

EXAMINERS GENERAL COMMENTS

BREACH OF EXAMINATION INSTRUCTIONS

IN SPITE OF THE EXAMINERS' GENERAL COMMENTS IN PREVIOUS EDITIONS OF THE "INSIGHT", IT WAS OBSERVED THAT A NUMBER OF CANDIDATES HAVE CONTINUED TO BREACH EXAMINATION INSTRUCTIONS AS STATED BELOW:

- A) BY ATTEMPTING MORE QUESTIONS THAN ALLOWED IN EACH PAPER; AND

- B) BY ATTEMPTING MORE QUESTIONS THAN ALLOWED IN EACH SECTION.

INADEQUATE COVERAGE OF THE SYLLABUS

IT HAS BECOME OBVIOUS THAT MANY CANDIDATES DO NOT COVER THE SYLLABUS IN DEPTH BEFORE PRESENTING THEMSELVES FOR THE EXAMINATION. CANDIDATES ARE THEREFORE ADVISED TO BE ADEQUATELY CONVERSANT WITH ALL ASPECTS OF THE SYLLABUS.

INSIGHT

FOREWORD

This **INSIGHT** is published principally, in response to a growing demand, as an aid to:

- (i) Candidates preparing to write future examinations of the Institute of Chartered Accountants of Nigeria (ICAN) at an equivalent level;
- (ii) Unsuccessful candidates in the identification of those areas in which they lost marks with a view to improving their knowledge and presentation in subsequent examinations;
- (iii) Lecturers and students interested in acquisition of knowledge in the relevant subject contained therein; and
- (iv) The profession in a bid to improving pre-examination and screening processes.

The answers provided in this book do not exhaust all possible alternative approaches to solving the questions. Efforts have been made to use methods, which will save much of the scarce examination time.

It is hoped that the suggested answers will prove to be of tremendous assistance to students and those who assist them in their preparations for the Institute's Examinations.

NOTE

Although these suggested solutions have been published under the Institute's name, they do not represent the views of the Council of the Institute. They are entirely the responsibility of their authors and the Institute will not enter into any correspondence about them.

INSIGHT

CONTENTS	PAGE
PRINCIPLES AND PRACTICE OF FINANCIAL ACCOUNTING	3 - 30
PUBLIC SECTOR ACCOUNTING	31 - 60
QUANTITATIVE ANALYSIS	61 - 96
INFORMATION TECHNOLOGY	97 - 119

INSIGHT

AT/191/PII.5

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2019**

PRINCIPLES AND PRACTICE OF FINANCIAL 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. What is the double entry to record a credit sale of GH¢5000?
 - A. Dr. Cash GH5000 Cr. Sales GH¢5000
 - B. Dr. Receivables GH5000 Cr. Sales GH¢5000
 - C. Dr. Sales GH5000 Cr. Cash GH¢5000
 - D. Dr. Sales GH5000 Cr. Receivables GH¢5000
 - E. Dr. Cash GH5000 Cr. Receivables GH¢5000

2. Which of the following would be included in the cost of inventories according to IAS 2?
 - A. Purchase price plus import duties, plus transport costs, less trade discount
 - B. Purchase price less trade discount
 - C. Purchase price plus transport costs less trade discount
 - D. Purchase price less import duties less trade discount
 - E. Purchase price plus import duties plus trade discount

3. Which of the following regarding non-current asset accounting is correct?
 - A. All non-current assets should be revalued each year
 - B. Non-current assets may be revalued at the discretion of management. Once revaluation has occurred, it must be done for all non-current assets in a class
 - C. Management can choose which non-current assets in a class of non-current assets to be valued
 - D. Non-current assets should only be revalued to reflect rising prices
 - E. All non-current assets should be revalued each month

ATSWA PART II MARCH 2019 DIET

INSIGHT

4. The purchase returns day book is used to record
 - A. Suppliers' invoices
 - B. Customers' invoices
 - C. Details of goods returned to suppliers
 - D. Details of goods returned by customers
 - E. Details of cash payment by customers

5. The qualitative characteristics which enhance the usefulness of information that is relevant and faithfully represented are
 - A. Comparability, verifiability and timeliness
 - B. Understandability, timeliness, verifiability and comparability
 - C. Understandability, comparability and timeliness
 - D. Verifiability, timeliness and understandability
 - E. Verifiability, comparability and timeliness

6. Which of the following should be presented under cash flows from operating activities according to IAS 7?
 - A. Proceeds from sales of shares
 - B. Development costs capitalised in the period
 - C. Property revaluation
 - D. Redemption of debentures
 - E. Employee costs

7. Which of the following is **NOT** true of a Not-for-profit organisation?
 - A. Income and Expenditure account is prepared
 - B. Income and Expenditure account includes accruals and prepayments
 - C. Income and Expenditure account excludes capital receipts and capital payments
 - D. Receipts and payments account deals with cash transaction only
 - E. Receipts and payments account is a substitute for income and expenditure account

INSIGHT

Use the following information to answer questions 8 and 9

Purchase Ledger Control Account

	₦		₦
Purchases return	3,000	Balance b/d	10,000
Contra	9,000	Purchases	21,000
Bank	12,200	Cheques dishonoured	600
Discount received	400		

8. Payables at the end of the year amount to
- A. ₦21,000
 - B. ₦18,000
 - C. ₦10,000
 - D. ₦9,000
 - E. ₦7,000
9. Net credit purchases for the year amount to
- A. ₦31,600
 - B. ₦24,000
 - C. ₦21,000
 - D. ₦18,000
 - E. ₦9,600
10. Which of the following statements is **NOT** valid?
- A. Provision for doubtful debts is deducted from trade receivables total in the statement of financial position
 - B. An increase in provision for doubtful debts appears on the debit side of the statement of profit or loss
 - C. A decrease in the provision for doubtful debts appears on the credit side of the statement of profit or loss
 - D. Bad debts is a deduction from total of trade receivables after making provision for doubtful debts
 - E. The bad debt account is closed to the debit side of the statement of profit or loss

INSIGHT

11. The accounting entries required for increase in provision for doubtful debts are
- A. Dr. statement of Profit or loss Cr. Provision for doubtful debts account
 - B. Dr. Trading account Cr. Provision for bad debts account
 - C. Dr. Trading account Cr. Provision for doubtful debts account
 - D. Dr. Provision for doubtful debts account Cr. Trading account
 - E. Dr. Provision for doubtful debts account Cr. Trade Receivables account
12. Goods worth ₦8,000 were stolen. The accounting entries required to record the stolen goods are
- A. Dr. Purchases account Cr. Trading account
 - B. Dr. Trading account Cr. Purchases account
 - C. Dr. Statement of Profit or loss Cr. Purchases account
 - D. Dr. Statement of Profit or loss Cr. Capital account
 - E. Dr. Capital account Cr. Purchases account
13. Which of the following should be credited to partners' capital account?
- A. Goodwill written off
 - B. Share of profits
 - C. Interest on drawings
 - D. Share of revaluation profits
 - E. Interest on loan advanced by a partner
14. The purchase consideration paid for the conversion of a partnership to limited liability company should be
- A. Debited to realisation account and credited to new company account
 - B. Debited to realisation account and credited to partner's capital account
 - C. Debited to new company's account and credited to realisation account
 - D. Debited to realisation account and credited to partner's current account
 - E. Debited to partner's current account and credited to realisation account

INSIGHT

15. Which of the following is **NOT** a provision of the Partnership Act in your Country?
- A. Profits are shared equally
 - B. Interest on loan advanced by partners is 5%
 - C. No interest shall be charged on partners' drawings
 - D. Interest shall be allowed on capital at 5%
 - E. No partner shall be entitled to receive salary
16. Which of the following is **NOT** correct about the treatment of a partner with deficiency at the end of partnership dissolution?
- I. The partner may have to pay the whole deficiency
 - II. Insolvent partners' deficiency is borne by the solvent partners in the last agreed capital
 - III. Insolvent partners deficiency are borne by the solvent partners in the profit or loss sharing ratio
- A. I and II
 - B. II and III
 - C. I and III
 - D. I, II and III
 - E. III
17. Which of the following would be debited in the statement of distribution of income?
- A. Interest on drawings
 - B. Interest on current account with debit balance
 - C. Profit transferred from the statement of profit or loss
 - D. Share of profits
 - E. Share of losses
18. Which of the following is **NOT** an attribute of a partnership?
- A. The liabilities of members are unlimited
 - B. Every member is entitled to take active part in the running of the business
 - C. The business has no perpetual succession
 - D. There is obligation under the law to prepare financial statements
 - E. Taxes are paid by individual partners and not the firm as an entity

INSIGHT

19. Which of the following will **NOT** be reported in the statement of profit or loss?
- A. Interest on loan
 - B. Dividend paid
 - C. Distribution costs
 - D. Administrative cost
 - E. Income tax expense
20. The financial statements of a limited liability company include
- A. Current accounts
 - B. Capital accounts
 - C. Statement of distribution of income
 - D. Notes to the financial statements
 - E. Revaluation accounts
21. Which of the following is a type of company that may be incorporated under the Company Act or Companies and Allied Matters Act in your country?
- I. Company limited by share
 - II. Company limited by guarantee
 - III. Unlimited company
- A. I and II
 - B. II and III
 - C. I and III
 - D. I, II and III
 - E. III
22. Which of the following is **NOT** a classification of an expense according to their nature?
- A. Changes in inventory of finished goods and Work in Progress
 - B. Finance costs
 - C. Raw materials consumable used
 - D. Employees benefit expenses
 - E. Depreciation expenses

INSIGHT

23. A VAT account debit balance reported in the year end trial balance would represent the amount
- A. To be treated as an expense in statement of profit or loss
 - B. Payable for VAT
 - C. Treated as income in the statement of profit or loss
 - D. Treated in the statement of cash flow
 - E. Of VAT recoverable

24. VAT payable at the beginning of the month was GH¢583,000. During the month, purchases inclusive of VAT were GH¢47,806,000 and sales inclusive of VAT were GH¢65,296,000, VAT rate was 10%.

The balance in the VAT account by the end of the month would be

- A. GH¢1,000,000
 - B. GH¢1,166,000
 - C. GH¢1,749,000
 - D. GH¢2,173,000
 - E. GH¢2,332,000
25. Which of the following statement(s) is/are correct in contract accounting?
- (I) ALL cash advances received in respect of contracts should be recognised immediately
 - (II) Foreseeable losses should be written off immediately in the period even if the contract has not commenced
 - (III) All anticipated profits should be recognised immediately in the contract account
- A. I
 - B. I and II
 - C. II and III
 - D. III
 - E. I and III
26. Which of the following is **NOT** a step in calculating inventory of goods lost in fire?
- A. Calculate the gross profit percentage for the previous year
 - B. Add the inventory salvaged from fire
 - C. Apply the gross profit percentage on the sales of the period to date of fire to obtain gross profit
 - D. Apply the average clause

INSIGHT

- E. Deduct the gross profit from sales to obtain cost of sales
27. Which of the following statements shows the computation of gross output in preparing the farm account?
- A. (Sales + subsidies + own consumption + closing stock) less (opening stock + purchases)
 - B. (Sales + subsidies + own consumption + opening stock) less (closing stock + purchases)
 - C. (Purchases + opening stock + subsidies + own consumption) less (Sales + closing stock)
 - D. Purchases + opening stock + subsidies) less (Closing stock + own consumption + sales)
 - E. (Sales + subsidies + closing stock) less (Purchases + own consumption + opening stock)
28. Which of the following account is **NOT** necessary to record transactions under the contract of royalties?
- A. Royalties payable account
 - B. Landlord account
 - C. Shortworkings recoverable account
 - D. Commission receivable account
 - E. Shortworkings irrecoverable account
29. Hire purchase agreement must be in writing, signed by all the parties and contain the following, **EXCEPT**
- A. Hire purchase price and cash price
 - B. Particulars of instalment plan
 - C. Description of the goods
 - D. Hirer's right to terminate the agreement or purchase which then gives him ownership
 - E. Previous contracts of the hirer
30. Which of the following is **NOT** a feature of a joint ventures arrangement?
- A. Each venturer owns a separate and independent business
 - B. There are no joint ownership of properties
 - C. A written agreement may not be necessary
 - D. The venture has longer and undefined life span
 - E. Each venturer is not an agent of his co-venturer

INSIGHT

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. Expenses incurred in the formation of a company are called.....
2. **TWO** examples of the components of equity are..... and
3. The basis of accounting used to prepare statement of cash flows is.....
4. Under which heading of the statement of cash flows are royalty fees and commission received classified?
5. Saleh, Fola and Bade were in partnership sharing profit in ratio 3:2:1. Bade retired and the journal below was included as part of the retirement procedures

	JOURNAL	
	Debit	Credit
	₦	₦
Capital - Saleh	45,000	
- Fola	30,000	
Goodwill		75,000

Required: Provide a narration for the journal

6. A partner paid ₦145,000 personally for general expenses of the firm. Assume the firm maintains fixed capital accounts system. The entry that would be made in the personal account of the partner is.....
7. In dissolution of partnership, how is the deficiency of an insolvent partner accounted for?
8. **TWO** types of changes in partnership that require the balances in the current account of partners to be transferred to capital accounts are and
9. **ONE** reason for making a journal entry is.....
10. What is the full meaning of IASB?

INSIGHT

11. Where there is a conflict between the conceptual framework and an IFRS, the requirements ofwill prevail.
12. A present obligation of an entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits is.....
13. When goods are sent on approval in the context of sale-or-return transaction, the accounting entry to be made is.....
14. The condition under which a tenant in a lease arrangement becomes a landlord is.....
15. In contract accounts, the contract type which allows final contract price to be determined by the measurement of final quantities is called.....
16. Insurance clause that provides that if the sum insured be less than the sum produced by applying the rate of gross profit to the annual turnover the amount payable shall be proportionally reduced, is called.....

Use the following information to answer questions 17 and 18

	₹
Purchase price of equipment	120,000
Freight and installation cost	20,000
Annual maintenance cost	2,000
Estimated useful life	5 years
Estimated scrap value	4,000

17. The total acquisition cost of the equipment is.....
18. The annual depreciation charge if straight-line method is used is.....
19. In a Not-for-Profit organisation, the excess of expenditure over income is called.....
20. The required accounting entries to write off the subscriptions in arrears of members of a Social Club that have left the organisation is.....

INSIGHT

SECTION B: ATTEMPT ANY FOUR QUESTIONS (50 Marks)

QUESTION 1

Galaxy Enterprises, a toothpick manufacturer extracted the following trial balance as at 31 December 2018

	Dr	Cr
	₦'000	₦'000
Capital		1,700
Plant & Machinery (cost)	2,000	
Motor vehicle (cost)	900	
Inventories - 1 January 2018:		
Raw materials	350	
Finished goods	410	
Purchases of raw materials	1,405	
Returns outwards		35
Turnover		3,605
Trade receivables and payables	221	144
Wages	438	
Bank overdraft		500
Direct expenses	13	
Factory electricity	124	
Salaries	285	
Sales commission	60	
Motor vehicle expenses	59	
Accumulated depreciation - 1 January		
Plant & machinery		283
Motor vehicle		278
Allowance for doubtful debts		29
Cash in hand	48	
Insurance	161	
Repair - Plant & Machinery	100	
	<u>6,574</u>	<u>6,574</u>

Additional information

- (1) Closing inventories as at 31 December 2018
 - (i) Raw materials ₦480,000
 - (ii) Finished goods ₦495,000
- (2) Insurance: $\frac{3}{4}$ of the insurance was for plant & machinery.
- (3) Wages in arrears was ₦62,000

INSIGHT

(4) Provision for depreciation for the year is as follows:

- (i) Plant & machinery 10% on cost
- (ii) Motor vehicle 15% on cost

(5) Provision for doubtful debts is to be made up to 10% of trade receivables.

You are required to prepare:

- a. Manufacturing Account in vertical format.
- b. Statement of profit or loss for the year ended 31 December 2018 in vertical format. **(12½ Marks)**

QUESTION 2

The trial balance of Makeup Enterprises as at 31 December 2018 failed to agree. A suspense account was opened for the difference. Draft final accounts were prepared that revealed a net profit of L\$80,000 for the year ended 31 December 2018. The following errors were subsequently discovered:

- (i) The purchases day book total of L\$160,000 had been posted to the ledger as L\$320,000
- (ii) The sales account has been undercasted by L\$240,000
- (iii) Discounts received of L\$14,000 had been debited to discounts allowed account
- (iv) An accrued salaries and wages of L\$12,000 was omitted
- (v) Loose tools bought for L\$8,000 had been debited to purchases account
- (vi) Purchases of inventory for L\$140,000 had not been posted to the ledger
- (vii) Bad debts of L\$19,000 written off in the trade receivables account had not been treated in the expense account.
- (viii) The proprietor had withdrawn goods that cost L\$6,000 for personal use. No entries had been made in the books

You are required to prepare:

- a. The journal entries to correct the errors. (6 Marks)
 - b. The suspense account and show the difference in the books. (3 Marks)
 - c. A statement to show the correct net profit for the year. (3½ Marks)
- (Total 12½ Marks)**

INSIGHT

QUESTION 3

The statement of financial position of WAZOBIA Limited as at 31 December 2017 and 2018 are as follows:

	2018		2017	
	Le'000	Le'000	Le'000	Le'000
NON-CURRENT ASSETS				
Plant & Machinery		10,755		10,410
Motor vehicle		<u>8,106</u>		<u>9,321</u>
		18,861		19,731
INTANGIBLE ASSETS				
Computer software		2,556		2,355
CURRENT ASSETS				
Inventory	17,151		17,205	
Receivables & Prepayments	14,805		14,091	
Cash and bank balances	<u>1,395</u>		<u>345</u>	
	<u>33,351</u>		<u>31,641</u>	
CURRENT LIABILITIES				
Trade and other payables	8,385		8,016	
Current taxation	2,685		2,955	
Bank overdraft	<u>816</u>		<u>2,115</u>	
	<u>11,886</u>		<u>13,086</u>	
Deferred Taxation		21,465 <u>(4,665)</u>		18,555 <u>(4,635)</u>
		<u>38,217</u>		<u>36,006</u>
CAPITAL AND RESERVES				
Ordinary share capital		13,200		13,200
Share premium		1,551		1,551
Accumulated profits		<u>23,466</u>		<u>21,255</u>
		<u>38,217</u>		<u>36,006</u>

The additional information is given:

- (i) Depreciation has been charged for the year ended 31 December 2018 as follows:

	Le'000
Plant and machinery	261
Motor vehicles	1800
Computer software	69

INSIGHT

- (ii) Motor vehicles sold during the year realised Le120,000. The cost of the vehicles when they were acquired was Le456,000, accumulated depreciation at the date of disposal amounted to Le396,000.
- (ii) The tax charge was Le3,390,000.
- (iv) Dividend paid in the year amounted to Le2,781,000
- (v) The profit for the year before tax was Le8,142,000.

You are required to:

Prepare the statement of cash flows using the indirect method for the year ended 31 December 2018.

(Show all workings)

(Total 12½ Marks)

QUESTION 4

Mr. Mbu sent to Mrs. Kofi 900 pieces of plastic chairs at a cost of Le3,000 each at an invoiced price of Le4,000 on goods sent on sale or return on 3 January 2018.

Mrs. Kofi returned 60 pieces of chairs back to Mr. Mbu on 11 January 2018, 50 pieces on 23 January 2018 and 30 pieces on 2 February 2018. Mrs. Kofi also sent an amount of Le920,000 to Mr. Mbu on 28 February 2018 as sales made during the period.

Required:

- a. Show the necessary recording in sale or return day book. (6 Marks)
- b. Determine the closing inventory i.e. goods sent on sale or return for statement of financial position purposes. (6½ Marks)

(Total 12½ Marks)

QUESTION 5

- a.
 - i. Define goodwill. (2 Marks)
 - ii. Differentiate between purchased and non-purchased goodwill. (4 Marks)
 - iii. State **THREE** attributes of a business that may result in goodwill. (1½ Marks)
- b. Bade and Kaka are partners sharing profits equally. On January 1, 2018 their capital account balances were:

Bade	GMD36,000,000
Kaka	GMD 24,000,000

INSIGHT

On this date, the partners agreed to admit Olu as a partner and agreed on profit sharing ratio as 2:2:1 for Bade, Kaka and Olu.

Goodwill has been valued at GMD9,600,000 but was not to be retained in the books of the partnership. Olu paid an amount of GMD16,000,000 to the firms account as his capital contribution.

Required:

Show the partnership capital account to give effect to the above transactions.

(5 Marks)

(Total 12½ Marks)

QUESTION 6

- a. i. Define inventory in line with IAS 2. (1 Mark)
ii. What is the basis of valuation of inventory? (1 Mark)
iii. IAS 2 specifically gave **TWO** methods of valuing inventory.
Write short notes on the **TWO** methods (4 Marks)
- b. On 1 January 2018, Alapako Limited had an opening balance of inventory of 200 units which cost GH¢500 each.

During the same month, the company made the following purchases:

2 January 600 units at GH¢600 each
15 January 1000 units at GH¢700 each

Also the following issues were made:

4 January 400 units
16 January 400 units and
26 January 400 units

Required:

Determine the value of the inventories at 31 January 2018 using FIFO method. (6½ Marks)

(Total 12½ Marks)

INSIGHT

SECTION A

PART 1 MULTIPLE-CHOICE QUESTIONS

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

INSIGHT

- 22. B
- 23. E
- 24. D
- 25. A
- 26. B
- 27. A
- 28. D
- 29. E
- 30. D

EXAMINER'S COMMENT

Multiple-Choice Questions (MCQ): The questions tests the candidates rudimentary

Knowledge of Accounting and spread over the syllabus. The performance was good as most of the candidates (85%) scored above 50% of the mark allocated.

PART II SHORT-ANSWER QUESTIONS

- 1. Preliminary expenses/Pre-operation expenses
- 2. (i) Ordinary shares
(ii) Share premium
(iii) Retained earnings
- 3. Cash basis
- 4. Operating activities
- 5. Goodwill written off after the retirement of a partner
- 6. Credit the partner's current account
- 7. The partner settled deficiency from private assets

ATSWA PART II MARCH 2019 DIET

INSIGHT

8. (i) Amalgamation of partnership
(ii) Dissolution of partnership
(iii) Conversion of partnership to limited liability company
9. (i) To correct an error
(ii) It can be used to make an entry that is not recorded in the book of prime entry (e.g prepayments, accrued expenses, depreciation)
10. International Accounting Standard Board
11. IFRS
12. Liability
13. Dr. The customer's account
Cr. The goods on approved account
14. Sub-letting or Sub-lease
15. Re-measure contract
16. Average clause
17. ₦140,000
18. ₦27,200
19. Deficit
20. Dr. Income and expenditure account
Cr. Subscriptions in arrears account

EXAMINER'S COMMENT

The questions test the candidates' broad knowledge of Accounting. About 98% of the candidates attempted the questions. The performance was fair as about 60% of them scored above average.

INSIGHT

SECTION B

SOLUTION 1

GALAXY ENTERPRISES

a (i) Manufacturing Account for the year ended 31 December, 2016

	₦'000	₦'000
Raw materials:		
Opening inventory		350
Purchases	1,405	
Less: Returns outwards	35	
	1,370	
Less: Closing inventory	<u>480</u>	
		<u>890</u>
Cost of raw materials used		1,240
Wages		500
Direct expenses		<u>13</u>
		1,753
Factory overhead:		
Electricity	124	
Insurance	120.75	
Repairs to Plant & Machinery	100	
Provision for Depreciation:		
Plant & Machinery	<u>200</u>	
		544.75
		<u>2,297.75</u>

INSIGHT

(ii) **Galaxy Enterprises**

Statement of Profit or Loss for the year ended December 31, 2018

	₦'000	₦'000
Turnover		3,605
Cost of sales:		
Opening inventory (Finished Goods)	410.00	
Cost of manufactured goods	2,297.75	
	<u>2,707.75</u>	
Less: Closing inventory (Finished Goods)	<u>495.00</u>	
		<u>(2,212.75)</u>
Gross Profit		1,392.25
Decrease in allowance for doubtful debts		<u>6.90</u>
		1,399.15
Salaries	285	
Salesmen Commission	60	
Motor vehicle expenses	59	
Insurance	40.25	
Provision for depreciation: motor vehicle	<u>135</u>	<u>(579.25)</u>
Net Profit		<u>819.90</u>

Workings:

(i) Wages: $\text{₦}438,000 + \text{₦}62,000 = \text{₦}500,000$

(ii) Insurance

Factory $\frac{3}{4} \times \text{₦}161,000 = \text{₦}120,750$

Office $\frac{1}{4} \times \text{₦}161,000 = \text{₦}40,250$

(iii) Allowance for depreciation:

Plant and Machinery $10\% \times \text{₦}2,000,000 = \text{₦}200,000$

Motor vehicle $15\% \times \text{₦}900,000 = \text{₦}135,000$

(iv) Allowance for doubtful debts

Expected allowance for the year $10\% \times \text{₦}221,000 = \text{₦}22,100$

Existing Allowance $\text{₦}29,000$

Decrease in allowance for doubtful debts $\text{₦}6,900$

EXAMINER'S COMMENT

The question tests candidates' knowledge and understanding on preparation of manufacturing and profit or loss account. About 99% of the candidates attempted the question and the performance was good. Most of the candidates that attempted the question scored above 65% of the mark

INSIGHT

SOLUTION 2

Makeup Enterprises

Journal Entries for correction of errors

	Dr.	Cr.
	₹	₹
(i) Suspense account	160,000	
Purchases account		160,000
Being correction of overstated purchases		
(ii) Suspense account	240,000	
Sales account		240,000
Being correction of undercast sales account		
(iii) (a) Suspense account	14,000	
Discount allowed account		14,000
Being reversal of wrong debit to discount		
Allowed discount		
(b) Suspense account	14,000	
Discount received account		14,000
Being amount to reinstate discount received wrongly debited to discount allowed account		
(iv) Salaries & Wages	12,000	
Accrued Salaries Wages account		12,000
Being treatments of accrued salaries & wages omitted from books		
(v) Loose tools account	8,000	
Purchases account		8,000
Loose tools wrongly debited to purchases account		
(vi) Purchases account	140,000	
Suspense account		140,000
Being inventory bought not recorded in the ledger		
(vii) Bad debts account	19,000	
Suspense account		19,000
Being bad debts written off from trade receivables not recorded as expense		

INSIGHT

(viii) Drawings account	6,000	
Purchases account		6,000
Being cost of goods withdrawn by the proprietor, but not recorded in the books		

(b) Suspense account

	DR ₹			CR ₹
Purchases	160,000	Difference in books	in	269,000
Sales	240,000	Purchases		140,000
Discount received	14,000	Bad debts		<u>19,000</u>
Discount received	<u>14,000</u>			<u>428,000</u>
	<u>428,000</u>			

Statement of corrected Net Profit

	₹	₹
Net profit as per draft account		80,000
Overcast purchases	160,000	
Undercast sales	240,000	
Discount received recorded as discount allowed	14,000	
Discount received	14,000	
Loose tools treated as purchases	<u>8,000</u>	<u>436,000</u>
		516,000
Less: Salaries & Wages	12,000	
Purchases omitted	140,000	
Bad debts	19,000	
Inventory withdrawn	<u>6,000</u>	
		<u>177,000</u>
Actual net profit for the year		<u>339,000</u>

EXAMINER'S COMMENT

The question tests candidates' knowledge of correcting errors affecting or not affecting the accuracy of the trial balance. About 75% of the candidates attempted the question and about 80% of the candidates that attempted the question performed poorly.

The major pitfall of the candidates was their lack of understanding of errors affecting the arithmetical accuracy of Trial Balance.

Candidates are advised to study well and acquire deeper understanding of this aspect of the syllabus when preparing for further examinations.

INSIGHT

SOLUTION 3

WAZOBIA LIMITED

STATEMENT OF CASH FLOW FOR THE YEAR ENDED 31, DEC 2016

	N'000	N'000
Cash flow from operating activities		
Profit before tax		8,142
Adjustment for:		
Depreciation (261 + 1,800)	2,061	
Amotization of software	69	
Profit on disposal of motor vehicles	<u>(60)</u>	2,070
<u>Changes in working capital</u>		
Decrease in inventory	54	
Increase in receivables	(714)	
Increase in profitable	<u>369</u>	<u>(291)</u>
Cash flow from operating activities		9,921
Tax paid		<u>(3,390)</u>
Net cash from operating activities		6,531
<u>Cash flow from investing activities</u>		
Dividend paid	(2,781)	
Net cash flow used in financing activities		<u>(2,781)</u>
Net increase in cash and cash equivalents		2,349
Cash and cash equivalent at 1 Jan 2016 (345 - 2,115)		<u>(1,770)</u>
Cash and cash equivalent at 31 Dec 2016 (1,395 - 816)		579

Workings

PLANT AND MACHINERY

	N'000		N'000
Bal b/d	10,410	Depreciation	262
Bank	<u>606</u>	Bal c/d	<u>10,755</u>
	<u>11,016</u>		<u>11,016</u>
Balance b/d	10,755		

INSIGHT

MOTOR VEHICLES

	N'000		N'000
Bal b/d	9,321	Depreciation	1,800
Acc dep. on disposal	396	Disposal cost	456
Bank	<u>645</u>	Bal b/d	<u>8,106</u>
	<u>10,362</u>		<u>10,362</u>
Balance b/d	8,106		

MOTOR VEHICLE DISPOSAL A/C

	N'000		N'000
Motor V. b/f	456	A/c Depreciation	396
Income statement	<u>60</u>	Bank (proceed)	<u>120</u>
	<u>516</u>		<u>516</u>

COMPUTER SOFTWARE A/C

	N'000		N'000
Balance b/f	2,355	Depreciation	69
Bank	<u>270</u>	Balance c/d	<u>2,556</u>
Balance b/d	<u>2,556</u>		<u>2,556</u>

EXAMINER'S COMMENT

The question tests candidates' knowledge on preparation of statement of cash flows using the indirect method. About 30% of the candidates attempted the question and the performance was poor as about 30% of those that attempted the question scored above 50% of the mark allocated.

The commonest pitfall was their shallow knowledge on preparation of statement of cash flow as most of the candidates prepared Statement of Financial Position. Candidates are advised to practice more with relevant text books and the Institutes' Insight when preparing for future examinations.

INSIGHT

SOLUTION 4

a. SALES OR RETURN DAY BOOK

Date	Particulars	Goods sent on sale or return	Date	Goods returned	Goods sold	Sale ledger folio
		Le'000		Le'000	Le'000	
3/1/18	900 chairs to Mrs. Kofi @ Le4,000	3,600				
	60 chairs returned @ Le4,000		11/1/18	240		
	50 chairs returned @ Le4,000		23/1/18	200		
	30 chairs returned @ Le4,000		2/2/18	120		
	Sale of chair by Mrs. Kofi		28/02/18		<u>920</u>	
		<u>3,600</u>		<u>560</u>	<u>920</u>	

b. CALCULATION OF CLOSING INVENTORY

	Le'000	Le'000	Le'000
Selling price on goods sent out on sale or return			3,600
Less:			
Selling price of returns:			
60 chairs - on 11/1/18 @ Le4,000	240		
50 chairs - on 23/1/18 @ Le4,000	200		
30 chairs - on 2/2/18 @ Le4,000	<u>120</u>	560	
Actual goods sold (230 chairs)		<u>920</u>	<u>(1,480)</u>
Sales value of goods sent (outstanding)			<u>2,120</u>
Therefore: Cost of outstanding goods with Mrs. Kofi: $\frac{2,120 \times 3,000}{4,000} =$			
Le1,590,000			
Chairs = 900 - (60 + 50 + 30 + 230) = 530 chairs			

INSIGHT

EXAMINER'S COMMENT

The question tests the candidates understanding on preparation and recording of sales on return day book and determination of closing inventory of goods sent on sale or return for statement of financial position purposes. About 40% of the candidates attempted the question and more than 70% of those that attempted the question scored above average hence the performance was fair.

The candidates are advised to be familiar with other books of prime entries in the treatment or recording accounting information apart from the regular cash and bank books which are prevalent in Incomplete records environment.

SOLUTION 5

a)(i). **Goodwill** is the excess value of a business over the net realisable value of its separately ascertainable assets. It is an intangible asset usually not listed in an entity's financial statement like other tangible assets. Goodwill is the amount by which the value of a business exceeds the value of all its net assets (its assets less liabilities).

(ii) **Differences between Purchased and Non-Purchased Goodwill**

Purchased goodwill is derived from valuation, during the acquisition of a business when the purchase consideration is more than the net book value of the assets acquired. If such purchase consideration is lower than the net book value of the assets then negative goodwill is the difference.

Non-purchased goodwill is inherent in the firm generated within the business in the course of normal business activities.

(iii) **Factors that could give rise to Goodwill in a Firm**

The following are attributes of a business that may result in goodwill:

- Monopolistic advantage
- Strategic location of the firm
- A long established list of experienced employees
- Reputable customers' patronage built sustained customers demand and taste satisfaction
- High reputation for credit ratings
- Good employer and employee relationship
- High quality products and services
- Competent Management Team
- Organized and effective advertising and marketing strategy

INSIGHT

**b) BADE, KAKA AND OLU
PARTNER'S CAPITAL ACCOUNTS AS AT JANUARY 1, 2018**

	Bade GMD'000	Kaka GMD'000	Olu GMD'000		Bade GMD'000	Kaka GMD'000	Olu GMD'000
				8/1/18			
				Bal b/d	36,000	24,000	-
Goodwill	3,840	3,840	1,920	Goodwill	4,800	4,800	-
Bal c/d	<u>36,960</u>	<u>24,960</u>	<u>14,080</u>	Cash	<u>-</u>	<u>-</u>	<u>16,000</u>
	<u>40,800</u>	<u>28,800</u>	<u>16,000</u>		<u>40,800</u>	<u>28,800</u>	<u>16,000</u>

EXAMINER'S COMMENT

The question tests candidates' knowledge of Partnership Accounting and their understanding of treatment of Goodwill, Purchased and Non-purchased Goodwill.

About 95% of the candidates attempted the question and performance was fair as most of them scored about 50% of the mark allocated. Candidates are advised to pay more attention to Goodwill treatment in Partnership Accounting when preparing for future examinations.

SOLUTION 6

a. INVENTORY

- i. **Inventory** is described as an asset that is held for sale in the ordinary course of business or consumed in the production process or in rendering of services.

Examples are finished goods, raw materials and work-in-progress, stores, spare parts and consumables.

ii. **Basis of Valuation of Inventories**

Inventories should be valued at lower of cost and net realisable value.

iii. **Two Methods of Valuing Inventories per IAS 2:**

- **First In First Out (FIFO) Method**

The FIFO method assumes that inventories purchased or produced first are sold first, such that the remaining inventories are those that have been most recently purchased or produced

- **Weighted Average Method**

The cost of each item is determined from the weighted average of the cost of similar items existing at the beginning of a period and the cost of those items purchased or produced during the period.

INSIGHT

b. ALAPAKO LIMITED

Value of Inventory Using FIFO at 31 Jan 2018

RECEIPT				ISSUE				BALANCE	
Date	Qty	Price (₹)	Amount ₹	Qty	Price (₹)	Amount ₹	Qty	Price (₹)	Amount ₹
1/1/18	200	500	100,000				200	500	100,000
2/1/18	600	600	360,000				800	500/600	460,000
4/1/18	-	-	-	200	500	100,000			
				200	600	120,000	400	600	240,000
15/1/18	1,000	700	700,000				1,400	600/700	940,000
16/1/18	-	-	-	400	600	240,000	1,000	700	700,000
26/1/18	-	-	-	400	700	280,000	600	700	420,000

EXAMINER'S COMMENT

The question tests the candidates' understanding of the treatment of Inventory Valuation from the point of view of the requirement of IAS 2. About 95% of the candidates attempted the question and about 50% of the candidates that attempted the question scored above average. The performance was fair.

Candidates' major pitfall was on 'A' part of the question where they showed little knowledge of IAS 2.

Candidates' are advised to put in more efforts and geared themselves towards understanding basic accounting standard in the preparation of financial statement and accounts when preparing for future examinations.

INSIGHT

AT/191/PII.6

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2019**

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. Which of the following is **NOT** an advantage of adopting IPSAS in Nigeria
 - A. Uniformity and comparison of data
 - B. Improve accountability and transparency
 - C. Ensure credibility, integrity and transparency
 - D. Provide easy access for EFCC and ICPC to eradicate corruption
 - E. Improve political acceptability of Government

2. Which of the following is **NOT** one of the objectives of Government Integrated Financial Management Information System (GIFMIS)?
 - A. Increases the ability to access information on financial and operational performance
 - B. Increases internal controls to prevent and detect potential and actual fraud
 - C. Improves medium term planning through a Medium Term Expenditure Framework (MTEF)
 - D. Increase the ability to demonstrate accountability and transparency
 - E. Ensuring excessive use of ways and means in financing budget expenditure

3. Which of the following is **NOT** categorised into non-expendable stores?
 - A. Paint-brushes
 - B. Plant and Machinery
 - C. Motor vehicles
 - D. Furniture
 - E. Office equipments

ATSWA PART II MARCH 2019 DIET

INSIGHT

4. Handing over of store notes must contain the following, **EXCEPT**
 - A. Signature of incoming and outgoing officer
 - B. Physical stock count, surplus or deficiency
 - C. Updated ledger and Tally card balances
 - D. Biodata of the store staff
 - E. Store form 10

5. According to Pension Reform Act 2014, which of the following are the rates of contribution to the Contributory Pension by employer and employee respectively?
 - A. Minimum of 8% by employer and employee
 - B. Minimum of 10% by employer and 8% by employee
 - C. Minimum of 12% by employer and 4% by employee
 - D. Minimum of 6% by employer and 10% by employee
 - E. Minimum of 16% by employer and employee

6. Short fall and Excess Account shall **NOT** be utilised to
 - A. Accommodate difference in price
 - B. Accommodate value of store
 - C. Accommodate minor discrepancies claim
 - D. Cover unsupplied stores during year
 - E. Accommodate value of unserviceable stores

7. Interfaces with third party systems to be provided by the Government Integrated Financial Management Information System include the following, **EXCEPT**
 - A. Human Manger – Payroll – OAGF – Payroll Cost/Loan Repayment
 - B. ASYCUDA – Customs – NCS - Revenue
 - C. ASYCUDA – NCS – Customs - Revenue
 - D. SAP – Taxation – FIRS - Revenue
 - E. CD – DRMS – Debt Management – DMO – Debt Payment

8. Which of the following is critical to the success of GIFMIS
 - A. Budget preparation
 - B. General ledger
 - C. Payments and Account Payable
 - D. Audit training program
 - E. Inventory and stock control

INSIGHT

9. Which of the following is **NOT** a feature of Sub-Accounting Unit?
- A. The unit maintains Accounting code
 - B. The unit renders return in sub-heads
 - C. The unit renders return in details
 - D. The unit maintains Internal Audit Department
 - E. The unit attach vouchers to their return
10. Which of the following is **NOT** an additional challenge that Government needs to strengthen in public expenditure management using GIFMIS?
- A. Building an integrated budget based on programs that are clearly linked to key department objectives
 - B. Ensuring that budget is not based on realistic forecasts of cash availability
 - C. Ensuring greater accountability from budget holders
 - D. Allowing greater emphasis on budget outcomes and impact
 - E. Identifying and addressing remaining sources of leakage in budget execution in order to strengthen efficiency of public expenditures
11. The positive variation in an officer's monthly salary is due to
- I. Annual increment
 - II. Promotion
 - III. Reimbursement of touring advance
 - IV. Reimbursement of arrears of allowances
 - V. Payment of claims and expenses
- A. I, II, III
 - B. II, III and IV
 - C. I, II and IV
 - D. I, IV and V
 - E. I, II and V
12. Which of the following is **NOT** a benefit of Treasury Single Account(TSA)?
- A. Assist the FGN in the efficient utilisation of government funds for approved projects
 - B. Support unlimited commercial bank accounts maintained by Ministries, Departments and Agencies (MDAs)
 - C. Promote transparency, and accountability in government operations

INSIGHT

- D. Ensure centralised control over revenue through effective cash management
 - E. Reduce fiscal criminality and help tame the tide of corruption
13. The Board that is usually convened to examine cash, bank balances and stamps held by the Accountant-General of the Federation is
- A. Audit Committee
 - B. Board of Enquiry
 - C. Board of Directors
 - D. Board of Auditors
 - E. Board of Survey
14. When the Permanent Board of Surveys and Enquiry is sitting as a Board of Survey, the Board shall:
- I. Investigate loss of stores and unserviceable stores
 - II. Defer its sitting owing to the fact that criminal proceedings are pending in connection with the loss
 - III. Not survey end-of-year Accountant-General's and Sub-Treasury's cash balances
- A. I and III
 - B. I
 - C. I, II and III
 - D. III
 - E. II
15. Information relating to construction contracts is treated under what standard?
- A. IPSAS 1
 - B. IPSAS 2
 - C. IPSAS 11
 - D. IPSAS 14
 - E. IPSAS 17
16. Which of the following is **NOT** a factor that can cause changes in net assets of an entity?
- A. Disclosure of legal form of the entity
 - B. Assets revaluation
 - C. Correction of prior year errors
 - D. Surplus/deficit during the period
 - E. Significant changes in accounting policies

INSIGHT

17. The Auditor-General for the Federation can only be removed from office where the term of his office had expired. The term of office can expire if:
- I. He had served for a maximum period of 35 years
 - II. Where his tenure is not renewed
 - III. He attained the age of 60 years
- A. III
 - B. I and II
 - C. I, II and III
 - D. II
 - E. I and III
18. The Recommendation for the appointment of Auditor-General in accordance with Section 86(i) of the Constitution is made by
- A. The President
 - B. The Senate
 - C. The Minister of Finance
 - D. The Permanent Secretary
 - E. Federal Civil Service Commission
19. A sub-accounting officer will dishonor a voucher and render it invalid where
- I. It is written in pencil
 - II. Certificate is not signed by the relevant authority
 - III. It is presented for payment after 90 days of preparation
- A. I and III
 - B. I
 - C. I and II
 - D. I, II and III
 - E. II
20. Which of the following is **NOT** a means through which the Treasury Department controls government expenditure?
- A. Issuance of Treasury Circulars
 - B. Appointment of knowledgeable Accountant as head
 - C. Establishment and nurture of a functional Internal Audit Department
 - D. Issuance of Financial Regulations
 - E. Appointment of Board of Enquiry

INSIGHT

21. The Efficiency Unit executes its mandates in the following way, **EXCEPT**
- A. Collaborating with government institutions whose responsibilities have a bearing with those of the Unit
 - B. Working closely with MDAs to review work and procurement processes for specific expenditure lines
 - C. Production of documents and records for the preparation of the financial statements of MDAs
 - D. Reviewing government's spending pattern using data from the budget implementation report and other sources
 - E. Agreeing changes or process improvements to reduce wastages and making savings
22. Which of the following is **NOT** a problem that militates against the performance of the Public Accounts Committee?
- A. Lack of courage by citizens to give evidence
 - B. Lack of data
 - C. Lack of adequate social services
 - D. An act of God
 - E. Frequent change of board members
23. Which of the following is **NOT** a managerial function of an Accountant in Public Sector Entity?
- A. Source for fund to finance a project
 - B. Preparation of budget
 - C. Review of law
 - D. Maintenance of deposit register
 - E. Implementing new accounting policy
24. Which of the following is **NOT** an objective of Expenditure Control?
- A. To prevent excess expenditure
 - B. To ensure that expenditures are incurred for the intended purposes
 - C. To curb unauthorized expenditure and frauds
 - D. To ascertain the amount spent and the balance in the account
 - E. To maximise the application of funds for government projects
25. Which of the following is **NOT** a function of the Fiscal Responsibility Commission?
- A. Monitoring and enforcing the promotion of economic objective
 - B. Disseminating standard practices of public expenditure, revenue collection, debt control

INSIGHT

- C. Undertaking fiscal and financial studies, analysis and diagnosis
 - D. Apportioning and approving annual estimate for public institution
 - E. Compelling public officer to disclose information relating to public revenue and expenditure
26. In Allocation of Revenue (Federation Account) Investments in general does **NOT** include investment
- A. Forming part of Consolidated Revenue Fund
 - B. Held in respect of the Public Fund of the Federation
 - C. Held in respect of money as part of contingency fund
 - D. Held in respect of Development Fund
 - E. Held by public offer in stock exchange
27. In Public Procurement Act, 2007 submission of bid process does **NOT** include that
- A. Invitation to open competitive bidding shall be in writing
 - B. All submitted bid shall be deposited in a secure tamper proof bid box
 - C. All bid submitted shall be in English Language
 - D. Procuring entity shall issue a receipts showing date and time of submission
 - E. Submit open copies to the members of the committee before opening
28. Which of the following is **NOT** a recurrent expenditure?
- A. Running cost
 - B. Road Construction cost
 - C. Salaries and Allowances
 - D. Petrol expenses
 - E. Medical expenses
29. The duties of Auditor-General does **NOT** include
- A. Financial Audit
 - B. Appropriation Audit
 - C. Direct audit of public quoted companies
 - D. Value for money
 - E. Financial Control Audit

INSIGHT

30. Function of Accounting Officer in a Ministry **DOES NOT** include
- A. Ensuring proper budgetary and accounting system are established
 - B. Ensuring that essential management control tools are put in place
 - C. Approve and allocate budget for the Ministry
 - D. Rendering monthly, the financial accounting returns and transcripts to Accountant-General
 - E. Ensuring the safety and proper maintenance of public asset, in his care

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 body that appoints Pension Fund examiner is
2. Chairman and Director-General of National Pension Commission has year tenure but renewable once
3. Marked public store cannot be disposed except under the approval of
4. Allocated stores are charged directly to
5. There is provision in the that enables the government to incur expenditure before the passage of the Appropriation Bill
6. The President needs the confirmation of before removal of the Chairman and members of ICPC
7. Expenditure incurred in the course of administration by government is known as
8. Efficient management of external and domestic debt obligations in Nigeria is the responsibility of
9. An ICT based accounting software application which facilitates the input of Accounting transactions, its reconciliation and the generation of Standard Accounting Reports that meet the required standard of Treasury is called

INSIGHT

10. The book that serves the purpose of ensuring that all bank transactions contained in the cash book are correctly entered is called
11. The name given to the memo raised by variation section to administrative department to inform the employee if there is a change in remuneration is called
12. The bank account or set of linked accounts through which Government transacts financial operation is called
13. The Permanent Board of Survey and Enquiry shall constitute itself into panels, which shall consist of and at least members
14. The two methods of preparing cash flow under accrual basis of accounting are..... and
15. The standards designed to be applied to the general purpose financial reports of Government Business Enterprises (GBE) is
16. The alignment of cash inflows with cash outflows of government within a given period of time is
17. The document that is sent to ministries and departmental heads for confirmation that officers are still in service as at the beginning of a current year is called
18. The issue of departmental accounting manuals, with various codes of instructions, to regulate the financial administration of the unit is done by
19. The name of the document containing procedures and policy to be followed in Government accounting department is
20. The Committee of the National Assembly which is responsible for the handling of queries raised by the Auditor-General is

INSIGHT

SECTION B ATTEMPT ANY FOUR QUESTIONS (50 Marks)**QUESTION 1**

- a. From the books of Powerline Electricity Board, a Public Sector owned by Electricity Generating Company, the following information were extracted from the books for the year ended December 31, 2018:

	₦'000
Purchase of Electricity	47,892
Sales of Electricity	57,196
Accumulated Depreciation, January 1, 2018	22,612
Meter reading, billing and collection of electricity	812
Non-current Assets Expenditure	42,051
Debtors for electricity consumption read in the year and other sales	6,003
Training and welfare	346
Stock and work in progress	617
Rents, rates and insurance	1,063
Electricity estimated unread consumption	3,611
Administration and general expenses	738
Electricity council grant	10,778
Preparation of electricity council's expenses	181
Bank balance and cash	642
Depreciation for the year	1,817
Hire purchase and deferred payment installations not yet due	1,336
Interest and financial expenses	1,217
Creditors and accrued liabilities	6,963
Profits on contracting and sale of appliance poles A/c	267
Reserves	11,558
Rental of meters application etc	278
Distribution cost	2,238
Customer service	905

You are further informed that depreciation for year 2018 was ₦1,817,000.

Required:

- a. Prepare in vertical form the Statement of Financial Performance of the Powerline Electricity Board for the year ended December 31, 2018.

(10 Marks)

INSIGHT

- b. In accordance with Section 86(1) of the Constitution of the Federal Republic of Nigeria 1999, State how the Auditor-General for the Federation is appointed. (2½ Marks)

(Total 12½ Marks)

QUESTION 2

- a. Highlight **FIVE** advantages and **FIVE** disadvantages of having Accounting Manual in Operation. (5 Marks)
- b. The department of Public work of North-West Government has a factory that produces their basic official furniture for transfer to general furniture stores where it is allocated on request by the public office and surcharged for it.

The following data are provided for the period ended 31 December 2018

Materials as at 1 January	₦30,000,000
Materials as at 31 December	₦22,000,000
Materials purchased during the year	₦75,000,000
Salaries of the factory workers for the year	₦82,700,000
Overhead incurred during the year	₦32,300,000
Work in progress at January	₦17,400,000
Work in progress at December	₦18,950,000
Finishing furniture produced and transferred	₦5,700,000
Material returned during the year	17,000 tables and chairs units

The factory charges 15% above cost for transfer

You are required to:

- i. Prepare the factory's production cost accounts . (5 Marks)
- ii. Value the furniture produced and transferred to General Store. (2½ Marks)

(Total 12½ Marks)

INSIGHT

QUESTION 3

The following data were extracted from the Federal Ministry of Waterside for the month of June, 2018.

(i.) Balance b/f from May 2018

Bank	₦375,000	Dr.
Cash	₦600	Dr.

(ii.) Revenue collected during the month:

Classification	Description	Amount (₦)
8/1	Licence	25,000
8/2	Internal Revenue	15,000
9/1	Rent on water licences	1,500
9/2	Royalty on Gold	1,000
10/14	Cash received for tenders	3,500
11/26	Contractors registration (cash)	2,500
12/3	Rent on Quarters – Junior	900
12/4	Rent on Quarters – Senior	1,250
Below the line:		
2001	Salary Advance Repayment	1,500
3001	Spectacle Repayment	500

(iii.) Payments made during the month;

Classification	Description	Amount (₦)
34/1	Personnel Cost	150,000
34/2	Local Transport & Travelling	25,000
34/3	Stationeries	50,000
34/4	Utility Services	2,000
34/6	Maintenance of Motor Vehicle	1,500
Below the line:		
2001	Salary Advance	2,000
3001	Spectacle Advance	500

a. Prepare the monthly transcript for the month of June, 2018.
(7½ Marks)

b. i State **FIVE** mandates of the Public Complaints Commission.
(2½ Marks)

INSIGHT

- ii. Enumerate **FIVE** objectives of Financial Reporting Council of Nigeria. (2½ Marks)

(Total 12½ Marks)

QUESTION 4

- a. The Efficiency unit mandate in Nigeria is to review the Expenditure profile and pattern of the Federal Government work in order to introduce more efficient process to government financial activities.

Required:

- i. State **SIX** ways by which the unit may carry out its mandate
ii. List the composition of the Steering Committee of Efficiency Unit in Nigeria.
iii. Enumerate **THREE** benefits of the Unit (7½ Marks)
- b. Part of the Regulatory documents guiding revenue collections and disbursement of Government funds at the Local Government level is the Local Government Financial Memoranda.

State **FIVE** contents of local government financial memoranda.

(5 Marks)

(Total 12½ Marks)

QUESTION 5

You are required to:

- a. i. State the constitutional provisions on the appointment of Auditor-General for the Federation. (2 Marks)
ii. State **THREE** powers of Accountant-General of the Federation. (3 Marks)
iii. List **THREE** framework documents that govern the operations of the Auditor-General for Local Government (1½ Marks)
- b. i. What is a Transcript ? (½ Mark)
ii. State the Procedures for the preparation of a transcript in the Ministry (4½ Marks)

(Total 12½ Marks)

INSIGHT

QUESTION 6

- a. i. State **TWO** conditions under which an employee can withdraw from Retirement Savings Account. (2 Marks)
- ii. Briefly describe the following:
- Programme withdrawal (2 Marks)
 - Withdrawal Based on Annuity (2 Marks)
 - Lump sum payment after retirement (1½ Marks)
- b. When loss of funds occurs in a Ministry or Department, an Officer of Government is required to constitute the Board of Enquiry.

You are required to:

- i. State the Convener of the Board. (1 Mark)
- ii. State where it is based. (1 Mark)
- iii. State **TWO** circumstances where a Board of Enquiry may not be necessary. (3 Marks)

(Total 12½ Marks)

INSIGHT

PART I MULTIPLE- CHOICE QUESTIONS

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

INSIGHT

- 28. B
- 29. C
- 30. C

EXAMINER'S COMMENT

This is Part 1 of Section A which is compulsory. They are made up of 30 questions that cut across all areas of the syllabus. All the candidates attempted the questions and above 60% scored about 50% of total marks obtainable.

PART II SHORT- ANSWER QUESTIONS

- 1. National Pension Commission
- 2. 5 Years
- 3. Accountant-General
- 4. The Sub head of relevant expectations
- 5. The Constitution
- 6. The Senate
- 7. Recurrent Expenditure
- 8. Debt Management Office
- 9. Automated Accounting Transaction Recording and Reporting System (AATRRS)
- 10. Bank Reconciliation Statement
- 11. Variation Advice
- 12. Treasury Single Account (TSA)
- 13. President and two members
- 14. Direct and Indirect Methods
- 15. International Financial Reporting Standards
- 16. Cash Budgeting/Plan
- 17. Personal emolument record card
- 18. Accounting Officer or Heads of Extrat Ministerial Department
- 19. Financial Regulations
- 20. Public Accounts Committee

INSIGHT

EXAMINER'S COMMENT

This is Part II of Section A and consists of 20 compulsory questions that covers every areas of the syllabus. All the candidates attempted the questions. Performance was fair as over 65% scoring above 50% of marks obtainable.

SECTION B

SOLUTION 1

(a)

POWERLINE ELECTRICITY BOARD
STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED
31 DECEMBER, 2016

	N'000	N'000
Sale of electricity		57,196
Purchase of electricity		(47,892)
Gross profit		9,304
Rental of meter applications		278
Profit on contracting and sale of appliance poles		<u>267</u>
Total profit		9,849
Less:		
Meter reading and billing	812	
Training and welfare	346	
Rents, rates and insurance	1,063	
Admin. Expenses	738	
Preparation of electricity councils expenses	181	
Depreciation for the year	1,817	
Interest and financial expenses	1,217	
Distribution cost	2,238	
Customer service	905	<u>9,317</u>
Net income		532
Reserves b/f		<u>11,558</u>
Reserves c/f		<u>12,090</u>

(b) The Auditor-General shall be:

- i. Appointed by the President;
- ii. On the recommendation of the Federal Civil Service Commission;
- iii. Subject to confirmation by the Senate.

ATSWA PART II MARCH 2019 DIET

EXAMINER'S COMMENT

Part 'a' of the question required the candidates to prepare in vertical form, the statement of Financial Performance of the Electricity Board for the year-end, while Part 'b' was to state how the Auditor-General for the Federation is appointed. More than 85% of the candidates attempted the question and about 80% scored above 40% of marks obtainable.

SOLUTION 2

(a) ADVANTAGES OF HAVING ACCOUNTING MANUAL

- The book acts as a point of “vengeance” for those who infringe the rules stipulated;
- It ensures consistency in the application of its stipulations;
- It ensures continuity;
- It serves as a training tools;
- It serves as a guide;
- It gives a detail description of the process of recording transactions;
- It provides references for preparation of accounts.

DISADVANTAGES OF THE EXISTENCE OF ACCOUNTING MANUAL

- It is very rigid, since its application does not encourage the use of initiative;
- Since the use of initiative is not encourage it is de-motivational;
- It makes job monotonous;
- Workers may not produce best results in view of the de-motivational factor;
- It requires special training as adherence to the manual is compulsory;
- It leads to increase in cost of operation through increase in training cost.

INSIGHT

(b)

i. **NORTH WEST GOVERNMENT
MINISTRY OF WORKS
FURNITURE PRODUCTION FACTORY**

	₦
Material as at January	30,000,000
Purchases during the year	75,000,000
Materials available for sale	105,000,000
Less closing Inventory	<u>(22,000,000)</u>
Material used for production	<u>83,000,000</u>
Opening work in progress	17,400,000
Add: Materials used for production	83,000,000
	100,400,000
Less: Closing work in progress	<u>(18,950,000)</u>
	81,450,000
Add: Salaries of the factory workers	82,700,000
Overhead incurred during the year	<u>32,300,000</u>
Total production cost	<u>196,450,000</u>

ii.

Value of the Furniture Produced and transferred to General Store

	₦
Total production cost	196,450,000
Add: Factory profit @ 15%	<u>29,467,500</u>
Transfer value	<u>225,917,500</u>
Numbers produced	17,000 units
∴ Cost per unit = ₦225,917,500 ÷ 17,000 =	<u>₦13,290</u>

EXAMINER'S COMMENT

Part 'a' requires the candidates to highlight advantages and disadvantages of having Accounting Manual.

Part 'b' was in two parts (i) requires the candidates to prepare the Factory's Production Cost accounts and (ii) requires candidates to determine the Value of the Furniture Produced and transferred to General Store. About 75% of the candidates attempted the question. And about 40% of them scored above 50% of total marks obtainable.

INSIGHT

SOLUTION 3

FEDERAL MINISTRY OF WATERSIDE TRANSCRIPT FOR THE MONTH ENDED 30 JUNE, 2016

Head	Sub-head	Description	Amount ₦	Sub-Total ₦	Total ₦	Head	Sub-head	Description payments	Amount ₦	Sub-total ₦	Total ₦
8	1	Bal. B/f			375,600	34	1	Personnel cost	150,000		
	2	Licence	25,000				2	Local transport	25,000		
		Internal revenue	<u>15,000</u>	40,000			3	Stationeries	50,000		
		Total for H. 8					4	Utility services	2,000		
9	1	Rent of water licences	1,500				5	Maintenance of vehicle	<u>1,500</u>		
	2	Royalty on gold	<u>1,000</u>					Total for head 34		228,500	
		Total for H. 9		2,500							
								BELOW THE LINE			
10	4	Cash received from transfers	<u>3,500</u>					Salary advance	2,000		
		Total for H. 10		3,500				Spectacle advance	<u>500</u>		
11	26	Contractor registration (cash)	2,500					Total below the line		<u>2,500</u>	
		Total for H. 11		2,500				Total payment			231,000
								Balance c/f			197,250
12	3	Rent on quarters - Jnr	900								
	4	Rent on quarters - Snr	<u>1,250</u>								
		Total for H. 12		2,150							
		BELOW THE LINE									
2001		Salary advance	1,500								
3001		Spectacle advance	<u>500</u>								

ATSWA PART II MARCH 2019 DIET

INSIGHT

		Total below the line		<u>2,000</u>	<u>52,650</u>	<u> </u>					
						<u>428,250</u>					<u>428,250</u>
		Balance b/f				197,250					

ATSWA PART II MARCH 2019 DIET

INSIGHT

ATSWA PART II MARCH 2019 DIET

(b) i. **MANDATES OF PUBLIC COMPLAINTS COMMISSION**

These may be stated as follows:

- a. To investigate and conduct research in Ministries and Departments, private companies and on officials of these Bodies;
- b. To investigate administrative procedures of any court of law in Nigeria;
- c. To report crimes in the course or after investigation;
- d. To report any erring officer for disciplinary action;
- e. To interpret policies of government and advise her and companies;
- f. To make public reports after investigation;
- g. To have access to all information;
- h. To make recommendations especially after pro-active.

ii. **OBJECTIVES OF THE FINANCIAL REPORTING COUNCIL OF NIGERIA**

The objectives of the Council shall be to:

- a. Protect investors and other stakeholders interest;
- b. Give guidance on issues relating to financial reporting and corporate governance to bodies listed in Sections 2 (2) (b, c and d) of this Act;
- c. Ensure good corporate governance practices in the public and private sectors of the Nigerian economy;
- d. Ensure accuracy and reliability of financial reports and corporate disclosures, pursuant to the various laws and regulations currently in existences;
- e. Harmonise activities of relevant professional and regulatory bodies as relating to Corporate Government and Financial Reporting.

INSIGHT

EXAMINER'S COMMENT

Part 'a' requires the candidates to prepare monthly transcript for the month, while the 'b' part was sub-divided into two parts:

- i. The candidate were to state mandates of the Public Complaints Commission; and
- ii. Candidates should enumerate Objectives of Financial Reporting Council of Nigeria.

All the candidates attempted the question. About 75% of them scored above 40% of marks obtainable.

SOLUTION 4

EFFECIENCY UNIT

(a) i. **The efficiency unit will execute its mandate in the following ways:**

- Reviewing the government's spending pattern using data from the budget implementation report and other sources;
- By working closely with MDAs to review work and procurement processes for specific expenditure lines;
- Agrees changes or process improvements to reduce wastages and subsequently make savings;
- By continually publishing the savings from the implementation of such changes;
- By identifying and migrating best practices in the public sector spending patterns and process of other countries to Nigeria;
- By promoting change in culture of public spending by MDAs to one of prudence and savings;
- By collaborating with government institutions whose responsibilities have relationship with those of the unit;
- By identifying and implementing price guidance and bench-marking of MDAs which offers the opportunity for quick wins and large savings;

INSIGHT

- By ensuring that government revenue are deployed in an efficient manner that translate to value-for-money and savings to government.
- ii. **Composition of the Steering Committee of the Efficiency Unit are as follows:**
 - a. The Honourable Minister of Finance – Chairman
 - b. The Head of Civil Service of the Federation – Member
 - c. The Auditor-General for the Federation – Member
 - d. The Accountant-General of the Federation – Member
 - e. Four members from the Private Sector
 - f. Head of the Efficiency Unit – Secretary
- iii. **Benefits of the Efficiency Unit**
 - a. It is a tool to the government for saving costs and providing learning opportunities for government;
 - b. It is participatory (the MDAs are involved) rather than top-down relationship which makes acceptance and the institutionalisation of a culture of efficiency easier;
 - c. It has the potential for introducing other reforms in the public sector for public good.
- (b) **Contents of Local Government Financial Memoranda**

These may be summarised as follows:

 - a. The format of budget and budgetary control;
 - b. The financial responsibilities of the Chairman and other Accounting Officers of a Local Government;
 - c. The responsibilities of the Local Government Secretary, Treasurer and Heads of Department;
 - d. The responsibilities of the Internal Auditor as they relate to Audit Alarm;

INSIGHT

- e. The powers and functions of the Auditor-General for Local Government;
- f. The functions and operations of the Audit Alarm Committee;
- g. The various financial offences and their respective sanctions;
- h. The means of Revenue Collection and Control;
- i. Main books of accounts kept in the Local Government,
- j. The custody, accounting and control of stores.

EXAMINER'S COMMENT

Part 'a' of the question was into three parts:

- i. Requires the candidates to state ways the Efficiency Unit may carry out its mandate;
- ii. To list Composition of the Steering Committee; and
- iii. To enumerate the benefits of the Unit.

Part 'b' requires the candidates to state contents of Local Government Financial Memoranda. Only about 40% of the candidates attempted the question.

About 10% of the candidates scored above 40% of marks obtainable.

SOLUTION 5

- (a) i. **CONSTITUTIONAL PROVISIONS ON THE APPOINTMENT OF AUDITOR-**

GENERAL

The appointment of the Auditor-General for the Federation is legally recognised in S. 86 of the 1999 Constitution of the Federal Republic of Nigeria. That is, he/she is:

- a. Appointed by Mr. President, subject to confirmation by the National Assembly;
- b. The above appointment is based on the recommendation of the Federal Civil Service Commission;

INSIGHT

- c. Once appointed, he/she cannot be removed from office, except where he/she can no longer perform the functions of the office due to ill-health, death, gross misconduct or where the terms of his/her office has expired (if he/she has served for 35 years or has attained the age of 60 years, whichever is earlier).
 - ii. **Constitutional Provisions on Powers of the Accountant-General of the Federation**
 - a. He has power of unlimited access to all financial documents and records of every Ministry or Department at all times;
 - b. He can carry out any special investigation, when the need arises, in any Ministry or Department;
 - c. The Accountant-General has power to demand for and obtain any information and explanation required to carry out his duties.
 - iii. **The office of the Auditor-General for Local Government operates within the following legal framework:**
 - a. The Local Government financial memoranda;
 - b. Guideline on Local Government operations;
 - c. Updated circulars issued from time to time.
- (b) i. Transcript can be defined as the statement of income and expenditure or receipts and payment.

It is the final accounts of a self accounting and sub-self accounting units.
- ii. **The procedures for the preparation of transcripts are:**
 - i. Obtain the cashbook used for the month;
 - ii. Obtain all vouchers posted into the cashbook;
 - iii. Cross check the vouchers into the cashbook to ensure that there is no error of omission, commission or transposition;

INSIGHT

- iv. Cast the cashbook to ascertain the arithmetical accuracy of the closing balance;
- v. Pre-list the vouchers into their various Heads and sub-heads;
- vi. -Prepare a schedule for each Head and sub-head;
- vii. Cast the schedule to ascertain the arithmetical accuracy;
- viii. Post the totals on each schedule into the transcript;
- ix. Balance the transcript and agree the closing balance with that in the cashbook.

EXAMINER'S COMMENT

Part 'a' required the candidates' understanding of provisions of appointment of Auditor-General for the Federation; powers of Accountant-General of the Federation and framework documents that governs the operations of the Auditor-General for Local Government.

Part 'b' requires candidates to define Transcripts and State procedures for its preparation. About 99% of the candidates attempted the question and about 70% of them scored above 40% of marks obtainable.

SOLUTION 6

- (a) i. Conditions of Granting Retirement Benefits.
- On voluntary retirement, after a qualifying service of 10 years;
 - On compulsory retirement for the purpose of facilitating improvement in the Department or Ministry;
 - On compulsory retirement upon attaining the retiring age of 60 years or 35 years in service, whichever comes earlier;
 - On total or permanent disablement while in service;

INSIGHT

- Public interest;
- Abolition of office, e.g. for the reason of re-organisation and redundancy.

ii. **Programmed withdrawal**

A programme withdrawal is the method by which the employee collects his retirement benefits in periodic sums spread throughout the length of an estimated life span.

Withdrawal based on annuity:

Is an annuity for life purchased from a life insurance company licensed by the National Insurance Commission with monthly or quarterly payments in line with guidelines jointly issued by the Commission and National Insurance Commission;

Lump sum payment

Withdrawal of a lump sum from the total amount credited to his retirement savings account provided that the amount left after the lump sum withdrawal shall be sufficient to procure a programmed fund withdrawals or annuity for life in accordance with extant guidelines issued by the Commission, from time to time.

(b) i. **Convener of Board of Enquiry**

Secretary, of the Permanent Board of Survey and Enquiry.

ii. Ministry of Finance.

iii. A Board of Enquiry may not be necessary in the following circumstance:

1. If the loss is a small one;
2. If it is an isolated case or one-off item;
3. If the officer responsible can be allocated and identified.

EXAMINERS' REPORT

Part 'a' tested the candidates knowledge on conditions for withdraw from Retirement Savings Account and definition of some basic terms.

INSIGHT

Part 'b' is on Loss of Funds. Tested candidates' understanding on the Convener of the Board of Enquiry and Circumstances where enquiry may not be necessary.

About 80% of the candidates attempted the question. About 60% of them scored 40% of marks obtainable.

INSIGHT

AT/191/PII.7

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2019**

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. Which of the following is **NOT** true about the TALLY method?
 - A. It is represented by strokes
 - B. It makes one to go through the data once
 - C. It allows for easy counting
 - D. It must be used for all sets of observations
 - E. It is better than counting each observation

2. The daily sales (in thousands of Naira) of an item in a departmental store for a number of days are: 20, 18, 17, 20, 16, 21, 20, 18, 15, 20
The mean and the median of the daily sales are respectively
 - A. (18.5, 20)
 - B. (19, 18.5)
 - C. (20, 18.5)
 - D. (18.5, 19)
 - E. (18.5, 18)

3. The variance of a set of observation is given as 25 if the mean is 15.
The coefficient of variation is
 - A. $\frac{5}{3}$
 - B. 3
 - C. $\frac{1}{3}$
 - D. 5

ATSWA PART I MARCH 2019 DIET

INSIGHT

- E. $\frac{3}{5}$
4. The difference between the rankings of 5 contestants by two judges are: -2, -1, 1, 0, 2.
Determine the Spearman's Rank correlation coefficient between the two judges.
- A. 0.49
B. 0.50
C. 0.51
D. 0.90
E. 0.91
5. The following pairs of components of a Times-Series are **NOT** easily estimable, **EXCEPT**
- A. Secular and cyclical variations
B. Seasonal and irregular variations
C. Seasonal and cyclical variations
D. Seasonal and secular variations
E. Secular and irregular variations
6. Which of the following is a demerit of moving average method in estimating the trend of a Time-Series?
- A. It is time consuming
B. It is not suitable for forecasting
C. It loses the extreme values
D. It does not give integral values
E. It is not easy to calculate

INSIGHT

7. Determine the simple aggregate index for 2018 from the following table:

Commodity	Price/Unit (GH cedis)	(Price/Unit (GH cedis)
	2017	2018
P	30	45
Q	25	38
R	22	26
S	28	38

- A. 140%
B. 138.1%
C. 138.0%
D. 72.4%
E. 72.0%
8. A statistical measure which shows changes in a variable with respect to time is the
- A. Arithmetic mean
B. Coefficient of variation
C. Index number
D. Absolute mean deviation
E. Geometric mean
9. Primary data is preferred to secondary data because it
- A. Makes use of questionnaires
B. Is expensive
C. Is easy to collect
D. Is collected for a particular purpose
E. Has a wider coverage.
10. The probability that an event A will occur is 0.7, while the probability that another event B will occur is 0.6. If the two events are independent, calculate the probability of A or B occurring
- A. 0.91
B. 0.90
C. 0.89

INSIGHT

- D. 0.88
E. 0.86
11. The Null hypothesis normally states that there is
- A. No significant difference between two samples
 - B. No relationship between two samples
 - C. A difference between two samples
 - D. No difference between two samples
 - E. A relationship between two samples
12. At a study centre, a sample of 25 male students was taken in order to determine if there is a significant difference between the mean height of the entire students which is assumed to be 1.78m and the mean height of the sample computed to be 1.84m with a standard deviation of 1.2m.
Determine the test statistic.
- A. 0.25
 - B. 0.30
 - C. 0.35
 - D. 1.25
 - E. 1.30
13. A mathematical way of describing a relationship between two or more variables is known as
- A. Quadratic Function
 - B. Implicit Function
 - C. Explicit Function
 - D. A Function
 - E. Trigonometric Function
14. A business woman spends ~~₦~~800,000 to set up a business from where items are sold. It costs ~~₦~~600 to buy an item and the sale price of an item is ~~₦~~1,000. Calculate the break-even quantity.
- A. 1,000 units
 - B. 2,000 units
 - C. 3,000 units
 - D. 4,000 units

INSIGHT

- E. 6,000 units
15. A project is estimated to take 10 days to complete. If the costs of overhead were GH¢ 800 for the first day, GH¢ 1600 for the second day, GH¢ 3200 for the third day and so on, how much will be the total overhead costs?
- A. GH¢ 718,400
B. GH ¢ 718,600
C. GH ¢ 728,400
D. GH ¢ 818,400
E. GH ¢ 818,600
16. Calculate the present value of an annuity of Le60,000 for 12 years at 8.5% compounded annually.
- A. Le400,872.35
B. Le420,682.35
C. Le430,682.35
D. Le440,682.35
E. Le450,682.35
17. The demand function for the product of AMOT (Nig. Ltd) is given as $P=2,500 - 20q^2$, where P is the price per item and q is the quantity produced and sold. Determine the marginal revenue function.
- A. $2,500 - 40q$
B. $2,500 + 40q$
C. $2,500 - 60q^2$
D. $2,500 + 60q^2$
E. $2,500q - 20q^2$
18. The demand function for a commodity x is given as $y = 100 + 10x - 2x^2$. Find the Consumer's surplus when $x_0 = 4$.
- A. 3.33
B. 4.33
C. 5.33
D. 6.33
E. 7.33

INSIGHT

19. Which of the following is **NOT** needed for Operations Research?
- A. Decision making should not be based on mere intuition
 - B. A scientific method that will assist in making rational decisions
 - C. Allocation of scarce resources in an efficient manner
 - D. Settlement of the conflict between Operations Research analyst and opinion of time managers
 - E. Scheduling of activities in a complex project.
20. Which of the following is a Linear Programming Model?
- A. Inventory model
 - B. Allocation model
 - C. Queuing model
 - D. Replacement model
 - E. Simulation model.
21. Which of the following is **NOT** a main step involved in the formulation of a Linear Programming problem?
- A. Determination of an optimal policy for the problem
 - B. Definition of all variables with their units of measurement
 - C. Expressing the objective function mathematically
 - D. Determination of the objective of the problem either as maximisation or otherwise
 - E. Expressing each constraint mathematically including the non negativity Constraints.
22. The original LP problem in a typical duality problem is known as
- A. Shadow problem
 - B. Maximisation problem
 - C. Primal problem
 - D. Dual problem
 - E. Minimisation problem
23. Which of the following cost is associated with running-out costs?
- A. Ordering cost
 - B. Carrying cost
 - C. Stock-out

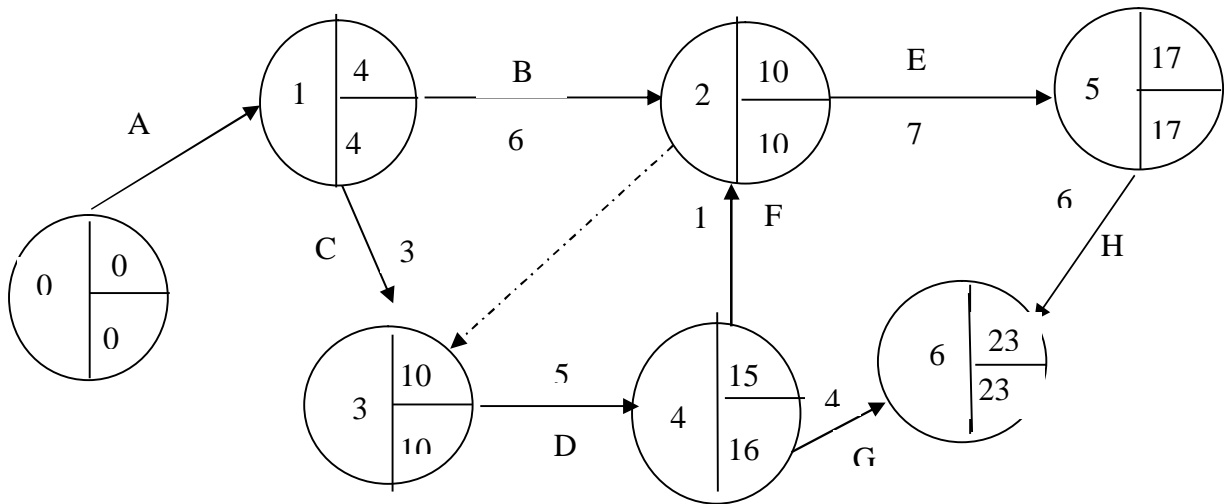
INSIGHT

- D. Warehouse cost
- E. Economic order quantity cost

24. The demand for an item is 89,856 units per annum. The cost of an order is ₦26. If the holding cost per item is ₦3.00 per annum, then the average inventory level (Average Stock) is

- A. 246
- B. 264
- C. 426
- D. 624
- E. 642

Use the network diagram below to answer questions 25 & 26



25. If the durations of all non-critical paths are arranged in ascending order of magnitude, we shall obtain

- A. 23, 22, 19, 16
- B. 22, 19, 19, 16
- C. 16, 19, 22, 23
- D. 16, 19, 19, 23
- E. 16, 19, 26, 29

INSIGHT

26. From the above Network diagram, the critical path is

- F. A → B → Dummy → D → G
- G. A → B → D → F → H
- H. A → B → D → F → G
- I. A → C → D → G → H
- J. A → B → E → H

27. If the total number of items is 2,000 and the individual and group replacements costs are ₦3.26 and 90 kobo per item respectively and if it is assumed that all items are replaced simultaneously at fixed intervals and individual items are replaced as they fail, find the average cost of individual replacements if the expected value is 4.86 (to the nearest naira).

- F. ₦1,800
- G. ₦1,371
- H. ₦1,343
- I. ₦1,206
- J. ₦371

28. Which of the following models is used in the allocation of goods from sources to destinations at optimum cost?

- F. Queuing model
- G. Assignment model
- H. Inventory model
- I. Transportation model
- J. Network model

29. ATSWA transports Examination materials from three states to four centres A, B, C, & D in Ibadan. Centre A requires 1,600 materials, centre B requires 1,800 materials, centre C requires 2,600 materials while centre D requires 3,300 materials.

State X can supply 2,800 materials

State Y can supply 2,550 materials

State Z can supply 2,650 materials

How many Examination materials will be needed to make the problem a balanced transportation problem?

INSIGHT

- A. 1,400
- B. 1,300
- C. 1,200
- D. 1,100
- E. 1,000

30. Which of the following simulation methods was developed on the basis of the principle of experiments, which makes use of sampling and probability distribution theories?

- A. Simplex simulation method
- B. System simulation method
- C. Monte Carlo simulation method
- D. Controlled simulation method
- E. Non-controlled simulation method.

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 heights of candidates in an examination hall are regarded as..... data while the number of the candidates in the hall is.....
2. If the Z - chart is constructed for the monthly production figures of a Company, the bottom horizontal plot representsfigures while the diagonal plot represents the.....total to date
3. Given that the variance of a set of numbers: 10, 16, 18 +c, 13 - 2c is 12, then the standard deviation of the numbers (to the nearest whole number) is.....
4. The regression equation obtained when the marks (y) scored in QA is regressed against the marks (x) scored in Economics is given by $y = 15.8 + 2.2x$. The mark scored in Economics by a candidate who scored 60% in QA is
5. The formula for evaluating the coefficient of variation of a set of numeric data is

INSIGHT

6. The probability of any event in a sample space can neither be less than..... nor greater than.....
7. Sophia has four brothers: Olujare, Chukwu, Shehu and Udofa from whom she can receive ₦3000, ₦5000, ₦4000 and ₦6000 respectively. Their respective probabilities are 0.4, 0.2, 0.3 and 0.1. Her expected money is
8. If a null hypothesis is stated as $H_0 : \mu = 8$, then for a one-tailed test, the alternate hypothesis will be..... or
9. If the logarithmic function $y = a x^b$ is linearised, we shall obtain.....
10. If the revenue function is given as $R(x) = 4x^2 + 20x$ and the cost function $C(x) = 3x^2 + 19x + 72$, then the break-even revenue is.....
11. A business is said to be feasible if the of its returns is positive
12. JADESETAT (Nig. Ltd.) has estimated its marginal cost of production to be $MC(x) = 3x^2 + 12x + 35$. The total cost (in naira) of producing 10 units is
13. The three main stages of an Operations Research project are identification of problems and objectives, Identification of variables and
14. One of the underlying basic assumptions of Linear Programming problem is theof the objective function and the constraints.
15. The shadow cost of a binding constraint is the amount by which the decreases (or increases) as a result of availability of one unit less or more of the scarce resource.
16. Stock costs and holding costs are types ofcosts.

ATSWA PART I MARCH 2019 DIET

INSIGHT

17. The CPA and PERT are methods used for.....
18. The following pieces of information are obtained from a particular activity of a project: Earliest Finish Time (EFT) = 23, Earliest Start Time (EST) = 14, Latest Finish Time (LFT) = 23 and Latest Start Time (LST) = 15, if the duration of the activity is 4, then its total float is.....
19. An unbalanced Transportation Problem is when the total quantity demanded is the total quantity supplied.
20. The Hungarian method of solving an Assignment Problem is also known as.....

SECTION B: ATTEMPT ANY FOUR QUESTIONS (50 MARKS)

QUESTION 1

- a. The probabilities that a business man will have customers 10, 12, 13 and 14 in a day are 0.4, 0.3, 0.2, and 0.1, respectively.
 - i. What is the expected number of customers in a day?
 - ii. What is the possible standard deviation of customers in a day? (6 Marks)
 - b.
 - i. Determine the mean, median and mode of the following data: 3, 3, 2, 4, 3.
 - ii. What inference can you make from your results above? (6½ Marks)
- (Total 12½ Marks)**

INSIGHT

QUESTION 2

- a. The profits made by a businessman in the last 25 days are given in the table below:

Profit (N'000)	Number of days
100 - 150	1
150 - 200	1
200 - 250	3
250 - 300	5
300 - 350	12
350 - 400	3

Calculate the mean deviation of profits made during the period.
(6 Marks)

- b. Two security analysts ranked twelve stock issues in terms of the amount of risk involved as follows:

Stock issue	1	2	3	4	5	6	7	8	9	10	11	12
Ranking 1	6	4	1	3	11	2	12	10	5	9	7	8
Ranking 2	7	8	2	1	9	3	12	11	4	10	6	5

Compute the Spearman's rank correlation coefficient between the two ranks. Comment on your result.
(6½ Marks)

(Total 12½ Marks)

QUESTION 3

- a. The annual sales of a company from 2001 to 2010 are given below:

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sales N'000	36.0	29.5	24.8	21.0	28.1	33.9	38.5	40.2	45.6	43.2

- Determine the trend of the series by using the Least Square Method.
- Obtain the variation using the "Additive Model" for year 2006 only.
(5 Marks)

INSIGHT

- b. The sales function (Le'000) for a manufacturer is $P(x) = 7x - 20$ while the cost function (Le'000) is $C(x) = 8125 - 210x + 8x^2$ where x is the number of quantities produced and sold.

Required:

- i. Determine the break-even quantities. (5 Marks)
- ii. Find the corresponding revenue for each break-even quantity. (2½ Marks)
- (Total 12½ Marks)**

QUESTION 4

- a. A manufacturing company has decided to manufacture its own items of stock at the rate of 10,000 items per week. The demand for the items is at the rate of 5,000 in a week. If each production run costs L\$30 and holding cost per item is L\$0.50 per week.

Calculate

- i. The economic production run. (2 Marks)
- ii. The length of the inventory cycle. (1 Mark)
- iii. The number of production runs. (1 Mark)
- iv. Total cost of production per week. (2 Marks)
- b. A maximisation linear programming problem involving 3 decision variables and 2 constraints is formulated as follows:
- Maximise $Z = 40x_1 + 30x_2 + 20x_3$
Subject to: $5x_1 + 3x_2 + 2x_3 \leq 30$
 $3x_1 + 3x_2 + 4x_3 \leq 36$
with $x_1, x_2, x_3 \geq 0$
- i. Obtain the initial simplex tableau for the problem. (5½ Marks)
- ii. Identify the entering and leaving variables. (1 Mark)
- (Total 12½ Marks)**

INSIGHT

QUESTION 5

- a. A model developer helps a paint manufacturer who makes two types of paints to formulate a Linear Programming problem to maximise profit (~~N~~) based on the production information available as follows:

Maximise: $p = 400x + 300y$ (in N)

Subject to:

$$5x + 4y \leq 4,000$$

and $2x + 5y \leq 2,000$

with non-negativity constraints

$$x \geq 0, y \geq 0$$

Use graphical method to determine the number of units of both types of paints (i.e. x and y) to be produced so as to maximise the manufacturer's profit. (6 Marks)

- b. An information technology firm has just been awarded a contract to network the daily proceedings of 16 branches of an organisation. The whole contract can be divided into 9 activities as follows:

Activity	Preceding Activity	Duration (days)
A	-	4
B	-	5
C	B	8
D	A, C	5
E	B	6
F	E	8
G	D, F	3
H	E	4
I	G	6

- i. Draw an activity-on-arrow network for the contract ($3\frac{1}{2}$ Marks)
- ii. Determine the critical path and its duration (3 Marks)
- (Total $12\frac{1}{2}$ Marks)**

INSIGHT

QUESTION 6

- a. A company uses two different industrial machines X and Y. The yearly costs of the two machine if money value is neglected are given in the table below:

Year	1	2	3
Machine X (Le)	15,000	9,000	11,000
Machine Y (Le)	20,000	5,000	13,000

Given that the money value is 15% per year

- i. Find the cost patterns of the two machine. (4 Marks)
- ii. Which of the two machines is more economical? (1 Marks)
- b.i. Two posts are offered to a Chartered Accountant from which he is to choose one. In one, the starting salary was ₦120,000.00 per month with an annual increment of ₦8,000. In the other post, salary commenced at ₦85,000 per month with an annual increment of ₦12,000. The Chartered Accountant decided to accept the post that will give him more earnings in the first twenty years of his service. Which post should he accept? Justify your answer. (5 Marks)
- ii. A construction work is estimated by a Chartered Accountant to take 18 days. It is also estimated that overhead costs for the first day, second day, third day and so on are ₦15,000, ₦22,500, ₦33,750 and so on. How much will the total overhead costs be? (2½ Marks)

(Total 12½ Marks)

INSIGHT

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 $t = x_i - x_m$

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

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

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

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

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

EOQ with stock-out

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

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

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

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

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

Spearman's rank correlation coefficient

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

EOQ with gradual replenishment

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

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

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

Production cost = *Ordering cost* + *Holdering cost*

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

INSIGHT

SECTION A

PART I

MULTIPLE-CHOICE QUESTIONS

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

INSIGHT

- 22. C
- 23. C
- 24. D
- 25. E
- 26. E
- 27. C
- 28. D
- 29. B
- 30. C

Workings

2. Mean = $\frac{1}{10} (20 + 18 + 17 + 21 + 20 + 16 + 20 + 18 + 15 + 20)$
= 18.5

Rearranging 15, 16, 17, 18, 18, 20, 20, 20, 20, 21

$$\text{Median} = \frac{18+20}{2} = 19$$

(18.5, 19) (D)

3. Variance = 25

Standard deviation = 5

Coefficient of variation is $\frac{s.d}{mean} = \frac{5}{15} = \frac{1}{3}$ (C)

4. $r_{\text{rank}} = 1 - \frac{6\sum d^2}{n(n^2-1)}$

$$\sum d^2 = 4 + 1 + 1 + 4 = 10$$

$$r_{\text{rank}} = 1 - \frac{6 \times 10}{5 \times 24} = 1 - \frac{60}{120} = 0.50 \quad \text{(E)}$$

INSIGHT

7.

Community	Price/unit (Cedis)	
	2014	2015
A	30	45
B	25	38
C	22	26
D	28	38
	105	147

$$SAPI = \frac{\sum P_n}{\sum P_0} \times 100$$

$$\frac{147}{105} \times 100 = 140\%$$

10.

$$\begin{aligned}
 P(A \cap B) &= P(A) + P(B) - P(A \cup B) \\
 &= 0.7 + 0.6 - (0.7) \times (0.6) \\
 &= 1.3 - 0.42 \\
 &= 0.88
 \end{aligned}$$

(A)

12.

$$\begin{aligned}
 Z_{\text{eal}} &= \frac{\bar{x} - \mu}{\sigma / \sqrt{n}} \\
 &= \frac{1.84 - 1.78}{1.2 / \sqrt{25}} \\
 &= 0.25
 \end{aligned}$$

(A)

14.

Let x represent the number of items produced and sold

For break-even,

$$R(x) = C(x)$$

Where

$$R(x) = \text{N}1,000x$$

$$C(x) = \text{N}800,000 + \text{N}600x$$

$$\Rightarrow 1,000x = 800,000 + 600x$$

$$1,000x - 600x = 800,000$$

$$400x = 800,000$$

$$x = \frac{800,000}{400}$$

$$x = 2,000$$

(B)

INSIGHT

15. 800, 1,600, 3,200,.....

$$r = \frac{1600}{800} = \frac{3200}{1600} = 2$$

the series is a GP

Hence $a = 800$, $n = 10$ and common ratio $r = 2$

$$\therefore S_{10} = \frac{a(r^n - 1)}{r - 1} \text{ Since } r > 1$$

$$= \frac{800(2^{10} - 1)}{2 - 1}$$

$$= \text{R}800 \times 1,023$$

$$= \text{R}818,400 \quad (\text{D})$$

16. $PV = \left[\frac{1 - (1+r)^{-n}}{r} \right]$

$$= 60,000 \left[\frac{1 - (1.085)^{-10}}{0.085} \right]$$

$$= 60,000 \left[\frac{1 - 0.3757}{0.085} \right]$$

$$= \frac{60,000 \times 0.6243}{0.085}$$

$$= \text{R}440,682.35 \quad (\text{C})$$

17. Revenue = Pq

$$= (25,000 - 20q^2)q$$

$$= 25,000q - 20q^3$$

$$MR = \frac{d}{dq} (25,000q - 20q^3)$$

$$= 25,000 - 60q^2$$

18. $Y = 100 + 10x - 2x^2$

$$\text{When } x_0 = 4, y_0 = 100 + 10(4) - 2(4^2)$$

$$= 100 + 40 - 32$$

$$= 108$$

$$\text{Consumer's surplus} = \int_0^4 (100 + 10x - 2x^2) dx - x_0y_0$$

$$= 100x + \frac{10x^2}{2} - \frac{2x^3}{3} \Big|_0^4 - 4(108)$$

$$= 100(4) + 5(4^2) - \frac{2}{3}(4^3) - 432$$

$$= 400 + 80 - 42.67 - 432$$

$$= 480 - 474.67$$

$$= 5.33 \quad (\text{C})$$

INSIGHT

24. Average inventory level = Average stock

$$\begin{aligned}
 &= \frac{Q}{2} \\
 Q &= \sqrt{\frac{2CD}{C_h}} \\
 &= \sqrt{\frac{2 \times 26 \times 89.856}{3}} \\
 &= \sqrt{1,557,504} \\
 Q &= 1,248 \\
 \text{Average stock} &= \frac{1,248}{2} = 624 \qquad \qquad \qquad (E)
 \end{aligned}$$

25. Paths Duration

A → B → E → H	=	4 + 6 + 7 + 6 = 23
A → C → D → G	=	4 + 3 + 5 + 4 = 16
A → H → Dr → Dummy → D → G	=	4 + 6 + 0 + 5 + 4 = 19
A → B → Dummy → D → I → H	=	4 + 6 + 0 + 5 + 1 + 6 = 22
A → C → D → f → H	=	4 + 3 + 5 + 1 + 6 = 19

Critical path is A → B → E → H (E)

27. Average number of failures per month

$$\begin{aligned}
 &= \frac{2,000}{4.86} = 411.52 \\
 &\cong 412 \text{ items} \\
 \therefore \text{Average cost of individual replacement} \\
 &= 412 \times \text{R}3.26 \\
 &= \text{R}1,343 \qquad \qquad \qquad (C)
 \end{aligned}$$

29. DD = 1,600 + 1,800 + 2,600 + 3,300 = 9,300
 SS = 2,800 + 2,550 + 2,650 = 8,000
 Difference = 9,300 - 8,000 = 1,300 (B)

EXAMINER'S COMMENT

All the candidates attempted the questions in MCQ. About 65% performed above average. They would have performed much better, if they have been able to interpret some of the questions very well. Writing of solutions in lower case form equally affected a few of them.

INSIGHT

PART II SHORT- ANSWER QUESTIONS

1. Continuous, Discrete (in that order)
2. Current monthly, Cumulative (in what order)
3. 3
4. 20% or 20.1% or 20.09%
5. $CV = \frac{S.D}{Mean} \times 100$ or $\frac{\sigma}{\bar{x}} \times 100$
6. 0, 1 (in that order)
7. ~~₦~~4,000
8. $H_1: \mu < 8$, $H_1: \mu > 8$
9. $\log y = \log a + b \log x$
10. 909
11. Net present Value
12. ~~₦~~1,950
13. Construction of Model
14. Linearity
15. Objective function
16. Inventory
17. Network Analysis
18. 5
19. Not equal to.
20. Reduced Matrix Method

Workings

4. $Y = 15.8 + 2.2x$
 $60 = 15.8 + 2.2x$
 $X = \frac{60 - 15.8}{2.2} = 20\% \text{ or } 20.11\%$
 $= 20\% \text{ or } 20.1\%$
7. Expected money = $3,000 \times 0.4 + 5,000 \times 0.2 + 4,000 \times 0.3 + 6,000 \times 0.1$
 $= \del{₦}4,000$
9. $\log y = \log b + n \log x$

INSIGHT

10. Break even occurs when $R(x) = c(x)$
i.e. $R(x) - c(x) = 0$
 $4x^2 + 20x - 3x^2 - 19x - 72 = 0$
 $x^2 - x - 72 = 0$
 $(x - 9)(x + 8) = 0$
 $x = 9$ or -8
 $x = 9$
at break even, $R(9) = 4 \times 9^2 + 20 \times 9$
 $= 909$ units of money
11. Net Present Value
12. Total cost of producing to units
is $\int_0^{10} (3x^2 + 12x + 35) dx$
 $= (x^3 + 6x^2 + 35x)^{10}$
 $= 1,000 + 600 + 350$
₹1,950
18. Total float = LFT - EST - D
 $= 23 - 14 - 4$
 $= 5$

EXAMINER'S COMMENT

All the candidates attempted the questions in this section. The performance is not encouraging as the average performance is about 6 marks out of 20 marks allocated to it.

SECTION B

SOLUTION 1

- (a) i. Given the following

X_i	10	12	13	14
$P(X_i)$	0.4	0.3	0.2	0.1

$$\begin{aligned} E(x) &= P_1 X_1 + P_2 X_2 + \dots \\ &= 0.4(10) + 0.3(12) + 0.2(13) + 0.1(14) \\ &= 4 + 3.6 + 2.6 + 1.4 \\ &= 11.6 \cong 12 \text{ customers} \end{aligned}$$

INSIGHT

ii. Standard deviation

$$S = \sqrt{E(x^2) - (E(x))^2}$$

$$\begin{aligned} E(x^2) &= P_1 X_1^2 + P_2 X_2^2 + \dots \\ &= 0.4 (100) + 0.3 (144) + 0.2 (169) + 0.1 (196) \\ &= 40 + 43.2 + 33.8 + 19.6 \\ &= 136.6 \end{aligned}$$

$$\begin{aligned} S &= \sqrt{(136.6 - (11.6)^2)} = \sqrt{(136.6 - 134.56)} \\ &= \sqrt{2.04} \\ &= 1.428 \\ &\approx 2 \text{ customers} \end{aligned}$$

(b) Mean = $\frac{\sum x}{N} = \frac{3+3+2+4+3}{5} = \frac{15}{5} = 3$

= Median → Re-arrange in ascending order

2, 3, 3, 3, 4

∴ Median = $\left(\frac{N+1}{2}\right)^{\text{th}}$ item = $\left(\frac{5+1}{2}\right)^{\text{th}}$ = 3rd item

= 3rd item = 3

- Mode frequency distribution

X	F
2	1
3	3
4	1

Here, 3 occurred most

∴ Mode = 3

- Inference on the results

Since mean = median = mode = 3, the data is symmetrical or normal

EXAMINER'S COMMENT

The question tests the candidates' understanding of the computation and interpretation of measures of central tendency and dispersion using business data. About 90% attempted the question out of which 80% scored below the average mark. The major pitfall was the inability of the candidates to calculate the standard deviation by the expectation method. Adequate attention should be paid to the calculation of standard deviation using the expectation method.

INSIGHT

In addition, Tuition Houses should expose the candidates more to the application of probability in calculating the expected values.

SOLUTION 2

(a) $MD = \frac{\sum f_i |d_i|}{\sum f_i}$, where $d_i = x_i - \bar{x}$

Class mark (x)	F	fx	d_i	$ d_i $	$f_i d_i $
125	1	125	-170	170	170
175	1	175	-120	120	120
225	3	675	-70	70	210
275	5	1,375	-20	20	100
325	12	3,900	30	30	360
375	3	1,125	80	80	240
Total	25	7,375			1,200

$$\text{Mean } (\bar{x}) = \frac{7,375}{25} = 295$$

$$MD = \frac{1,200}{25} = 48.0$$

$$\therefore MD = \text{R}48 \times 1,000 = \text{R}48,000$$

(b)

Stock issue	1	2	3	4	5	6	7	8	9	10	11	12
Ranking 1 (R1)	6	4	1	3	11	2	12	10	5	9	7	8
Ranking 2 (R2)	7	8	2	1	9	3	12	11	4	10	6	5
$d = R1 - R2$	-1	-4	-1	2	2	-1	0	-1	1	-1	1	3
d^2	1	16	1	4	4	1	0	1	1	1	1	9

$$\sum d^2 = 40$$

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

$$= 1 - \frac{6(40)}{12(12^2 - 1)}$$

$$= 1 - \frac{240}{1,716}$$

$$= 1 - 0.13986$$

$$= 0.8601$$

INSIGHT

Comment: From the coefficient, there is a high positive correlation between the ranks.

EXAMINER'S COMMENT

The question tests the candidates' knowledge of the application of measures of dispersion and correlation coefficient to business data. About 99% of the candidates attempted the question out of which about 90% scored above average marks.

The candidates demonstrated very good understanding of the topics. The few who did not understand was due to their inability to take absolute value as positive for negative value.

SOLUTION 3

(a)

Year	+ (year code)	Y	Yt	t	T	Variation T = Y - T
2001	0	36.0	0	0		
2002	1	29.5	29.5	1		
2003	2	24.8	49.6	4		
2004	3	21.0	63.0	9		
2005	4	28.1	112.4	16		
2006	5	33.9	169.5	25	35.0279	-1.128
2007	6	38.5	231.0	36		
2008	7	40.2	281.4	49		
2009	8	45.6	364.8	64		
2010	9	43.2	388.8	81		
Total	45	340.8	1.690	285		

$$T = a + bt$$

$$\text{Where } b = \frac{n\sum Yt - \sum Y \sum t}{n\sum t^2 - (\sum t)^2}$$

$$a = \frac{\sum Y}{n} - \frac{b\sum t}{n}$$

$$b = \frac{10(1.690) - 45(340.8)}{10(285) - (45)^2} = \frac{1.564}{825} = 1.8958$$

$$a = \frac{340.8}{10} - \frac{1.8958(45)}{10} = 34.08 - 8.5311 = 25.5489$$

$$\therefore T = 25.5489 + 1.8958t$$

INSIGHT

$$\begin{aligned}\text{Variation} &= Y_{2006} - T_{2006} \\ &= 33.9 - 35.0279 \\ &= -1.128\end{aligned}$$

- (b) Sales function: $P(x) = 7x - 20$
Revenue function is $R(x) = P(x) \times x$

i. $R(x) = (7x - 20)x$
 $= 7x^2 - 20x$
Cost function is $C(x) = 8,125 - 210x + 8x^2$

- ii. At break-even point $R(x) = C(x)$
 $7x^2 - 20x = 8,125 - 210x + 8x^2$
 $0 = 8,125 - 210x + 20x + 8x^2 - 7x^2$
 $X^2 - 190x + 8,125 = 0$

$$X = \frac{-(-190) \pm \sqrt{(-190)^2 - (4 \times 1 \times 8,125)}}{2 \times 1}$$

$$X = \frac{190 \pm \sqrt{36,100 - 32,500}}{2}$$

$$X = \frac{190 \pm \sqrt{3,600}}{2}$$

$$X = \frac{190+60}{2} \text{ or } \frac{190-60}{2}$$

$$X = 125 \text{ or } 65$$

The break-even quantities are 125,000 units and 65,000 units

- iii. From sales function, we have the revenue given, when
 $R(x) = 7x^2 - 20x$

The break-even, when $x = 125$

$$\begin{aligned}R(125) &= 7(125)^2 - 20(125) \\ &= 109,375 - 2,500 \\ &= \text{Le } 106,875 - 2,500 \\ &= \text{Le } 106,875,000\end{aligned}$$

Also when $x = 65$

$$\begin{aligned}R(65) &= 7(65)^2 - 20(65) \\ &= 29,575 - 1,300 \\ &= \text{Le } 28,275,000\end{aligned}$$

\therefore The break-even amounts are
Le 106,875,000 and Le 28,275,000

INSIGHT

EXAMINER'S COMMENT

The question tests the understanding of the candidates on the use of least squares method in solving time series data and also tests break-even analysis. About 90% of the candidates attempted the question out of which about 60% scored above average mark. Misuse of appropriate methods could be source of their shortcomings.

The candidates are advised to understand standard methods of solving business problems needed for time series data and others.

ALITER 1 TO SOLUTION 3 (a)

Year	T	Y	Yt	t ²	T = a + bt	Variation
2001	1	36.0	36.0	1		
2002	2	29.5	59.0	4		
2003	3	24.8	74.4	9		
2004	4	21.0	84.0	16		
2005	5	28.1	140.5	25		
2006	6	33.9	203.4	36	35.0279	-1.128
2007	7	38.5	269.5	49		
2008	8	40.2	321.6	64		
2009	9	45.6	410.4	81		
2010	10	43.2	432.0	100		
Total	55	340.8	2030.8	385		

$$T = a + bt$$

$$b = \frac{n\sum Yt - (\sum Y)(\sum t)}{n\sum t^2 - (\sum t)^2}$$

$$\frac{10(2030.8) - 340.8(55)}{10(385) - 55^2} = \frac{1564}{825} = 1.8958$$

$$a = \frac{\sum Y}{n} - b \frac{\sum t}{n} = \frac{340.8}{10} - 1.8958 \left(\frac{55}{10}\right)$$

$$= 34.08 - 10.4269$$

$$= 23.6531$$

$$\therefore T = 23.6531 + 1.8958t$$

$$T_{2006} = 23.6531 + 1.8958(6) = 35.0279$$

$$\text{Variation} = 33.9 - 35.0279 = -1.128$$

INSIGHT

ALITER 2

Year	Sales y N'000	x	t = t ₁ - tm	t ²	ty
2001	36.0	0	-4.5	20.25	-162
2002	29.5	1	-3.5	17.25	-103.25
2003	24.8	2	-2.5	6.25	-62
2004	21.0	3	-1.5	2.25	-31.5
2005	28.1	4	-0.5	0.25	-14.05
2006	33.9	5	0.5	0.25	16.95
2007	38.5	6	1.5	2.25	97.75
2008	40.2	7	2.5	6.25	100.5
2009	45.6	8	3.5	12.25	159.6
2010	43.2	9	4.5	20.25	194.4
	340.8	45		82.5	156.4

$$\bar{x} = \frac{\sum x}{n} = \frac{45}{10} = 4.5$$

$$b = \frac{\sum ty}{\sum t^2} = \frac{156.4}{82.5}$$

$$= 1.88958$$

$$\bar{y} = \frac{\sum Y}{n} = \frac{340.8}{10} = 34.08$$

$$a = \bar{y} - b\bar{x}$$

$$a = 34.08 - 1.88958(4.5)$$

$$a = 34.08 - 8.5311$$

$$a = 25.5489$$

ALITER 3

Year	X	y	xy	x ²
2001	-9	36	-324	81
2002	-7	29.5	206.5	49
2003	-5	24.8	-12.4	25
2004	-3	21.0	-63	9
2005	-1	28.1	-28.1	1
2006	1	33.9	33.9	1
2007	3	38.5	115.5	9
2008	5	40.2	201	25
2009	7	45.6	319.2	49
2010	9	43.2	388.2	81
	0	340	312.2	330

INSIGHT

$$y = mx + c$$

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

$$c = \frac{\sum y}{n} - \frac{m\sum x}{n}$$

$$m = \frac{10(312.2) - 0}{10(330) - 0^2}$$

$$m = 0.9461$$

$$c = \frac{340}{10} = 34$$

$$y = 0.9461x + 34$$

For 2006 $x = 1$

$$Y_{2006} = 0.9461(1) + 34$$

$$= 34.946$$

$$Y_{2006} \cong 35$$

$$\text{Variation} = 33.9 - 35 = -1.1$$

SOLUTION 4

- (a) i. The formula for EOQ with gradual replenishment (Stock holder)

Manufacturer is given as

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

$$C = 30, d = 5,000, h = 0.5, r = 10,000$$

$$Q = \sqrt{\frac{2 \times 30 \times 5,000}{0.5 \left(1 - \frac{5,000}{10,000} \right)}}$$

$$Q = \sqrt{1,200,000} = 1,096$$

ii. Length of inventory cycle = $\frac{Q}{d} = \frac{1,096}{5,000} \text{ weeks} = 0.22 \text{ weeks}$

iii. Number of production runs = $\frac{d}{Q} = \frac{5,000}{1,096}$
 $= 456$

iv. Production cost = ordering cost + holding cost

$$= 456 \times 30 + Q \left(1 - \frac{d}{r} \right) h$$

$$= 136.8 + 1,096 \left(1 - \frac{5,000}{10,000} \right) 0.5$$

$$= 136.8 + 137$$

$$= \text{L\$}273.80$$

INSIGHT

(b) The standard model is

$$\begin{aligned}
 \text{Maximise} \quad & z = 40x_1 + 30x_2 + 20x_3 + 0S_1 + 0S_2 \\
 \text{subject to:} \quad & 3x_1 + 3x_2 + 2x_3 + S_1 = 30 \\
 & 3x_1 + 3x_2 + 4x_3 + S_2 = 36 \\
 & x_1, x_2, x_3, S_1, S_2, > 0
 \end{aligned}$$

The initial simplex tableau

C		40	30	20	0	0		
B.v		X ₁	X ₂	X ₃	S ₁	S ₂	q	R
O	S ₁	5	3	2	1	0	30	$\frac{30}{5} = 6$
O	S ₂	3	3	4	0	1	36	$\frac{36}{3} = 12$
Z		0	0	0	0	0	0	
C - Z		40	30	20	0	0		

The entering variable is X₁

The leaving variable is S₁

EXAMINER'S COMMENT

The question tests the candidates' knowledge of inventory analysis when the items of stock are sourced internally and Linear Programming using simplex method. About 30% of them attempted the question. Less than 2% who attempted the question scored 1½ marks and below. The major pitfall was the inability of the candidates to interpret the question correctly and to set up initial tableau for simplex method. Candidates are advised to consult the Study Text and other relevant materials for better performance for the future.

SOLUTION 5

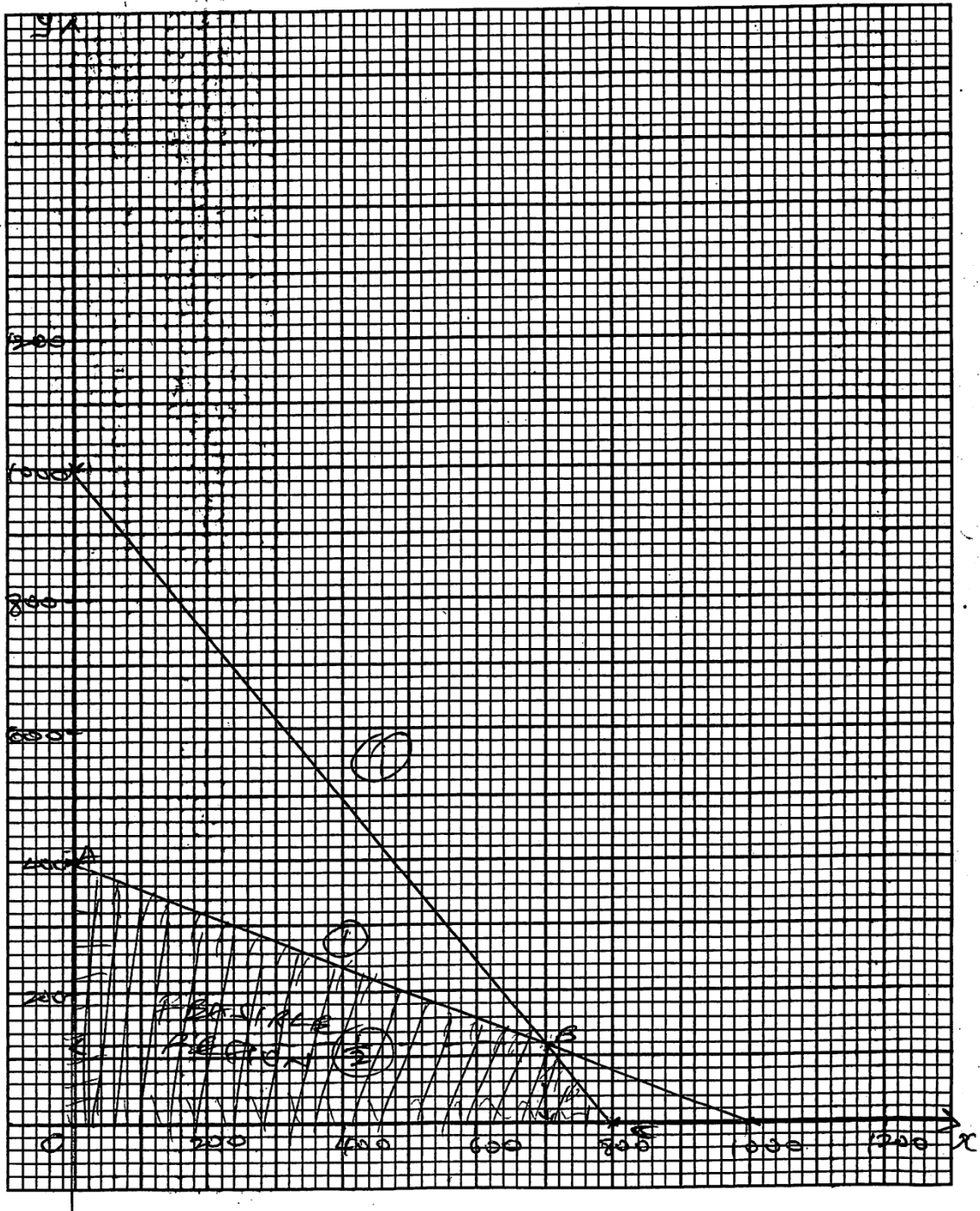
(a) $5x + 4y = 4,000$
 When $x = 0$, $y = 1,000$
 When $y = 0$, $x = 800$
 For $2x + 5y = 2,000$
 When $x = 0$, $y = 400$
 When $y = 0$, $x = 1,000$
 $X = 0$
 $Y = 0$

INSIGHT

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

No. Of Question Question 5(a)

Candidate's No.



G. 5

ATSWA PART I MARCH 2019 DIET

INSIGHT

From the graph,

The corner points of the feasible region are

O (0, 0), A (0,400), B(700, 120), C(800,0)

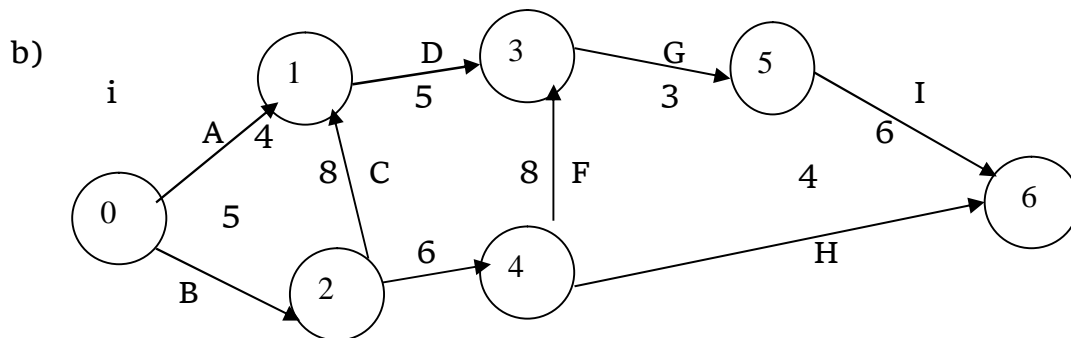
For O (0, 0), $P = 400 (0) + 300 (0) = 0$

For A (0, 400), $P = 400 (0) + 300 (400) = 120,000$

For B (700, 120), $P = 400 (700) + 300 (120) = 316,000$

For C (800,0), $P = 400 (800) + 300 (0) = 320,000$

Maximum profit of ~~N~~320,000 is obtained when $x = 800$ and $y = 0$



ii. Paths	Duration
A, D, G, I	$4 + 5 + 3 + 6 = 18$ days
B, E, H	$5 + 6 + 4 = 15$ days
B, C, D, G, I	$5 + 8 + 5 + 3 + 6 = 27$ days
B, E, F, G, I	$5 + 6 + 8 + 3 + 6 = 28$ days

The critical path is B, E, F, G, I and its duration is 28 days.

EXAMINER'S COMMENT

The question tests candidates' knowledge on Linear Programming and Network Analysis. About 90% of the candidates attempted this question out of which more than 60% scored above the average mark.

The main pitfalls are as follows:

- Lack of adequate understanding of Network Analysis
- Poor scale chosen by the candidates for drawing Linear Programming diagram/graph graphically amongst others.

It is therefore suggested that the candidates should be encouraged to consult textbooks recommended by ICAN and other relevant materials.

They should try and cover all the topics in the syllabus.

INSIGHT

SOLUTION 6

(a) i. The discount rate per year = $\frac{1}{1+r}$
 $= \frac{1}{1+0.15}$
 $= 0.87$

The discounted cost patterns for the two practical's are shown below

Year	Machine x discount cost in Le	Machine y discount cost in Le
1	$15,000 \times (0.87)^0$ $= 15,000$	$20,000 \times (0.87)^0$ $= 20,000$
2	$9,000 \times (0.87)^1$ $= 7,830$	$5,000 \times (0.87)^1$ $= 4,350$
3	$11,000 \times (0.87)^2$ $= 8,325.9$	$13,000 \times (0.87)^2$ $= 9,839.7$
Total cost (Le)	31,155.9	3,4189.7

ii. Machine x is more economical than machine y, because its total cost is smaller.

(b) i. Total earnings in the first hob is

$$S_n = \frac{n}{2} (2a + (n - 1) d)$$

$$a = 120,000 \times 12 = 1,440,000, \quad n = 20, \quad d = 8,000$$

$$\begin{aligned} S_{20_1} &= \frac{20}{2} \{ 2 (1,440,000) + (20 - 1) 8,000 \} \\ &= 10 \{ 2,880,000 + 152,000 \} \\ &= 10 (3,032,000) \\ &= \text{N}30,320,000 \end{aligned}$$

Total earnings is second job is

$$S_n = \frac{n}{2} (2a + (n - 1) d)$$

$$a = 85,000 \times 12 = 1,020,000$$

$$n = 20, \quad d = 12,000$$

$$\begin{aligned} \therefore S_{20_2} &= \frac{20}{2} \{ 2 (1,020,000) + (20 - 1) 12,000 \} \\ &= 10 \{ 2,040,000 + 228,000 \} \\ &= 10 (2,268,000) \\ &= \text{N}22,680,000 \end{aligned}$$

Since $S_{20_2} > S_{20_1}$, then the Chartered Accountant should choose the second job.

INSIGHT

- ii. The overhead cost follows a geometric sequence because

$$\frac{22,500}{15,000} = \frac{33,750}{22,500} = 1.5 = r$$

$$S_n = \frac{a(r^n - 1)}{r - 1}$$

$$a = 15,000, \quad n = 18$$

∴ Total overhead cost for the 18 days

is $S_{18} =$

$$\begin{aligned} S_{18} &= \frac{15,000(1.5^{18} - 1)}{1.5 - 1} \\ &= \frac{15,000(1477.89188 - 1)}{0.5} \\ &= 44,306,756.4 \\ &= \text{R}44,306,756.4 \end{aligned}$$

EXAMINER'S COMMENT

About 25% of the candidates attempted the question. It tests the candidates' understanding of Financial Mathematics, Arithmetic and Geometric Progressions. Less than 10% of the candidates interpreted the word-questions correctly.

Candidates should focus more on the application of mathematics to business and the appropriate mathematical tools necessary for solving them should be well developed for better understanding.

INSIGHT

AT/191/PII.8

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2019**

INFORMATION TECHNOLOGY

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. Which of the following is **NOT** a subset of a Database?
 - A. File
 - B. Field
 - C. Text
 - D. Byte
 - E. Record

2. Which of the following is **NOT** a characteristic of a mainframe computer?
 - A. It is very expensive
 - B. It supports a wide range of peripheral equipment
 - C. It is more powerful than super computer
 - D. It is a large system
 - E. It evolves large quantity of heat

3. Which of the following is **NOT** an example of data transformation?
 - A. Teacher collates marked examination papers
 - B. Examination scores entered into score sheets
 - C. Scores on examination papers
 - D. Score sheet given to the class teachers
 - E. Calculation of the total and average scores of each student

ATSWA PART I MARCH 2019 DIET

INSIGHT

4. Convert 1883 to a hexadecimal number
 - A. 75B
 - B. B75
 - C. 1883
 - D. 3881
 - E. 6275
5. Which of the following is a personal computer?
 - A. Mainframe
 - B. Computer chip
 - C. Super computer
 - D. Mini computer
 - E. Micro computer
6. The unit of measurement for computer memory is **NOT**
 - A. Byte
 - B. Kilobyte
 - C. Multibyte
 - D. Gigabyte
 - E. Megabyte
7. USB is an acronym for
 - A. Unique Serial Bus
 - B. Universal System Bus
 - C. Universal Serial Bus
 - D. Unique Save Bus
 - E. Ultra Serial Bus
8. Which of the following feature does **NOT** describe flat panel display?
 - A. They are lightweight
 - B. They are compact
 - C. They provide better resolution than CRT
 - D. They are modern
 - E. They are very heavy
9. LASER is an acronym for
 - A. Light Amplification for the Simulation of Emitted Radiation
 - B. Light Amplifier for the Simulation of Emitted Radiation
 - C. Light Amplifier for the Simultaneous of Emitted Radiation
 - D. Low Amplifier for the Simultaneous of Emitted Radiation

INSIGHT

- E. Low Amplification for the Simulation of Emitted Radiation
10. Which of the following is **NOT** an external storage device
- A. Secondary storage devices
 - B. Auxiliary storage devices
 - C. Backing storage devices
 - D. Bulk storage devices
 - E. Cache storage devices
11. In computer programming, a repetitive statement is also known as a
- A. Cycle
 - B. Turn around
 - C. Loop
 - D. Round robin
 - E. Ring
12. A spreadsheet package such as MS-Excel **CANNOT** be used to automate
- A. Financial statements, business forecasting
 - B. Transaction registers, inventory control
 - C. Accounts receivable, accounts payable
 - D. Graphical design
 - E. Payroll
13. In order to perform a calculation in a spreadsheet, you need to use a
- A. Table
 - B. Formula
 - C. Field
 - D. Variable
 - E. Arithmetic operation
14. Programs designed to perform specific task are known as
- A. System software
 - B. Application software
 - C. Utility program
 - D. Operating system
 - E. Bespoke package

INSIGHT

15. An approach that permits the computer to work on several programs instead of one is
- A. On-line thesaurus
 - B. Multi-programming
 - C. Over-lapped processing
 - D. Outline processing
 - E. Parallel processing
16. The process in which operating system switches programs based on allocated amount of time and priority is called
- A. Context switching
 - B. Non-preemptive multitasking
 - C. Preemptive multitasking
 - D. Cooperative multitasking
 - E. Multi-processing
17. Which of the following is **NOT** a data processing method?
- A. Batch processing
 - B. Online processing
 - C. Distributed processing
 - D. Traffic processing
 - E. Offline processing
18. A computer monitor technology that uses crystalline materials sandwiched between two planes of glass is known as
- A. Line Crystalline Monitor (LCM)
 - B. Line Crystal Monitor (LCM)
 - C. Line Crystalline Display (LCD)
 - D. Cathode Ray Tube (CRT)
 - E. Liquid Crystal Display (LCD)
19. Which of the following is **NOT** a computer service bureau?
- A. Independent company
 - B. Computer manufacturer
 - C. Computer user selling to other firm
 - D. Computer vendor
 - E. Computer shop

INSIGHT

20. Which of the following is **NOT** a feature of word processing packages?
- A. Text manipulation
 - B. Document checking
 - C. File merging
 - D. Mail merging
 - E. Statistical calculations
21. Which of the following is **NOT** an example of social media?
- A. Facebook
 - B. 2GO
 - C. Internet Explorer
 - D. Netlog
 - E. Instagram
22. Which of the following protocols is responsible for handling the sending of messages of an e-mail system?
- A. SMTP
 - B. HTTP
 - C. HTML
 - D. IMAP
 - E. FTP
23. Which of the following is **NOT** an example of a web browser?
- A. Internet Explorer
 - B. Window Explorer
 - C. Firefox
 - D. Chrome
 - E. Mozilla
24. In a client/server model, a client program is responsible for which of the following?
- A. Distributes data files to other computers
 - B. Provides information and files
 - C. Serves software files to other computers
 - D. Requests for information
 - E. Controls the storage of data files

INSIGHT

25. Which of the following is **NOT** true about a Fiber optic cable?
- A. It transmits light rather than electronic signals
 - B. Ability to transmit signals over long distances
 - C. It is flexible and easier to install and modify
 - D. It has capacity to carry information at greater speed
 - E. It is not affected by electrical interference like noise
26. Which of the following is a source of digital evidence?
- A. Cell phone
 - B. Radio
 - C. Walkie-Talkie
 - D. Ear piece
 - E. Head phone
27. Which of the following definitions best describe computer ethics?
- A. A honest, moral code that should be followed when on the computer
 - B. A computer program about honesty
 - C. A computer that fits on or under a desk
 - D. A list of commandments in the computer Bible
 - E. A behavioural pattern for computer users
28. Which of the following is **NOT** a computer crime?
- A. Impersonation
 - B. Computer virus
 - C. Spoofing
 - D. Spooling
 - E. Scavenging
29. A software that provides a variety of tools for investigating a suspect's personal computer is called
- A. Computer software
 - B. Cyber software
 - C. Forensic software
 - D. Software tools
 - E. Service software

INSIGHT

30. Security threats related to computer crime or abuse include the following **EXCEPT**
- A. Impersonation
 - B. Trojan horse method
 - C. Logic bomb
 - D. Computer virus
 - E. Provision of service

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 key feature of a closed system is
2. A special purpose digital computer used in the production of office document is called
3. A device used in sending printed documents electronically over a long distance is called
4. An audible sound coming from the speaker when an audio CD disc is played on the computer is an example of
5. A device that produces hardcopy is called
6. Expert systems, natural language, object-oriented languages and parallel processing languages are product of a computer generation language called
7. The speed of the processor is measured in
8. The primary memory in micro computer is produced from
9. The computer application package that is generally useful for financial, statistical and mathematical functions as well as tabular presentations is.....
10. Software technology that is capable of processing text, graphics, video, audio and animation is called

INSIGHT

11. The use of several processing units (processors) linked together to perform co-ordinated work concurrently is known as
12. The ethical issue that concerns the collection and use of data about individuals is known as
13. Data capture, preparation, validation and verification are essential processes in processing technique before it is finally processed to give immediate results.
14. Departmental secrecy is exposed in because data is stored locally.
15. Test scripts and application testing are the duty of in the IT department.
16. A computer user who gains unauthorised access to computer facilities (system) bypassing passwords for the fun and challenge of it is called
17. The interconnected system of sites or places all over the world that can store information in multimedia form such as sounds, photos, video and text is known as
18. A system in which documents scattered across many internet sites are directly linked so that a word or phrase in one document becomes a connection to an entirely different document is called
19. The process of extracting or getting information, files and documents from a web page on the internet is called
20. The partnership between users and the systems team/developers so that they can collaborate during the process of developing a system is called

INSIGHT

SECTION B: ATTEMPT ANY FOUR QUESTIONS (50 Marks)

QUESTION 1

- a. Define computer system. (1½ Marks)
- b. State **THREE** advantages and **TWO** disadvantages of using a computer system. (5 Marks)
- c. Define the following computers:
- i. Desktop
 - ii. Minitower
 - iii. Workstation
 - iv. Palm top
 - v. Laptop
 - vi. Pen

(6 Marks)
(Total 12½ Marks)

QUESTION 2

- a. What is ROM? (2½ Marks)
- b. List **THREE** variants of ROM and state **ONE** characteristic of each variant. (6 Marks)
- c. List **FOUR** examples of secondary storage devices. (4 Marks)

(Total 12½ Marks)

QUESTION 3

- a. State **TWO** uses of the following application packages:
- i. Statistical package
 - ii. Desktop publishing package
 - iii. Spreadsheet package (6 Marks)
- b.
- i. State **TWO** distinguishing features of an integrated package and give **TWO** examples. (3 Marks)
 - ii. List **THREE** advantages of using an integrated package. (1½ Marks)
- c. Define the term “font” in relation to word processing. (2 Marks)

(Total 12½ Marks)

INSIGHT

QUESTION 4

- a. i. List **TWO** differences between real time and time sharing data processing. (2 Marks)
- ii. List **TWO** advantages of real time processing technique over time sharing. (2 Marks)
- b. i. Define the term 'multiprocessing'. (1½ Marks)
- ii. List **TWO** ways by which it is achieved. (2 Marks)
- c. i. Who is a system analyst? (1 Mark)
- ii. List **TWO** functions for each of the following technical skilled staff in the information centre:
- i. Business Analyst (2 Marks)
- ii. System Engineer (2 Marks)
- (Total 12½ Marks)**

QUESTION 5

- a. Define Data Communication. (1½ Marks)
- b. List **FOUR** components of a typical Data communication system. (4 Marks)
- c. Enumerate **FOUR** advantages and **THREE** disadvantages of using computer network by individuals, organisations and government. (7 Marks)
- (Total 12½ Marks)**

QUESTION 6

- a. i. What is system development? (1½ Marks)
- ii. Enumerate **THREE** reasons for developing a typical information system. (3 Marks)
- b. i. Define data encryption. (2 Marks)
- ii. List **TWO** types of data encryption methods. (2 Marks)
- c. i. What is computer ethics? (2 Marks)
- ii. State **TWO** issues involved in computer ethics. (2 Marks)
- (Total 12½ Marks)**

INSIGHT

SECTION A

PART 1 MULTIPLE-CHOICE QUESTIONS

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

ATSWA PART I MARCH 2019 DIET

INSIGHT

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

EXAMINER'S COMMENTS

The multiple choice questions comprising of thirty standard questions which cover greater part of the syllabus. The level of the questions was high enough for the ATSWA.

The performance was very good as about 80% of the candidates scored 50% and above of the allocated marks.

PART II SHORT-ANSWER QUESTIONS

- 1. Self contained/self controlled
- 2. Word Processor
- 3. Fax/Fax machine/Facsimile
- 4. Output/Information
- 5. Printer/Output device
- 6. 5th Computer Generation
- 7. Hertz (HZ)
- 8. Silicon Chips

ATSWA PART I MARCH 2019 DIET

INSIGHT

9. Spreadsheet
10. Multimedia
11. Multiprocessing
12. Privacy
13. Online Real Time
14. Decentralized Processing Method
15. Software Testers/Programmers
16. Crackers
17. Web
18. Hypertext
19. Downloading
20. Joint Application Development (JAD)

EXAMINER'S COMMENTS

This section consists of twenty standard questions which cover the entire syllabus but the performance was very poor as about 40% of the candidates scored 35% and above of the allocated marks.

The major pitfall was the inability of the candidates to supply the required computer terminologies.

The candidates are advised to be more familiar with the terminologies in Information Technology.

SECTION B

SOLUTION 1

- a. Computer system can be defined as a data processing machine that is under the control of stored programs which automatically accepts and processes data and supplies or stores the result of that processing and makes it available to end-user. In essence, it
 - Accepts data;

INSIGHT

- Processes the data into information;
- Stores or supplies the information; and
- Makes information available to end users.

b(i) Advantages

- It foster online trading
- It foster research in appropriate academic area
- It processes transaction with high accuracy
- Computer system provides a large storage facilities
- Computer system produces timely and efficient information
- It facilitates prompt decision making
- It is a versatile machine
- It enhances reduction in paper work
- Allows easy access to vast amount of data
- It can be used for a variety of purposes at the same time
- It processes at high speed

(ii) Disadvantages

- It may not be workable because of lack of continuous electrical energy
- Relatively expensive
- It is dependent on human intelligence
- Data loss is eminent during disaster
- Components are fragile
- Radiation from the monitor constitute health hazard
- It is susceptible to virus and hackers attack
- High cost of resources to generate it when light is off

c(i) Desktop computers are the most common type of microcomputers and are designed to fit onto the surface of a desk or workplace. They are designed to complete complex operation in addition to having each component such as mouse, keyboard and screen separate from the main unit and simply attached by wires.

(ii) Minitower computer is a version of the desktop computer but has a smaller main unit or tower. It takes up less space on a surface or desk and also designed to stand upright on any surface.

(iii) Workstation computers are expensive, high end personal computers that have powerful calculating and graphics capabilities. They are frequently used by engineers for product design and testing.

INSIGHT

- (iv) Palm top computers contain several built-in or inter changeable personal information management functions such as calendar to keep track of events; an address and phone file and a task list of things to do. It does not have disk storage devices but with non-standard keyboard (not managed or sized like a typewriter). It is small in size.
- (v) Laptop computer is bigger than notebook and heavier but still portable. Laptops are built to fit on someone's lap to enable the user to type and use anywhere simply by placing it on their lap.
- (vi) Pen computers are specialised portable computers that use a pen-like device to enter data. They can be used to write information on a special input screen and can be used as a pointing device to select processing choice presented on a screen. Pen systems have special software that allows the system to recognize handwritten input. A type of small pen input system is called the Personal Digital Assistant (PDA) or Personal Communicator. Pen computers are designed for workers on the go and often have built-in communication capabilities that allows the PDA to accept voice, fax or data communicators.

EXAMINER'S COMMENTS

This question tests the candidates' understanding of the term Computer System, their various variants, their advantages and disadvantages.

95% of the candidates attempted this question and the performance was very good as over 70% of the candidates scored 65% and above of the allocated marks.

SOLUTION 2

- a. ROM stands for Read Only Memory. The memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories during manufacture. A ROM stores such instructions that are required to start a computer.
- b. Variants of ROM include:
 - i. MROM (Masked ROM)

INSIGHT

- ii PROM (Programmable Read Only Memory)
 - iii EPROM (Erasable and programmable Read Only Memory)

 - iv EEPROM (Electrically Erasable and Programmable Read Only Memory)

 - i. MROM (Masked ROM)
The very first ROMs were hard-wired devices that contained a pre-programmed set of data or instructions. These kinds of ROMs are known as Masked ROMs which are inexpensive.
 - ii. PROM (Programmable Read Only Memory)
PROM is read only memory that can be modified only once by a user. The user buys a blank PROM and enters the desired contents using a PROM program. Inside the PROM chip, there are small fuses which are burnt open during programming. It can be programmed only once and is not erasable.
 - iii. EPROM (Erasable and Programmable Read Only Memory)
EPROM can be erased by exposing it to ultra-violet light for duration of up to 40minutes. Usually an EPROM eraser achieves this function. During programming, an electrical charge is trapped in an insulated gate region. The charge is retained for more than 10 years because the charge has no leakage path. For erasing this charge, ultra violet light is passed through a quartz crystal window (lid). This exposure to ultra-violet light dissipates the charge. During normal use, the quartz lid is sealed with a sticker.
 - iv. EEPROM (Electrically Erasable and Programmable Read Only Memory)
EEPROM can be programmed and erased electrically. It can be erased and reprogrammed about ten thousand times. Both erasing and programming take about 4 to 10 Ms (Millisecond). In EEPROM, any location can be selectively erased and programmed. EEPROMs can be erased one byte at a time, rather than erasing the entire chip. Hence, the process of reprogramming is flexible but slow.
- c. Examples of secondary storage devices include:
Magnetic Floppy disks

INSIGHT

Magnetic tape
Flash disks
Zip disks
CD-R, CD-ROM, CD-RW
DVD-R, DVD-ROM, DVD-RW
Hard disks (is called Winchester disk)
Memory cards/smart cards
Memory stick

EXAMINER'S COMMENTS

This question tests the candidates' understanding of the computer system primary storage – ROM (Read Only Memory) and its various variants. It also demands for some computer system secondary storage devices.

This question was very popular among the candidates as about 75% of them attempted it.

The performance was very good as over 90% of them scored 70% and above of the allocated marks.

SOLUTION 3

a. Uses of Application Packages

i. Statistical package

The uses include:

- For carrying out the analysis of statistical data
- For presenting data in form of tables, charts and graphs
- Use for simulation and regression analysis

ii. Desktop Publishing Package

The uses include:

- For producing documents that look like professional publications
- For combining variety of attributes such as text, artwork, photographs and a variety of magazine-style fonts.
- Use for integrating files from other programs

iii. Spreadsheet Package

ATSWA PART I MARCH 2019 DIET

INSIGHT

The uses include:

- For carrying out financial analysis on data
- For depicting data on a wide variety of charts
- For producing financial books/statements
- Use to forecast future financial performance
- Use for evaluating arithmetic functions

b. **Distinguishing Features of Integrated Packages include:**

- i. They perform more than one application function using the same data for the different functions
- ii. They usually have a primary application function as the base application function
- iii. Reporting capabilities

Examples of Integrated Packages

- MS-Excel
- MS-Words
- Framework
- Symphony
- MS-Works

Advantages of using an integrated package include:

- Makes transfer of data between applications easy
- Saves time of installing different applications
- Saves memory space

- c. Font is a term that describes the style of writing a character or symbol. It can further be defined as a combination of typeface and other qualities such as size, pitch and spacing.

EXAMINER'S COMMENTS

This question tests the candidates' understanding of three specific Computer Application packages. It also demands for specific features of an Integrated Software.

The question was well attempted as over 60% of the candidates attempted it. The performance was highly encouraging as about 50% of the candidates scored 50% and above of the allocated marks.

INSIGHT

SOLUTION 4

a(i) Difference between Real time and time sharing processing

Real Time	Time-Sharing
Very complex to design, implement and maintain	Simple to design and implement
Risk of unauthorised access is high	Risk is minimised
Used for critical processing	Time of processing is shared among users/processors
Information is immediate	Need not be immediate
Processing may be done on one system	Processing is done on many processors

(ii) **Advantages of real time processing technique**

- Computer output is instantaneously made available
- The output from real-time processing can be used to influence the transaction
- Avoid the use of consuming and unnecessary paper work
- It enables users to see the cumulative effect of all transactions for decision making
- It avoids costly and time consuming data preparation and control operations

b(i) **Multiprocessing**

This is an act of executing several processes simultaneously by a computer with more than one Central Processing Unit (CPU). Computers that have more than one CPU are called multi-processors

(ii) It is achieved by:

- Context switching
- Cooperative or Non pre-emptive multitasking
- Pre-emptive multitasking

INSIGHT

- c(i) A System Analyst investigates and analyses business problems and then designs information systems that provide a feasible solution, typically in response to requests from their business or a customer.
- (ii) **Business Analyst**
- Analysing user's needs
 - Gathering of user's requirements
 - Documenting user's needs
 - Creating a project plan to design the resulting technology solution
- (iii) **System Engineer**
- Designing system-level software
 - Programming system software like operating system, database system etc
 - They study and understand how both software and hardware are integrated (function well).

EXAMINER'S COMMENTS

This question tests candidates' knowledge on the differences between Real time and Time Sharing Processing Techniques. It also demands for the meaning of multiprocessing technique and the functions of two skilled computer staff.

The question was poorly attempted as less than 35% of the candidates attempted it. The performance was very poor as less than 30% of the candidates scored 50% and above of the allocated marks.

The pitfalls were the inability to:

- i. Distinguish between Real time and Time Sharing Processing Techniques.
- ii. Define Business Analyst and System Engineer.

In future, candidates are advised to pay more attention to Systems Development and Processing Techniques.

INSIGHT

SOLUTION 5

- a. **Data Communication** – Is the transmission of data and information in coded form from device or computer to another device or computer over communication medium (channel) like twisted pair coaxial wire, fiber optic cables, microwave or infrared light etc.
- b. The components of a typical data communication system include:
- (i) Transmission Channel – Link between the communicating parties e.g wired and wireless media
 - (ii) Modems – Convert analog signals into digital signals and vice versa.
 - (iii) Transmitter or computer that sends data through the channel.
 - (iv) Receiver or computer that receives the transmitted data from the channel
 - (v) Multiplexer that combines several signals from multiple devices into a single stream of data and transmit it over a channel
 - (vi) Front-end processor
 - (vii) Network Interface Card
 - (viii) Switch
 - (ix) Bridge
 - (x) Repeater
 - (xi) Protocol
- c. **Advantages of Computer network include:**
- (i) There is sharing of peripheral devices such as printers, scanners, disk drives to minimize cost
 - (ii) Sharing of programs and data stored on common shared storage device
 - (iii) Better communication can be achieved
 - (iv) Securing of information can be achieved via backed up of networked storage devices
 - (v) There is easy access to databases on the network by authorised users
 - (vi) It offers computer users an efficient data processing at a reasonable cost
 - (vii) There is sharing of expert experience among users
 - (viii) Network allows for better localised control over physical and procedural aspect of the system
 - (ix) There is greater user involvement and familiarity with the use of computer technology

INSIGHT

d. **Disadvantages of using network include:**

- (i) Initial costs of installation is high or prohibitive
- (ii) There is duplication of data on files of different computers on the network
- (iii) There is difficulty in administration and control especially for large networks
- (iv) There is the need for compatibility of equipments used on the network
- (v) Failure of the server may ground the network
- (vi) Cable break may stop the entire network

EXAMINER'S COMMENTS

This question tests candidates' understanding of Data Communication and Computer Networks.

The question was poorly attempted as less than 35% of the candidates attempted it. Fortunately, the performance was good as over 60% of those that attempted it scored above 50% of the allocated marks.

SOLUTION 6

- a(i) System Development is the process of creating a new system that is entirely different from existing system or the process of improving the existing system to reflect the present day requirements.
- (ii) The reasons for developing a typical information system may include:
- Extension of business by opening new branches
 - Inability of the present system to process data to the required time schedule
 - Need for more control of information that the present system cannot provide
 - Anticipated increase in the volume of data to be processed or handled
 - To maintain a competitive position
 - To take advantage of new technology
 - Expansion following a merger or acquisition
- b(i) **Data Encryption** - This is the technique of disguising data/information in order to preserve its confidentiality during transmission and when stored. Data encryption is a practice of

INSIGHT

encoding data so that it is no longer in its original form and cannot be read until it gets to the receiver. This is an important part of data security.

(ii) Two types of data encryption methods:

- Symmetric encryption method
- Asymmetric encryption method
- Hashing method

c(i) Definition of Computer Ethics

Computer ethics is concerned with how computing professionals should make decisions regarding professional and social conduct.

(ii) Issues of Computer Ethics

- **Privacy:** Concerns collection and use of data about individuals
- **Accuracy:** Relates to the responsibility of those who collect data to ensure correctness
- **Property:** Relates to who own the data
- **Access:** Relates to the responsibility of those who have data to control and who is able to use it.

EXAMINER'S COMMENTS

This question tests candidates' understanding of Systems Development and Data Encryption.

Over 90% of the candidates attempted this question but the performance was very poor as about 70% of those that attempted it scored less than 30% of the allocated marks.

The pitfall was the inability of the candidates to understand the question. In future, the candidates should study Systems Development and Data Encryption properly.