It relies on unpredictable electricity supply
- Privacy problem and data insecurity
- There may be loss of data due to virus infection
- Prone to virus and hacking.

c. Functions that Transform Data into Information Include

These functions are the Arithmetic and logical operations, and the examples include:

- Additive Operations (e.g addition, subtraction)
- Multiplicative Operations (e.g multiplication, division)
- Calculation of averages (e.g arithmetic mean, mode, median)
- Comparism (e.g less than, greater than)
- Sorting/Rearrangement
- Summarising (e.g tables)
- Indexing
- Conversion of speech to text and vice versa.
- Classification

Examiner's comment

This question tests candidates' knowledge on Web Browser and the transformation functions in the computer systems that convert data into information.

The question was well attempted as over 70% of the candidates attempted the question. The performance is just above 50% of the allotted marks.

The web browser is a software application, so we expect the candidates to be familiar with the popular ones.

The transformation functions are the arithmetic and logical functions (ALU) of the processor. Majority of the candidates misinterpreted this question.

For future examinations, candidates must consult the INSIGHT for consultation on this topic.

SOLUTION 2

2a. Distinction between real-time and batch processing systems

REAL-TIME PROCESSING

This means the ability of a computer system to immediately process data as they occur and update relevant files because any action taken must be based on the current circumstances. The result is so quick that the results are available to influence the activity currently taking place. The transactions are applied to the master file as they happen and information is obtained from the system on demand. It requires dual-purpose input and output devices such as terminals and Visual Display Unit (VDU). Real time processing can be applied in Airline reservation, Banks, process controls, etc.

BATCH PROCESSING:

This is a technique by which items to be processed must be coded and collated into groups or batches prior to processing. A batch consists of a

convenient number of records or a collection of records relating to a given period e.g. daily, weekly, and monthly and so on or after a specified number is attained to justify updating of a master file.

The distinction in tabular form is as follows:

	REAL TIME PROCESSING	BATCH PROCESSING
1.	It produces instant result	It does not produce instant result
2.	It is used for critical activities e.g. airline reservation, international hotels reservation, and bank processes such as in Automated Teller Machines/Services.	The technique is used to process activities that do not occur continuously e.g. payroll, since salaries are paid once or twice a month.
3.	It is suitable for companies that require immediate result for further action.	It is not suitable for companies that require immediate result for further action.
4.	It can only work online.	It can work offline therefore It makes less stress on the computer processor.
5.	There is direct access to the system by the users.	There is no direct access to the system by the users.
6.	It is very complex to design.	It is not complex to design.
7.	It requires a lot of experts.	Less experts are required.

2b. **Advantages and disadvantages of real-time processing system in a tabular form is**

	Advantages	Disadvantages
1.	It is ideal for processing a large amount of data	It requires a complicated and expensive system
2.	It produces up to date information	It is tedious to process
3.	Insights are immediately available from the updated data.	It is difficult for auditing
4.	Fast real-time analysis	It uses heavy system resources
5.	It has no chances or error in performing task	It is very expensive

2c.i. **Computer network topology**

Computer network topology refers to the physical arrangement of computers on a network, that is, the way computers in a network are physically arranged. It describes the way in which the various computer components are physically connected.

ii. **Types of network topology include**

- Star topology
- Ring topology
- Mesh topology
- Bus topology
- Tree topology

iii. Lapses of computer network include:

- Server breakdown will affect the network
- It gives room for duplication of data on files of different computers on network
- High set-up cost
- High maintenance cost
- If the cable used to connect the computers breaks, the network will be affected
- Very large network may be difficult to manage
- There is the need for compatibility of equipment in the network.

Examiner's Comment

This question tests candidates' understanding on computer processing techniques and network topology. It demands for the difference between Real-time and Batch processing techniques.

This question is very popular among the candidates as over 10% of the candidates attempted the question and performance is far above average.

Network topology is just the various physical arrangements of the computers during processing activities.

For future examinations, candidates should remember the names and diagrams of the topologies.

SOLUTION 3

- ai.** A direct-access storage device is a secondary storage device in which "each physical record has a discrete location and a unique address". It is a type of secondary storage device that supports direct access to stored data, as opposed to sequential access, which is slower and less efficient.

OR

Direct Access storage device is a storage device in which data can be accessed directly regardless of the sequence or order in which the data is stored.

ii. Examples of direct access storage devices include

- Hard Disk Drive
- Floppy Disk Drive
- Compact Discs (CDs)
- DVD and Blu-ray Discs
- USB Flash Drives
- Secure Digital Cards (SD Card)s
- Solid-State Drives (SSDs)

iii. Advantages of using direct access storage device include:

- Data security and fault tolerance
- Storage capacity expansion
- Faster for certain applications
- High access rate due to storage area network absence
- Elimination of network setup complications
- Ease of management and administration

Lapses of using direct access storage device include:

- Data not accessible by diverse user groups.
- Allows only one user at a time.
- High administrative costs.
- Limited sharing
- Improper capacity utilisation
- Data can be accidentally erased or over written

b. Reasons for deploying computer forensic include:

- Falsification of data or forgery
- Embezzlement, fraud, extortion
- Sabotage
- Theft of trade secrets
- Theft or destruction of intellectual materials or properties
- Unauthorised activities
- Tracking internet browsing habit
- Reconstructing events
- Wrongful dismissal claims
- Software piracy
- Homicide investigation
- To analyse computer systems belonging to defendants in legal cases
- To gather evidence against on employee that an organization wishes to terminate his/her appointment.

Examiner's Comment

This question tests candidates' understanding on the various forms of computer storage devices and reasons for adopting computer forensic.

Storage devices are categorised in the manner data are arranged on the disc during processing, while forensic technique is deployed to help the legal institutions to determine the extend of the use of computer system in committing crime.

Over 60% of the candidates attempted this question but the performance was poor as over 50% of the candidates scored below 40% of the allotted marks.

The major pitfall is the inability of the candidates to explain Direct Access technique.

Candidates are advised to use the INSIGHT effectively for future examinations.

SOLUTION 4

4a. Electronic mail refers to facilities that can be used to send and receive mails electronically. It is a method of exchanging digital messages from an author to one or more recipients on the internet.

OR

It is the transmission of electronic/digital messages over an electronic network such as the internet.

4b. Benefits of Electronic mail include:

- E-mail is reckoned to be several times cheaper than fax or post.
- The sending and receiving of e-mail is virtually instantaneous anywhere in the world.
- Recipient can access e-mail anywhere and anytime at their convenience.
- E-mail messages can be used to send documents and reports as well as memoranda.
- An Audit trail of messages is automatically retained for a long period.
- Access to e-mail is generally restricted by the use of password.
- Easy to use and organise daily correspondence.

Lapses of Electronic mail include:

- E-mail can be seen as an inefficient way of reaching a decision where telephone call or meeting might better facilitate immediate views and reaching consensus
- It can be an insensitive way of sharing bad news and personal messages
- Poorly constructed messages might be mis –interpreted
- There is absence of non – verbal communication which can lead to misinterpretation
- Email may carry viruses
- Many people may send spam mails.
- Email cannot really be used for official business documents
- Email bankruptcy (also called email fatigue). This is when a user ignores a large number of email messages after falling behind in reading and answering them.
- Attachment size limitation
- Email spoofing: This is when the header information of an email is altered to make the message appear to come from a known or trusted source. It is often used as a ruse to collect personal information.

4c. Legal obligations that the employer of an organisation must provide a healthy and safe workplace for employees are

- Protecting employees against risk to safety in connection with the activities performed by the employee
- Promote safe and healthy workplace for employees to protect them from injuries
- Provision of preventive mechanisms to protect them from accidents of injury in workplace
- Ensure provision of occupational safety and health services to workers
- Regular consultations between employers and employees on safety and welfare of employee
- There should be provision for regulatory framework for compliance with safety and health standards by employers, employees and agents in workplaces

Examiner's comment

This question tests the knowledge of the candidates on the application of the electronic mail (email) and the safe guides of the health of employees in a safe workplace.

This was a very familiar and practical question and over 80% of the candidates attempted the question.

The performance was very encouraging as over 70% scored above 60% of the allotted marks.

SOLUTION 5

5a. The following are some of the physical security that can be put in place to protect hardware, software, data and information in information system environment

- Restriction of access to workplace to authorised persons only
- Provision of burglary proofs on the windows and doors
- Building or erection of fence to protect the workplace
- Dredging of drainage to prevent flood disaster in the workplace.
- Provision of fire alarm and fire extinguisher in case of fire disaster.
- Where possible negotiation of adequate insurance perfection for the system must be made.
- Effective maintenance programme should be put in place by the management.
- There should be temperature and humidity control to regulate and monitor room temperatures.
- Provision of locks and keys on doors.
- Issuance of identity cards to authorise persons.
- Authorisation to work on particular jobs or areas separation or functions.
- Adequate supervision of personnel.
- Electronic surveillance such as use of CCTV-Closed Circuit Television

- Physical surveillance i.e. physical safeguarding of the workplace by security operatives.
- Physical safeguarding of files in a fireproof safe or cabinet.
- Keeping back up copy of files in off site location
- Making a person (data control clerk) responsible for the safeguarding and dispatch of output or information
- Use of logbook for recording any updating of files.

5b. Computer fraud can be prevented through the following

- Use of access control such as very strong password
- Use of data encryption
- Use of firewall on network
- Use of biometric identification
- Installation of antivirus
- Create Intrusion Detection System Rules
- Update all Software
- Avoid using Public Wi-Fi for Financial Transactions
- Be cautious when posting personal information on the internet.
- Proper implementation of operation guidelines

5c. The following are some of the services available on the internet

- E-Mail
- E-Commerce / E-Business
- E-Marketing
- E-Procurement
- E-Sourcing
- Teleconferencing (Audio / Video Conferencing)
- Web hosting
- Cloud Computing
- Information search
- Internet call
- Social networking such as Facebook, twitter, Instagram etc
- Downloading / Uploading
- Chatting
- Internet banking / Electronic Fund Transfer (EFT)
- Location based report
- Weather forecast

Examiner's comment

This question tests the knowledge of the candidates on the physical security measures for the computer system, techniques of preventing computer fraud and services on the internet.

This question is on computer security and services on the internet.

Ordinarily, it is a very popular and familiar question as over 60% of the candidates attempted it, but the performance was just above 50% of the allotted marks.

The major pitfall is that the question demanded for PHYSICAL security measures but most of the candidates wrote the non-physical measures for the software.

In future, candidates are advised to understand the questions before answering them.

SOLUTION 6

6a. Functions of steering committee include:

- Appointment of feasibility study team/group
- Negotiating with suppliers of expensive hardware and software
- Ensure Cost – Benefits Analysis (CBA) of the projects
- Make recommendation to Board or Management
- Monitoring of each state of the project
- Ranking projects in order of priority due to availability of fund
- To evaluate feasibility reports written by Feasibility Study Team.

6b. Reasons for reviewing a new/proposed information system after implementation include:

- To identify new errors in the system
- To ensure corrections are effected where necessary
- To allow users assess the input and processing operations of the system
- To increase operational control of the system
- To reduce or eliminate risk
- To ensure that the system developed is in line with the specification
- To provide the system analysts with valuable feedback

6c. Activities under system implementation include:

- Acquisition of hardware and services
- Acquisition or writing of software
- System installation
- End user training
- Testing of programs
- Change over procedure
- System Documentation

Examiner's comment

This question tests the deep knowledge of the candidates on system development. System development is considered as a cycle and the student was required to give some details about some of the stages.

This question is very familiar and popular as over 80% of the candidates attempted it but the performance is just average.

The major pitfall is that many candidates did not know the activities involved during the implementation stage as well as the reasons for the review after implementation.

For future examinations, students should consult the INSIGHT.