

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.

ATSWA PART II MARCH 2018 DIET

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INSIGHT

AT/181/PII. 5 **ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA**

**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS - MARCH 2018**

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. Which of the following documents is most useful for Business Managers?
 - A. Financial statements for the last financial year
 - B. Bank statements for the past year
 - C. Tax records for the past five years
 - D. Budgets for the coming financial year
 - E. Chairman's statement for the previous year

2. Under the International Accounting Standards Board (IASB)'s framework for the preparation and presentation of financial statements, which of the following qualitative characteristics will make financial information more reliable?
 - A. Prudence and comparability
 - B. Faithful presentation and verifiability
 - C. Going-concern and Timeliness
 - D. Accruals and understandability
 - E. Materiality and Relevance

3. The residual interest in an entity after the value of all its recognised liabilities has been deducted from the value of all its recognised assets is

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- A. Income
 - B. Expenses
 - C. Assets
 - D. Equity
 - E. Liabilities
4. The following are relevant in choosing a method of computing the depreciation of a depreciable asset EXCEPT
- A. The cost and residual value of the asset
 - B. The amount of money being owed in respect of the asset
 - C. The acquisition date of the asset
 - D. The depreciation policy of the owner of the asset
 - E. The intensity of use of the asset
5. A company with ordinary share of ₦1.00 each issued shares at a price of 90k per share. What is the share premium or discount?
- A. Premium of 10k per share
 - B. Discount of 90k per share
 - C. Premium of ₦1 per share
 - D. Discount of ₦1.90 per share
 - E. Discount of 10k per share
6. Which of the following is **NOT** included in the Cost of inventories?
- A. Purchase cost
 - B. Interest and borrowing costs
 - C. Import duties
 - D. Handling charges
 - E. Transport cost of bringing the inventory to its present location

Use the following information to answer questions 7 & 8.

A trader paid insurance premium of ₦27,000 for 15 months ended 31 March, 2016. He prepares account to 31 December

7. How much should be charged to the statement of profit or loss as Insurance expenses for year 2015?
- A. ₦27,000

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- B. ₦21,600
- C. ₦20,600
- D. ₦18,400
- E. ₦5,400

8. How much of assets/liabilities should be disclosed in the statement of financial position as at 31 December 2015?
- A. ₦27,000 as current asset
 - B. ₦21,600 as current liability
 - C. ₦6,760 as current liability
 - D. ₦5,400 as current liability
 - E. ₦5,400 as current asset

Use the following information to answer questions 9 & 10

SALES LEDGER CONTROL ACCOUNT

		GH¢			GH¢
Jan 1	Balance b/d	26,000	Jan 1	Balance b/d	1,720
31	Sales	152,600	31	Bank	131,100
	Dishonoured cheques	5,000		Discounts	6,900
	Stopped cheques	2,000		Returns	2,600
	Balance c/d	1,840		Purchases Ledger	7,200
		<hr/>		Balance c/d	<hr/>
		187,440			37,920
		<hr/>			<hr/>
Feb 1	Balance b/d	37,920	Feb 1	Balance b/d	1,840

9. The amount of GH¢152,600 in the control Account above represents
- A. Total credit sales
 - B. Total of all the debtors of the business
 - C. The total sales for the month

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- D. Cash sales only
 - E. The double entry for the total of the sales account
10. The sum of GH¢131,100 described as “Bank” represents
- A. Cash sales for the month including discounts
 - B. Cash sales for the month excluding discounts
 - C. Receipts from trade debtors only
 - D. Receipts from all the debtors of the business
 - E. Takings from both cash and credit sales
11. A cheque for L\$8,000 drawn in favour of Tajudeen Okeowo was wrongly posted to the credit of his account. The entry necessary to correct the error is
- A. Dr. Suspense Account with L\$16,000
Cr. Tajudeen’s Account with L\$16,000
 - B. Dr. Bank with L\$8,000
Cr. Tajudeen’s Account with L\$8,000
 - C. Dr. Suspense Account with L\$8,000
Cr. Tajudeen’s Account with L\$8,000
 - D. Dr. Tajudeen’s Account with L\$16,000
Cr. Suspense Account with L\$16,000
 - E. Dr. Tajudeen’s Account with L\$8,000
Cr. Suspense Account with L\$8,000
12. The accounting entries required for increase in allowance for doubtful debts are
- A. Dr. Statement of profit or loss
Cr. Allowance for doubtful debts account
 - B. Dr. Statement of profit or loss
Cr. Bad debts account
 - C. Dr. Trade Receivable account
Cr. Allowance for doubtful debts account
 - D. Dr. Allowance for doubtful debts account
Cr. Trading account
 - E. Dr. Allowance for doubtful debts account
Cr. Trade receivables account

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13. A typical Partnership Deed contains the following provisions **EXCEPT**
- A. Rights and duties of each partner
 - B. Amount of capital to be contributed by each partner
 - C. Profit or loss sharing ratio
 - D. Tax payable by each partner
 - E. The rate of interest on capital
14. In the absence of a Partnership Deed, loans advanced by a partner to the partnership are recognised in the
- A. Partner's capital account interest free
 - B. Partner's current account at discount
 - C. Partner's statement of distribution of income
 - D. Loan account at 5 per cent interest rate
 - E. Loan account at 21 per cent interest rate
15. Which of the following transactions is **NOT** recognised in the partner's current account?
- A. Share of goodwill
 - B. Interest on capital
 - C. Interest on drawings
 - D. Partner's drawings
 - E. Partner's salary
16. The double entry required to record partner's drawings of inventory for personal use is
- A. Dr. Statement of profit or loss
Cr. Inventory account
 - B. Dr. Partner's current account
Cr. Inventory account
 - C. Dr. Inventory account
Cr. Statement of profit or loss
 - D. Dr. Inventory account
Cr. Partner's current account
 - E. Dr. Statement of distribution of income
Cr. Inventory account
17. Which of the following accounts is **NOT** peculiar to a partnership business?
- A. Capital account
 - B. Current account
 - C. Interest on drawing account

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- D. Drawings account
 - E. Current taxation account
18. Which of the following is **NOT** a reason for forming a partnership?
- A. To eliminate competition
 - B. To increase financial resources
 - C. To increase the value of assets
 - D. To reduce overhead expenses
 - E. To take advantage of bulk purchases
19. Benju Limited with Ordinary shares of 75k each issued its share at a price of 50k per share. In effect
- A. The share was issued at market price of 125k per share
 - B. The share was issued at par
 - C. The share was issued at a premium of 25k per share
 - D. The share was issued at bonus
 - E. The share was issued at a discount of 25k per share
20. In a situation where the ordinary share of a company is over subscribed, it means that
- A. Premium on the company's share is very high
 - B. Nominal value of the share is more than market price
 - C. Number of ordinary shares applied for is more than the number of shares available for issue by the Company
 - D. The shares were issued at a bonus
 - E. Ordinary and preference shareholders applied for the shares
21. Which of the following statements about the valuation of inventory is correct according to IAS 2 Inventories?
- A. The cost of goods manufactured by an enterprise will include materials and labour only, overhead costs cannot be included
 - B. LIFO is an accepted valuation method for inventory
 - C. Inventory items are normally to be valued at the lower of cost and net realisable value
 - D. Selling price less estimated profit margin may be used to arrive at cost if this gives a reasonable approximation to actual cost
 - E. Inventory items are valued at net realisable value
22. The prime cost of goods manufactured by companies is defined as the following:

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- A. Opening inventory and factory overhead
 - B. Cost of factory overhead, plus wages
 - C. Opening inventory of material plus purchase of raw materials
 - D. Direct cost of materials plus cost of direct labour plus direct factory overhead
 - E. Direct cost of materials plus opening work in progress
23. Adex Limited with accounting year end of 31 December 2016 paid rent and rates amounting to Le1,800,000 which covers three years up to 31 December 2018. As at 31 December 2016, Le250,000 was outstanding in respect of rent for the year 2015. Determine the rent and rates that would be charged in the company's statement of profit or loss for the year ended 31 December 2016
- A. Le800,000
 - B. Le600,000
 - C. Le850,000
 - D. Le680,000
 - E. Le720,000
24. Which of the following is **NOT** an asset?
- A. Prepayment
 - B. Inventory
 - C. Goodwill
 - D. Accrual
 - E. Bills receivable
25. When goods are returned by branch customer to the head office, the double entry to be made at the head office is
- A. Dr. Branch inventory control Cr. Branch receivables
 - B. Dr. Head office current Cr. Branch receivables
 - C. Dr. Goods sent to branch Cr. Branch receivables
 - D. Dr. Branch adjustment Cr. Branch receivables
 - E. Dr. Branch payables Cr. Branch adjustment
26. The consideration paid to a lessor for allowing another party to utilise a legal right owned by him is called

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- A. Royalty
 - B. Premium
 - C. Short working receivable
 - D. Short working payable
 - E. Commission
27. The profit on hire purchase transaction is calculated by the hire purchase vendor as
- A. Hire purchase price less cost price
 - B. Hire purchase price less cash selling price
 - C. Cash selling price less hire purchase
 - D. Cash selling price less deposit
 - E. Cash selling price less cost price
28. Which of the following is **NOT** a characteristic of a finance lease?
- A. The lease term does not cover the major part of the economic life of the asset
 - B. The leased asset are specifically built for the lessee
 - C. The lessee could take title of the asset at the end of the lease term
 - D. The losses on cancellation of leased asset is borne by the lessee
 - E. Only the lessee can capitalize the leased asset
29. A Venturer's personal account in the books of co-venturer is called:
- A. Common Account
 - B. Memorandum Joint Venture Account
 - C. Joint Venture Account
 - D. Joint Venture Profit or Loss Account
 - E. Joint Venture Bank Account
30. Buildwell Venture, a building contractor signed a contract for construction and maintenance of a housing estate. The housing estate would be built over 4 years and maintained for 10 years. Both contracts are negotiated as a single package and they are closely interrelated to each other. Both contracts should be
- A. Recognised under the completed contract method
 - B. Accounted for as a single contract
 - C. Accounted for as separate contracts

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- D. Accounted for under different methods - completed contract method and percentage of completion method
- E. Carried out by different contractors

**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 assumption in accounting which states that an entity will continue to operate for the foreseeable future and has neither the intention to go into liquidation nor reduce materially the scale of its operations is called
2. The IASB conceptual framework identified two classes of qualitative characteristics as fundamental and characteristics.
3. A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity is called
4. In an IFRS compliant Financial Statements, Long term borrowings and loan notes can be classified as
5. Loan Notes that are repayable at a future date are referred to as.....
6. Costs incurred in the factory during production which cannot be easily traced to items being manufactured are called
7. The assets that are convertible to cash or near cash within one year and are readily available to discharge the liabilities of the company are known as

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8. A payment made in advance for services or benefit that has not been received or enjoyed is known as
9. The depreciation of a finance lease asset is based on the period of the of the asset.
10. The aggregate amount of cost incurred and recognised profit less cash received and receivable is
11. The branches that keep a separate account of their own operations are described as branches.
12. The accounts prepared by a joint venture which do not form part of the double entry system is referred to as.....

Use the following information to answer questions 13 & 14

The total Trade Receivables Account balance of a business concern is ₦650,000. Out of this, 2% is irrecoverable, 5% of the balance is unlikely to be collected.

13. What is the amount of bad debts?
14. What is the amount to be provided for doubtful debts?
15. An amount set aside from profit before tax for specific uses in business operation is called
16. State the dual effect of overstated closing inventory in the income statement.
17. State one of the criteria used to classify partners in a Partnership.
18. The partner whose liability is limited to the amount he has agreed to contribute to the business is called
19. State which class of partners may be entitled to partnership salary.
20. State the regulatory authority in your country to which a copy of partnership agreements signed by partners should be submitted.

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SECTION B ATTEMPT ANY FOUR QUESTIONS (50 Marks)

QUESTION 1

APIA PELE Limited extracted the following trial balance from its ledgers at 31 December 2016

	DR Le '000	CR Le '000
Inventory - 1 January 2016	900,000	
Revenue		4,407,000
Non-current assets at cost:		
Building	3,750,000	
Plant and equipment	525,000	
Motor vehicles	120,000	
Accumulated depreciation:		
Buildings		1,500,000
Plant and equipment		180,000
Motor vehicles		45,000
Cash at bank	37,500	
Administrative expenses	827,250	
Distribution cost	243,750	
Suspense		562,500
Retained earnings		210,000
Trade receivables and payables	328,500	393,750
Purchases	1,575,000	
Dividend paid	75,000	
Tax payable		521,250
Share premium		187,500
Ordinary share at Le1 each		<u>375,000</u>
	<u>8,382,000</u>	<u>8,382,000</u>

The following additional information are relevant:

- (i) Inventory at 31 December 2016 was valued at Le 600,000,000. While carrying out the inventory taking exercise, an error in the previous year inventory count was discovered. The inventory brought forward at beginning of the year has been Le 825,000 and not Le 900,000 as stated in trial balance.
- (ii) 375 million ordinary shares were issued at Le 1.50 on 1 December 2016. The proceeds have been left in suspense account.

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- (iii) No dividend is being proposed.
- (iv) Income Tax for the year is Le 243,750,000

You are required to prepare:

- a. Statement of profit or loss and other comprehensive income for the year ended 31 December 2016
(2 Marks)
 - b. Statement of changes in equity for the year ended 31 December 2016.
(5½ Marks)
 - c. Statement of financial position as at that date. (5 Marks)
- (Total 12½ Marks)**

QUESTION 2

- a. An entity is required to apply the accounting policies standard that applies to a transaction, item or event. However, management are allowed to develop and apply accounting policies where no one exists.

State **FOUR** conditions to be met before the policy developed could be considered reliable. 5 Marks

- b. The Financial Accountant of AVENUE Limited encountered the following during the process of preparing the financial statement of the company for the year 2016.

While carrying out the inventory taking exercise, an error in the previous year inventory was discovered. The actual inventory figure brought forward at the beginning of the year was ₦360m and not ₦400m as stated in the trial balance. The retained earnings figure at the beginning of the year was ₦260m and profit was ₦700m.

You are required to:

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- i. Adjust the inventory. (3 Marks)
- ii. Show the extract of the statement of changes in equity at 31 December 2016. (4½ Marks)

(Total 12½ Marks)

QUESTION 3

The books of Fanny Enterprises revealed that the trial balance showed a difference of GH¢2,406,640 which has been transferred to the debit side of a suspense account. Further investigation revealed the following:

- (i) Purchases of office equipment for GH¢255,000 was debited to office expenses account.
- (ii) Sales day book was overcast by GH¢360,000
- (iii) An invoice for GH¢197,400 received from a supplier was entered correctly in the purchases day book, but was posted to the debit side of the supplier's account.
- (iv) A credit note for GH¢216,000 issued to a debtor was entered in the returns inward book as GH¢126,000 and was posted to the ledger accordingly.
- (v) A debtor who owed a sum of GH¢4,200 died without leaving anything behind. This amount was written off his account as bad debt but no other entry was made in the books.
- (vi) Cash drawings amounting to GH¢90,000 have not been recorded in the books.
- (vii) A payment of GH¢28,000 for electricity was entered correctly in the cash book but as GH¢82,000 in the electricity account.
- (viii) A motor vehicle was bought for GH¢2,500,000 by cheque. This transaction was only recorded in the cash book.

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(ix) Discounts received GH¢8,760 have not been posted from the cash book to ledgers.

You are required to prepare:

- a. Journal entries with narrations to correct the errors.
- b. Suspense account.

(12½

Marks)

QUESTION 4

Bala, Saka and Coo have been in partnership for many years trading under the business name, Bacosa Shine.

Their profit sharing ratio is 3:2:1. They decided to dissolve the partnership on 30 June 2017 when their statement of financial position was as follows:

BACOSA SHINE		
Statement of financial position as at 30 June 2017		
	L\$000	L\$000
Non-current assets:		
Premises		10,830
Furniture & fittings		<u>3,032</u>
		13,862
Current assets:		
Inventory	5,198	
Receivables	8,881	
Cash	<u>983</u>	<u>15,062</u>
		<u>28,924</u>
Equity and liabilities:		
Capital accounts:		
Bala	8,519	
Saka	6,516	
Coo	<u>1,000</u>	
		16,035
Current accounts:		
Bala	1,173	
Saka	1,011	
Coo	<u>(1,278)</u>	
		906
Non-current liabilities:		
Loans		9,600
Current liabilities:		
Payables		<u>2,383</u>

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28,924

Additional information:

- (i) The assets were sold for cash as follows:
- | | |
|-----------------------|------------|
| Inventory | 3,826,000 |
| Premises | 11,191,000 |
| Fixtures and fittings | 1,360,000 |
- (ii) Receivables were realized for L\$8,448,000.
- (iii) The loan was paid in full.
- (iv) Payables were discharged less L\$100,000 while the dissolution expenses of L\$920,000 were incurred and paid.
- (v) The partner with a debit balance in his account was insolvent.

Required:

Prepare the following relevant ledger accounts to close the books of the partnership.

- Realisation Account
- Cash account
- Partners' Capital Account

(Total 12½
Marks)

QUESTION 5

The following trial balance was extracted from the ledger of Labox Nigeria Limited as at 31 December 2016.

	₦'000	₦'000
Ordinary share capital		15,000
Share premium		3,000
9% loan notes		6,000
General reserve		4,640
Retained earnings 1 January 2016		1,530
Plant and machinery at cost	22,000	
Motor vehicle at cost	6,500	
Accumulated depreciation - Plant and machinery		2,400
Accumulated depreciation - Motor vehicle		1,800
Furniture and fittings	2,400	
Accumulated depreciation - Furniture & fittings		560

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Inventories 1 January 2016	2,680	
Account receivables	24,200	
Bills receivables	2,834	
Account payables		18,210
Cash in hand and Bank	8,620	
Revenue (Net)		74,880
Purchases (Net)	46,160	
Carriage inwards	1,620	
Salaries & Wages	5,660	
Rents and Rates	2,160	
Insurance	870	
Office expenses	1,830	
Bad debt	106	
Electricity	172	
Interest income		50
Motor running expenses	258	
	<u>128,070</u>	<u>128,070</u>

The following additional information is provided:

- (i) Provision is to be made for depreciation on the non-current assets at the following rates:

Plant and machinery	15%	
Motor vehicle	20%	
Furniture & fittings		10%

- (ii) The following payments were made in advance in respect of:

Rent	₤560,000
Insurance	₤146,000

- (iii) One year interest is due on loan notes.

- (iv) Provision is to be made for audit fees of ₤1,200,000.

- (v) Closing inventories 31/12/2016 ₤4,860,000.

- (vi) Current year income tax charged ₤3,210,000

- (vii) Authorised and fully paid share capital.
15,000,000 ordinary shares at ₤1 each ₤15,000,000

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You are required to prepare:

- a. The statement of profit or loss.
- b. The statement of financial position as at 31 December 2016 of Labox Nigeria Limited. (12½ Marks)

QUESTION 6

Jeunsoke Construction Company Limited won a construction contract along with existing contracts for the sum of N800 million on 1 January 2015 over a period of four years. The contract commenced immediately with the following details available as at 31 December 2016.

	N'000
Work in progress	276,360
Materials purchased	150,250
Materials transferred from another site	6,220
Materials at site 31 December 2016	9,880
Site direct wages	65,420
Site overheads	26,880
Sub-contract cost	22,500
Professional charges	25,200
Plant delivered to site	35,000
Site direct wages accrued	4,630
Hire of equipment	6,900
Head office overhead charged to contract	8,500
Cost of work done not yet certified	28,300
Cash received on contract	250,000
Plant on site at 31 December 2016	21,500

Assume that the profit taken for the accounting period ended 31 December 2016 was N23,600,000.

Required:

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Prepare the Contract Account for the year ended 31 December 2016.
(Show the reconciliation of work in progress).

(12½ Marks)

SOLUTION TO MCQ

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

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30. B

Examiner's Report

The questions were attempted by all the candidates. About 70% of them scored above average.

SOLUTION TO SHORT ANSWER QUESTION

1. Going concern
 2. Enhancing
 3. Assets
 4. Non-current Liabilities
 5. Redeemable Loan Notes
 6. Factory overhead
 7. Current Assets/Liquid Assets
 8. Prepayments
 9. Economic /Useful Life
 10. Working in-progress/Amount due from customers
 11. Autonomous branches/independent branches/self Accounting
 12. Memorandum Joint Venture Account
 13. ₦13, 000
 14. ₦31, 850
 15. Provision/Reserve
 16. It reduces cost of sales and increases the gross profit
 17.
 - i. Participation in Management
 - ii. Extent of liability borne
 18. Limited partner
 19. General /active partner
 20. Nigeria – Corporate Affairs Commission
Tutorial
- Q1. $₦650, 000 \times 2\% = ₦13, 000$
Q2. $(₦650, 000 - ₦13, 000) \times 5\% = ₦31, 850$

Examiner's Report

The questions were attempted by all candidates while about 80% scored above average marks.

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SOLUTION TO QUESTION 1

1. a. **APIA PELE LTD**
STATEMENT OF PROFIT OR LOSS & OTHER
COMPREHENSIVE INCOME FOR THE YEAR ENDED 31
DECEMBER 2016

	Le '000	Le '000
Revenue		4,407,000
Cost of sales (W1)		<u>1,875,000</u>
GROSS PROFIT		2,532,000
Less: EXPENSES		
Administrative expenses	827,250	
Distribution expenses	<u>243,750</u>	<u>1,071,000</u>
NET PROFIT BEFORE TAX		1,461,000
Income Tax		<u>243,750</u>
NET PROFIT FOR THE YEAR		1,217,250
OTHER COMPREHENSIVE INCOME		
TOTAL COMPREHENSIVE INCOME		NIL
		<u>1,217,250</u>

b. **STATEMENT OF CHANGE IN EQUITY FOR THE YEAR**
ENDED

	31 DECEMBER 2016			
	SHARE CAPITAL	SHARE PREMIUM	RETAINED EARNINGS	TOTAL
	Le '000	Le '000	Le '000	Le '000
Bal at 1 Jan 2016	375,000	187,500	210,000	772,500
Prior period adjustment	-	-	<u>(75,000)</u>	<u>(75,000)</u>
Restated bal. 1 Jan. 2016	375,000	187,500	135,000	697,500
Profit for the year	-	-	1,217,250	1,217,250
Dividend paid	-	-	<u>(75,000)</u>	<u>(75,000)</u>

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Shares issued	<u>375,000</u>	<u>187,500</u>	<u>-</u>	<u>562,500</u>
	<u>750,000</u>	<u>375,000</u>	<u>1,277,250</u>	<u>2,402,250</u>

c.

PAPIA PELE LTD
STATEMENT OF FINANCIAL POSITION AS AT 31
DECEMBER 2016

	COST Le '000	DEP. Le '000	CA Le '000
Building	3,750,000		2,250,000
		1,500,000	
Plant & Equipment	525,000	180,000	345,000
Motor Vehicle	<u>120,000</u>	<u>45,000</u>	<u>75,000</u>
	<u>4,395,000</u>	<u>1,725,000</u>	<u>2,670,000</u>
TOTAL NON-CURRENT ASSETS			2,670,000
CURRENT ASSETS			
Inventories (600 - 75)		525,000	
Trade Receivables		328,500	
Cash at bank		<u>37,500</u>	
TOTAL CURRENT ASSETS			<u>891,000</u>
TOTAL ASSETS			<u>3,561,000</u>
EQUITY AND LIABILITIES			
Share Capital			750,000
Share Premium			375,000
Retained Earnings			<u>1,277,250</u>
EQUITY			<u>2,402,250</u>
CURRENT LIABILITIES			
Tax payable (521,250 + 243,750)	765,000		
Trade payables	<u>393,750</u>		
TOTAL CURRENT LIABILITIES			<u>1,158,750</u>
EQUITY AND LIABILITIES			<u>3,561,000</u>

ATSWA PART II MARCH 2018 DIET

INSIGHT

Working 1 – COST OF SALES

	Le '000
Opening Inventory	900,000
Purchases	<u>1575,000</u>
	2475,000
Less: closing Inventory	<u>600,000</u>
	<u>1,875,000</u>

Working 2 – INVENTORY ADJUSTMENTS

Wrong balance bl.1	900,000
Less: Current figure	<u>825,000</u>
ADJUSTING FIGURE	<u>75,000</u>

Working 3 – SHARE PREMIUM

	Le '000
Total of shares proceed Le 375m x 1.5 =	562,500
Less value of shares 375m x Le 1	<u>375,000</u>
Value of share premium	<u>187,500</u>

Examiner's Report

The question on basic knowledge of IFRS was attempted by about 75% of the candidates. They put up poor performance as about 9% of those who attempted it scored below average marks.

SOLUTION TO QUESTION 2

a. POINTS TO BE MET BEFORE POLICIES DEVELOPED COULD BE CONSIDERED RELIABLE

They will be considered reliable if it:

- i. Represents faithfully the financial position, the performance and cash flows;
- ii. Reflects the economic substance of transactions of other events and conditions;
- iii. Is neutral
- iv. Is prudent and
- v. Is complete in all material respects.

INSIGHT

b. i. **INVENTORY ADJUSTMENTS**

	N '000
Opening balance b/d	400,000
Actual figure to be	<u>360,000</u>
Adjustment required	<u>40,000</u>

ii. **Extract: STATEMENT OF CHANGES IN EQUITY AS AT 31 DECEMBER 2016**

	RETAINED EARNINGS
	N '000
Balance at 1 Jan. 2016	260,000
Prior year adjustment	<u>(40,000)</u>
Restated balance at 1 Jan. 2016	220,000
Profit for the year	<u>700,000</u>
Balance at 31 December 2016	<u>920,000</u>

Examiner's Report

The question that tested candidates' knowledge in the presentation of final accounts in line with IFRS was attempted by about 20% of the candidates and put poor performance as they scored below average marks.

SOLUTION TO QUESTION 3

**Fanny Enterprises
General Journal**

	Dr.	Cr.
	N	N
i) Office Equipment Account Dr.	255,000	
Office Expenses Account		255,000
Being error of principle now corrected		
ii) Sales Account Dr.	360,000	
Suspense Account		360,000
Being sales overcast now corrected		
iii) Suspense Account Dr.	394,800	
Trade Payables Account		394,800
Being wrong posting to supplier's account now corrected		
iv) Sales Return Account Dr.	90,000	
Trade Receivable Account		90,000

INSIGHT

Being under posting of amount to a customer's account			
v)	Bad Debts Account	Dr.	4,200
	Suspense Account		4,200
Being debt of a deceased customer written off as bad			
vi)	Drawings Account	Dr.	90,000
	Cash Book		90,000
Being correction of error of omission			
vii)	Suspense Account	Dr.	54,000
	Electricity Account		54,000
Being correction of amount over posted into the electricity account now corrected			
viii)	Motor Vehicle Account	Dr.	2,500,000
	Suspense Account		2,500,000
Being amount not recorded in the ledger now recorded			
ix)	Suspense Account	Dr.	8,760
	Discount Received Account		8,760
Being discount received omitted from the ledger now recorded			

Suspense Account	
	N
Difference in Trial Balance	N
2,406,640	
Trade Payables	
394,800	
Electricity	
54,000	
Discount Received	
<u>8,760</u>	
<u>2,864,200</u>	
	N
	Sales
	360,000
	Bad Debts
	4,200
	Motor Vehicles
	<u>2,500,000</u>
	<u>2,864,200</u>

Examiner's Report

INSIGHT

The question on correction of error and the use of suspense account was attempted by about 75% of the candidates and good performance was displayed as they scored above average marks.

SOLUTION TO QUESTION 4

In the books of Bacosa shine as at 30 June 2017

Realisation Account

N '000	N '000
Premises 10,830	Assets realised
Furniture & fittings 3,032	Bank – premises 11,191
Inventory 5,198	Bank – Furniture 1,360
Receivables 8,881	- Inventory 3,826
Cash:	- Receivables 8,448
- Dissolution expenses 920	Payables – discount 100
	Share of losses;
	Capital – Bala 1,968
	- Saka 1,312
	- Coo <u>656</u>
<u>28,861</u>	<u>28,861</u>

Cash Account

N '000	N '000
Bal b/d 983	Dissolution expenses 920
Realisation:-	Payables 2,283
Premises 11,191	Loans 9,600
Fixtures 1,360	Capital – Bala 7,195
Inventory 3,826	- Saka 5,810
Receivable <u>8,448</u>	
<u>25,808</u>	<u>25,808</u>

Capital Accounts

INSIGHT

	Bala	Saka	Coo		Bala	Saka	Coo
	₦000	₦000	₦000		₦000	₦000	₦000
Current account			1,278	Bal b/d	8,519	6,516	1000
Share of losses	1,968	1,312	656	Current Acct	1,173	<u>1,011</u>	
Capital - coo	'529	405		Capital-Bala			529
Cash	<u>7195</u>	<u>5810</u>		- Saka			<u>405</u>
	<u>9692</u>	<u>7527</u>	<u>1934</u>		<u>9692</u>	<u>7527</u>	<u>1934</u>

Share of Coo's debt balance to:

$$\Rightarrow \text{Bala } \frac{8519}{15035} \times 934 = 529$$

$$\Rightarrow \text{Saka } \frac{6516}{15035} \times 934 = 405$$

Examiner's Report

About 80% of the candidates attempted the questions and displayed clear understanding of the requirements of the question. Performance was above average. 50% of them could not properly prepare the capital and cash accounts.

SOLUTION TO QUESTION 5

- i. **LABOX NIGERIA LIMITED**
STATEMENT OF PROFIT OR LOSS FOR THE YEAR ENDED 31
DECEMBER 2016

	₦	₦ '000
	'000	
Revenue (Net)		74,880
Less cost of sales:		
Opening Inventories	2,680	
Add Purchases (Net)	46,160	
Carriage inwards	<u>1,620</u>	
	50,460	

INSIGHT

Less closing inventories	4,860	<u>45,600</u>
Gross profit		29,280
Interest income		<u>50</u>
		29,330
Less expenses:		
Salaries and wages	5,660	
Rent and Rates (₦2160 - ₦560)	1,600	
Insurance (₦870 - ₦146)	724	
Office expenses	1,830	
Bad Debt	106	
Electricity	172	
Motor running expenses	258	
Audit fees	1,200	
Finance cost - interest on notes	540	
Depreciation- Plant and machinery	3,300	
- Motor vehicle	1,300	
- Furniture and fittings	240	<u>16,930</u>
		12,400
Income tax expense		<u>(3,210)</u>
Profit for the year		<u>9,190</u>

ii. LABOX NIGERIA LIMITED
STATEMENT OF FINANCIAL POSITION AS AT 31 DECEMBER 2016

	₦ '000	₦ '000	₦ '000
Non-Current Assets:			
Plant and Machinery	22,000	(5,700)	16,300
Motor Vehicle	6,500	(3,100)	3,400
Furniture and fitting	2,400	(800)	<u>1,600</u>
			21,300
Current Assets:			
Inventories		4,860	
Accounts receivables		24,200	
Bills receivables		2,834	
Prepayment (₦560 + ₦146)		706	
Cash and bank		<u>8,620</u>	<u>41,220</u>
			<u>62,520</u>
Equity and Liabilities:			
Ordinary shares of ₦1 each			15,000
Share premium			3,000

INSIGHT

General reserve			4,640
Retained earnings (N1,530 + N9,190)			<u>10,720</u>
			33,360
Long term liabilities			
9% Loan notes			6,000
Current Liabilities:			
Accounts payables		18,210	
Accrued expenses (Audit fees)		1,200	
- Interest on loan notes		540	
- Current tax expenses		<u>3,210</u>	<u>23,160</u>
-			<u>62,520</u>

Examiner's Report

The question that tested candidates' knowledge in preparation of company final accounts was attempted by about 90% of the candidates and good performance was displayed as over 70% scored above average marks.

SOLUTION TO QUESTION 6

JEUNSOKE CONTRUCTION CO. LTD CONTRACT ACCOUNT

	N ' 000	
Work in progress b/f		'000
276,360		
Materials purchased		Materials at site 31/12/16 c/f
150,250		9,880
Materials transferred from another site		
6,220		Plant on site 30/12/16 c/f
Site Direct wages 65,420		21,500
Accrued site wages <u>4,630</u>		
70,050		
Site Over heads		
26,880		
Sub-contract cost		Work in progress c/f

INSIGHT

22,500	620,080
Professional charges	
25,200	
Plant delivered to site	
35,000	
Hire of equipment	
6,900	
Head office overhead	
8,500	
Profit taken in the year	
<u>23,600</u>	
<u>651,460</u>	<u>651,460</u>
Work in progress b/f	
620,080	
Materials at site b/f	
9,880	
Plant at site b/f	
21,500	

Reconciliation of work in progress

	₹ '000	₹ '000
Opening work in progress b/d		276,360
Add:- Cost of work certified in the year	291,820	
Cost of work not yet certified	28,300	
Profit taken in the year	<u>23,600</u>	
Increase in W.I.P during the year	<u>343,720</u>	<u>343,720</u>
		<u>620,080</u>

Examiner's Report

The question that tested candidates' knowledge of contract Account was attempted by about 25% of the candidates. They put up average performance as about 20% scored above average marks.

INSIGHT

AT/181/PII. 6 ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA

**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS -MARCH 2018**

PUBLIC SECTOR ACCOUNTING

Time Allowed: 3 hours

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

ATTEMPT ALL QUESTIONS IN THIS SECTION

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

1. Which of the following combinations is **NOT** an expendable store item?
 - i. Computers and shovels
 - ii. Cutlasses and television
 - iii. Stationeries and detergents
 - A. (i) and (ii)
 - B. (ii)
 - C. (i) and (iii)
 - D. (iii)
 - E. (i)

2. According to Financial Regulation (2009 Ed.), 2534, the establishment and constitution of Permanent Board of Survey and Enquiry shall be guided by which of the following?
 - A. The President shall not be below salary grade level 15 and others not below level 12
 - B. Appointment to the Board shall be made by the National Assembly
 - C. When the Board is in session, it shall not be guided by the rules of natural justice
 - D. Pension Reform Act 2014
 - E. There shall be 20 members and below

3. Cash receipts from royalties, fees, commissions and other revenue are items to be found in
 - A. Cash flows from financing activities
 - B. Cash flow from operating activities

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INSIGHT

- C. Cash flow from investing activities
 - D. Disallowed operating expenses
 - E. Cash and cash equivalents
4. Which of the following is **NOT** a Cash flow from operating activities?
- A. Cash receipts from taxes, levies and fines
 - B. Cash receipts or payments from discontinued operations
 - C. Cash payments to and on behalf of employees
 - D. Cash receipts or payments in relation to litigation settlements
 - E. Cash receipts from sale of property, plant and equipment
5. By virtue of Financial Regulation (2009Ed.), 110, the Auditor General has the following powers **EXCEPT**:
- A. Power of access to books and records of all ministries
 - B. Power to carry out Ad-hoc investigation in any Ministry
 - C. Power to execute contract on behalf of the Ministry
 - D. Power to request for information
 - E. Power to carry out special investigation in any Ministry
6. Into what account are the proceeds of the Pay-As-You-Earn (PAYE) of the Armed Forces, Foreign Service officers and residents of the Federal Capital Territory paid?
- A. Contingency Fund Account
 - B. Consolidated Revenue Fund Account
 - C. Development Fund Account
 - D. Special Fund Account
 - E. Federation Account
7. Which of the following is **NOT** an objective of budgeting in government?
- A. To assist policy makers to develop policies that will assist the nation to achieve its main objectives
 - B. To provide a mechanism for controlling the national revenue and its expenditure
 - C. To set standards to enable performance to be monitored and evaluated
 - D. To block the loopholes for corruption in the economy
 - E. To serve as motivating device for both government employees and the departmental managers

INSIGHT

8. Which of the following is **NOT** an item contained in Advance Payment Voucher?
- A. The officer's health status
 - B. Name of officer and his grade level
 - C. Terms and Conditions guiding the granting of the advance
 - D. Status of the officer
 - E. Authority for the advance
9. The purposes for keeping a vote book includes the following **EXCEPT**
- A. To have absolute control over expenditure
 - B. To ensure that votes meant for a particular expenditure are not channeled to other expenditures which are not provided for in the approved budget
 - C. To show all outstanding liabilities and commitments
 - D. To reveal balances available
 - E. To reveal the faithfulness and integrity of the vote holder.
10. Government's financial management system consists of
- i. Planning and programming
 - ii. Budgeting
 - iii. Audit and review
 - iv. Budget execution, accounting and control
- A. i, ii and iii
 - B. i and ii
 - C. i, ii, iii, and iv
 - D. i, ii, and iv
 - E. iii and iv
11. Which of the following is excluded in the cost of inventories in accordance with IPSAS 12?
- A. Import duties on purchases made
 - B. Storage cost necessary in the production process prior to further production stage
 - C. Handling cost relating to the acquisition of supplies
 - D. Abnormal amount of wasted materials
 - E. Cost of conversion of materials into finished goods
12. The advantages of fund accounting include all the following **EXCEPT**
- A. It is simple to operate
 - B. It does not provide information on debtors and creditors

INSIGHT

- C. It facilitates coordination and planning
 - D. It ensures financial control
 - E. It is used to highlight government policy
13. The following serves as control over the payroll by the salary section.
- i. Cash Book
 - ii. Variation Advice
 - iii. Variation control
- A. i and iii
 - B. i, ii and iii
 - C. ii
 - D. i
14. A..... unit is a ministry or department that has no control whatsoever over any of its records
- A. Non-self Accounting
 - B. Sub-self Accounting
 - C. Self-Accounting
 - D. Above the line
 - E. Below the line
15. Integrated Personnel and Payroll Information System (IPPIS) is a centralized computer based payroll and management system that is aimed at
- A. Reduction of payroll fraud
 - B. Controlling of payroll fraud
 - C. Reviewing of payroll fraud
 - D. Aggregation of payroll fraud
 - E. Elimination of payroll fraud
16. The fund set aside by Government to support projects which are financed by foreign donation is
- A. Revolving Fund
 - B. Intra-Governmental Service Fund
 - C. Debt Service Fund
 - D. Counterpart Fund

INSIGHT

- E. Capital Project Fund
17. Government Integrated Financial Management Information System (GIFMIS) is a tool to facilitate change to better public financial management.
This can be achieved through the following **EXCEPT**
- A. It provides an opportunity to move to Treasury Single Account
 - B. It increases the number of stages in transaction processing
 - C. It provides better access to information that can be used to improve fiscal and operational management
 - D. It reduces fiduciary risk by enabling greater transparency
 - E. It reduces the opportunity for manual intervention
18. Which of the following is a document that should accompany a transcript?
- A. Group register
 - B. Original cheque books
 - C. Original cash book
 - D. Cheque Register
 - E. Cash book register
19. When expendable store not fully consumed is returned to store, it will be taken on charge by
- A. Crediting the vote of charge and debiting unallocated store
 - B. Debiting the vote of charge and crediting unallocated store
 - C. Issuing S.R.V or transfer note
 - D. Updating ledger and bin card balance with addition
 - E. Registering it in the returned store register
20. According to the Pension Reform Act, 2014, Statutory Reserve Fund means
- A. Reserve made from statutory contribution of consolidated reserve fund
 - B. A contingency fund reserve to meet any claim for which PFA may be liable
 - C. Constitution authorises reserve for pension payment
 - D. Pension payment reserve for those in First line charge in consolidated reserve fund
 - E. Fund for management of statutory reserve
21. Which of the following is **NOT** a function of stock verification unit?
- A. Responsible for price analysis and take charge of store
 - B. Assist the Board of survey and enquire on store matters

INSIGHT

- C. Pre audit payment voucher
 - D. Verify store record
 - E. Maintain a system of continuous verification of stores
22. Pension Fund Administrators are **NOT** allowed to invest in
- A. Bond bill and other securities
 - B. Debenture and redeemable preference
 - C. Real estate development
 - D. PFA fund and custodian fund Investment
 - E. Bank deposits and bank securities
23. Income of parastatals and statutory corporation must **NOT** be from
- A. Internally Generated Fund
 - B. Subvention
 - C. Political party contribution
 - D. International grant and donation
 - E. Receipts from Investment
24. When stores loss occurred, the officer in charge of stock shall **NOT**
- A. Report immediately to the Head of Department
 - B. Report to the nearest Police Station
 - C. Initiate action on TF 146
 - D. Surcharge all store personnel
 - E. Ensure the internal control is reviewed
25. Which of the following statements is **NOT** correct about the subsequent measurement of intangible assets?
- A. An entity can decide to use the cost model
 - B. Amortisation commences when the asset is ready for use
 - C. Amortisation ceases on the date the asset is held for sale though derecognised at earlier date
 - D. An intangible asset with a finite useful life is amortized
 - E. Where a revaluation model is used in accounting for intangible assets, all other assets in the same class use the same model
26. On the submission of annual budget, the document to accompany it does **NOT** include

INSIGHT

- A. Copy of revenue and expenditure profile
 - B. Report setting out actual and budgeted revenue and expenditure
 - C. A revenue frame work and monthly estimate of collection
 - D. Fiscal target appendix
 - E. Auditor general report on previous year expenditure
27. Public fund does **NOT** include
- A. Public revenue of the federation
 - B. Money held in official capacity which temporarily or otherwise belong to the government
 - C. Dividend warrant issued to shareholders by public quoted company
 - D. Trust, donation, grant and other foreign aids to the government
 - E. Forfeiture of money and asset by the court due to corruption and financial crime conviction
28. Public borrowing does **NOT** mean
- A. Any loan to public officer
 - B. Loan granted to a public quoted company
 - C. Deferred payment for property, goods and services
 - D. Bond, debenture, bills, notes
 - E. Trade on banker acceptance on public transaction
29. The duties of Accountant-General does not include
- A. Approval of budget estimate
 - B. Serve as the Chief Accounting Officer
 - C. Collate, prepare and publish statutory finance statement
 - D. Manage government investment
 - E. Maintain and operate Federation Account
30. Opinion of the Auditor-General in an audit report should **NOT** disclose
- A. Accuracy and proper account information
 - B. Public fund is fully accounted for
 - C. Fund has been expended for the purpose for which they were approved
 - D. Essential records are maintained, rules and regulations followed
 - E. Capability of appointed political office holder

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. Contents of the Board of Survey Report include a statement on the exact amount of loss sustained or involved (**TRUE OR FALSE**)
2. Enquiries commissioned by government to find out the cause or causes of an event, so that remedial actions may be taken is
3. An independent appraisal activity within an organization for the review of operations as a service to management and managerial control which functions by measuring and evaluating the effectiveness of other controls is known as
4. What is the financial statement that shows the sources and uses of cash for a period called?
5. A document used for summarizing and transmitting inter-ministerial or inter-governmental transaction is called
6. The set of linked accounts through which government transacts its financial operations in such a way that its financial position can be determined at any time is known as
7. The supervision of the activities of a public organization, with the responsibility and authority to control, or indeed exert significant pressure over the operating and financial decisions of the entity is called
8. A system that provides a leverage solution to automate the manual recording of the accounting transactions in the line Ministries, Agencies and Parastatals of government is
9. A process which reviews and adjusts set-targets during a financial year and Institute's a control mechanism to hold budget operators to account is termed.....

INSIGHT

10. The name of the document used by the revenue collector to record all the cash received and cash paid or transferred is called
11. The cardinal objective ofis to ensure that funds are not mis- appropriated or mismanaged in the public sector.
12. The program oriented management approach to budgeting which examines needs over a medium to long term period is referred to as
13. The Contingency Fund derives its inflow from the
14. For a Local Government, the Chief Accounting Officer is the
15. The Remuneration of members of ICPC shall be determined by.....
16. In accordance with Financial Regulations, the accounts of Imprest Holders are subject to inspection by the Accountant-General and
17.must be maintained by store officer to record receipt or issue from store
18.is constitutionally empowered to make periodic check to parastatals
19. Accounts of Parastatals are audited by auditors appointed by from among the registered auditors by the Auditor-General.
20. Unserviceable part recovered from the over hauling of a plant are normally to junk stores for future disposal

SECTION B
Marks)

ATTEMPT ANY FOUR QUESTIONS

(50

QUESTION 1

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INSIGHT

a. The National Assembly is charged with the role of monitoring the financial activities of the Executive. State the responsibilities of the following Committees of the National Assembly:

- i. Public Finance Committee (1½ Marks)
- ii. Appropriation Committee (2 Marks)
- iii. Other Functional Committees (2 Marks)
- iv. Public Accounts Committee (2 Marks)

b. A new Principal just posted to IWALEWA Community Grammar School made the following observations on the Accounts and Records of the School:

- There was a loss of cash valued at ₦15,000 to embezzlement by the school fees collector who is still in service.
- During the year, the works engineer for maintenance of school deliberately overpaid the contractor ₦50,000.
- Food supplier was over paid mistakenly by the bursar with ₦7,000.
- The school fees owed by the old students amounted to ₦70,000. The principal intended to write it off.
- Also the last Bursar deliberately over-paid contractors to a value of ₦180,000. The amount has been credited to schools' final account.

Required:

- i. Post the accounting entries for the above transactions to correct the anomalies.
(2½ Marks)

INSIGHT

- ii. State **FIVE** steps necessary to be taken before reporting the matters to Headquarters.

(2½Marks)

(Total

12½ Marks)

QUESTION 2

- a. Briefly discuss the following:

- i. Appointment of the Minister of Finance

(1½

Marks)

- ii. Constitutional provisions on the powers of the Auditor-General for the Federation

(3

Marks)

- iii. The legal frameworks that govern the operations of the Auditor-General for the Federation

(3 Marks)

- b. Value-for-Money Audit has some goals to pursue in seeking maximum benefit from the disposal of scarce resources. To pursue these goals, there are three components of Value-For-Money audit.

List **TWO** of these components and explain briefly.

(5

Marks)

(Total 12½ Marks)

QUESTION 3

- a. The Government of Sun Set State operate an unallocated stores in Ministry of Health where quality drugs and equipment are centrally kept and distributed on request to the necessary units and departments.

At the end of year 2016, the following data were provided

	N'm
Value of store as at January	17,215
Store purchased during the year	37,297
Store surplus found unverified	3,218
Store written off as obsolete	1,319
Store revaluation for year surplus	7,418
Store issued during the year	38,152

INSIGHT

Foreign exchange loss 9,314

Required:

Prepare Annual Balance Statement for Accountant-General's record.
(7½

Marks)

- b. A major aspect of regulatory framework and requirement is the audit of government account. State **FIVE** basic elements of the Auditor's Report.

(5 Marks)

(Total 12½ Marks)

QUESTION 4

- a. Public Procurement Act, 2007 made reference to "The Council". Which "Council" is being referred to and what are the basic functions of the "Council" under the Act?

(5 Marks)

- b. Going through the books of EYIOWUKAWI LOCAL GOVERNMENT for the year ended 31 December 2016, the following information were extracted from the books:

Assets and Liabilities

	N
Fixed Deposit	25,000,000
Bank balance	228,000
Cash at hand	42,000
Ordinary shares in Ayedade Limited	29,810,000
Other Investment	10,000,000

Advances

Motor cycles	120,000
Motor vehicles	200,000
Deposit Liabilities	1,000,000

Deposits

Land	2,000,000
Houses	1,000,000
Savings Account	50,000

INSIGHT

You are given the following additional information on the revenue and expenditure for the year:

HEAD	DESCRIPTION	₦
1001	Licences	13,000,000
1002	Fees	125,000,000
1003	Fines	14,000,000
1004	Rent on Property	16,500,000
1005	Taxes	42,750,000
1006	Interest on Investment	250,000
1007	Interest on Fixed Deposit	120,000
2001	Personnel Department	18,780,000
2002	Accounts Department	9,320,000
2003	Office of the Chairman	13,540,000
2004	Public Relations Department	1,190,000
1008	Statutory Allocation	50,560,000
1009	General Grants	40,440,000
2005	Cottage Hospital	7,000,000
2007	Agriculture Department	22,000,000
1010	Sale of yam tubers	120,000
2008	Office of the Secretary	31,000,000
1011	Miscellaneous	50,000,000
2009	Capital Expenditure	100,000,000

The General Revenue Balance on 1 January 2016 was ₦1,000,000. The accounts were coded “1” for revenue and “2” for expenditure.

Required:

Prepare the Statement of Revenue and Expenditure for the year ended 31 December, 2016. (7½

Marks)

(Total 12½

Marks)

INSIGHT

QUESTION 5

- a. In the constitution of Boards of Survey according to Financial Regulation Section 1805;
- i. State the number of members involved and their cadres. (3½ Marks)
- ii. In a situation where any of the officers appointed to serve on a Board of Survey is constrained to make himself available, what is he expected to do? (1½ Marks)
- b. Ministry of Labour of Dankwa State provided the following data regarding the budgeted and actual overheads and personnel costs in respect of year 2016.

Sub-Head	Description	Budget ₦	Actual ₦
01	Personnel Cost	2,675,000	2,590,000
02	Travels and Tours	544,560	690,200
03	Utility services	715,100	910,500
05	Stationery	475,200	460,600
06	Office Furniture & Maintenance	650,200	640,000
07	Vehicle Maintenance	470,000	490,000
09	Subvention & Grants	1,000,000	1,000,000
12	Contribution to foreign bodies	550,000	550,000

The following additional information are also provided:

- (i) There is an inflation factor of 12% on overhead cost and is recognized in the computation of 2017 budget.
- (ii) 10% of total salaries for 2016 is required to meet the additional personnel cost in 2017. The personnel cost of the 2016 includes ₦750,000 spent on private staff salaries.
- (iii) The staff allowance will be 20% of year 2016 staff salaries

INSIGHT

Required:

Prepare 2017 budget on incremental system basis. (7½ Marks)

(Total 12½

Marks)

QUESTION 6

a i. State **TEN** members of the National Pension Commission (5 Marks)

ii. State the tenure of office for the following in accordance with the Pension Act, 2014

- Chairman
- Other members of the Board (2½ Marks)

b. What are the regulatory provisions on the appointment of members of Independent Corrupt Practices (ICPC) and Other Related Offences Commission and their tenure of office? (5 Marks)

(Total 12½ Marks)

SOLUTION TO MULTIPLE CHOICE QUESTION

1. A
2. A
3. B
4. E
5. C
6. B
7. D
8. A
9. E
10. C

INSIGHT

11. D
12. B
13. D
14. A
15. E
16. D
17. B
18. C
19. A
20. B
21. C
22. D
23. C
24. D
25. C
26. E
27. C
28. B
29. A
30. E

Examiner's Report

This was a compulsory part of the questions which covers the entire areas of the syllabus. More than 99.5% of the candidates attempted the question. Performance was good as over 75% scoring above 40% of the total marks obtainable.

SOLUTION TO SHORT ANSWER QUESTION

1. TRUE
2. Board of Enquiry
3. Internal Audit
4. Cashflow Statement
5. Supplementary Transcript

INSIGHT

6. Treasury Single Account
7. Oversight
8. Automated Accounting Transaction Recording and Reporting System (ATRRS)
9. Budgetary Control
10. Revenue Collector's Book
11. Internal Control
12. Planning, Programming Budgeting System (PPBS)
13. The Consolidated Revenue Fund (CRF)
14. Local Government Chairman
15. The National Revenue Mobilization, Allocation and Fiscal commission
16. The Auditor General
17. Store Ledger
18. Auditor General
19. Board of Director
20. Returned

Examiner's report

This was a compulsory part of the questions which covers the entire area of the syllabus. The attempt was good as over 99.5% candidates attempted this part of the questions. Over 50% of them scored above 40% of obtainable marks.

SOLUTION TO QUESTION 1

- a. i. **Public Finance Committee**

INSIGHT

This committee is responsible for the receipt of the Appropriation Bill, made up of the annual expenditure estimates and other proposals of government; for the considerations of the National Assembly.

ii. **Appropriation Committee**

The responsibility is the passing of the Appropriation bill into the Appropriation Act, in order to give authorization to the estimates, after the examination of the various sub-committees. The Appropriation Committee is in effect, the whole House of Parliament when it sits to pass the bill into law as an Act.

iii. **Other Functional Committee**

The Committee is responsible for the examination of individual estimates contained in the Appropriation bill as they relate to Ministries, Departments and Agencies (MDAs). The proper performance of their roles is a major control mechanism known as the execution of oversight functions.

iv. **Public Accounts Committee**

This committee receives the audited public accounts and other special audit reports, examines and debates the contents and submits its report on its findings and recommendation to the whole House of Assembly.

b.i **Accounting Entries**

1.	Loss of Cash	Debit	Cashbook	15,000
		Credit	Advance Account	
	15,000			
2.	Fraudulent			
	Overpayment	Debit	Advance Account	50,000
		Credit	Account Originally	

INSIGHT

		Charged	
50,000			
3.	Unrecovered Overpayment not fraudulent	Debit	Advanced Account 7,000
		Credit	Account Originally Charged 7,000
4.	Abandonment of Unpaid	Debit	No Adjustment is necessary but Accountant General should be notified
5.	Fraudulent Overpayment	Debit	Advance Account 180,000
		Credit	Account Originally debited 180,000

b.ii Five steps necessary to be taken before reporting to the headquarters.

- a. Report immediately to Head of Unit or Division by the fastest means if the loss occurs away from the Head
- b. Report to Police if fraud or theft is suspected
- c. Initiate immediate action by completing Treasury Form 146, Part 1 and forward same in quadruplicate to Head of supervising department or Unit
- d. Ensure that if a weakness in the system of Internal Control or in security is established, measure have been taken to prevent a reoccurrence of the loss.
- e. Ensure that the accounting entries as prescribed in Financial Regulation (FR) 2524 and 2525 have been made.

Examiner's Report

Part "a" of the question required the candidates to state responsibilities of some Committee of the National Assembly. While Part "b" is on Loss of Cash. It requires candidates to post the accounting entries accordingly and necessary steps to be taken before reporting the matter to Headquarters. About 90% of the candidates attempted the question. Performance was very poor as less than 30% of them scoring 40% of marks obtainable.

INSIGHT

SOLUTION TO QUESTION 2

a.i. **Appointment of the Minister of Finance**

The Minister of Finance is an officer on political appointment who has the responsibility for the control and management of public fund of the Federation.

The Minister of Finance under the democratic dispensation is appointed by the President after due consultations and the approval of the Senate.

ii. **Constitutional Provisions on Powers of the Auditor General for the Federation**

In accordance with Government Regulations, the Auditor-General for the Federation has the following powers:

- a. Power of access to books and records of all Ministries and Extra-Ministerial Department, at reasonable times.
- b. Power to request for information and explanation necessary for his duties
- c. Power to carry out special/ad-hoc investigations in any Ministry and Extra-Ministerial Department.

iii. The office of the Auditor-General for the Federation operates within the following legal framework:

- a. The Constitution
- c. Audit Act
- d. Financial Regulation

b.i. The factors are:

- Economy
- Efficiency
- Effectiveness

ii. **Economy**

This addresses how economically management acquires resources in the needed quantity and quality at the lowest possible costs (i.e cheaply, but not at the expense of quality).

b. **Efficiency**

INSIGHT

The required level of production is achieved at the minimum outlay of inputs on resources. Or,

The maximum qualitative output is obtained with the least expenditure of resources.

c. **Effectiveness**

It ensures that the production from a given activity achieves the desired goals set out.

Examiner's Report

Part "a" requires candidates to discuss the appointment of Minister of Finance, Constitutional Powers and Operations of the Auditor-General for the Federation.

Part "b" requires candidates to list and explain two components of Value-for-Money audit. About 98% of the candidates attempted the question.

Performance was impressive as more than 75% of them scored above 70% of the marks obtainable.

SOLUTION TO QUESTION 3

a.

**SUN SET STATE
MINISTRY OF HEALTH
UNALLOCATED STORES
Annual Balance Statement as at 31st December 2016**

	Nm		Nm
Opening Stock	17,215	Store Issue	38,152
Purchase during the year	37,297	Store Written Off	1,319

INSIGHT

Store taken on charge	3,218		
Store Revaluation	7,418	Storage to Exchange	9,314
		Closing Value	<u>16,363</u>
	<u>65,148</u>		<u>65,148</u>

b. Basic Elements of the Auditor's Report

The Auditor's report includes the following basic elements, ordinarily in the following layout:

1. Title
2. Addressee
3. Opening or introductory paragraph which must identify the financial statements audited and a statement of the responsibility of the entity's management and the responsibility of the auditor;
4. Scope paragraph (describing the nature of an audit), making reference to the International Standards of Auditing (ISAs) or relevant national standards or practices. Also, a description of the work the auditor performed.
5. Opening paragraph containing making reference to the financial reporting framework used to prepare the financial statement (including identifying the country of origin of the financial reporting framework when the frame work used is not International Accounting Standards); and an expression of opinion on the financial statements.
6. Date of the report
7. Auditor's Address; and
8. Auditor's Signature
9. He must express his opinion on whether or not:
 - i. The accounts have been properly kept
 - ii. All public funds have been fully accounted for
 - iii. The rules and procedures applied are sufficient to secure effective check on the assessment, collection and proper allocation revenue
 - iv. Monies have been expended for the purposes for which they were appropriated and the expenditure have been made as authorized

INSIGHT

- v. Essential records are maintained and the rules and procedures applied are sufficient to safeguard public property and funds.

Examiner's Report

Part 'a' of the question requires the candidates to prepare Annual Balance Statement of the Un-Allocated Stores. While Part 'b' requires the candidates to state any five elements of the Auditor's Report. About 90% of the Candidates attempted the question. Performance was average as about 45% of them scoring 40% of marks allocated.

SOLUTION TO QUESTION 4

a. PUBLIC PROCUREMENT ACT, 2007

The Act is established by the Enactment of the National Assembly of the Republic of Nigeria.

Establishment of National Council on Public Procurement

This is referred to in the Act as "the Council".

Functions of National Council on Public Procurement

- a. To consider, approve and amend the monetary issues relating to the Act.
- b. Consider and approve policies on public procurement
- c. To improve the appointment of the Director of the Bureau
- d. To receive, review, consider and approve the audited accounts of the Bureau of Public Procurement
- e. To approve changes in the procurement process to adapt to improvements in modern technology
- f. To perform such other functions as may be deemed necessary to achieve the objectives of the Act

b. EYIOWUKAWI LOCAL GOVERNMENT Statement of Revenue and Expenditure for the year ended 31

REVENUE:

INSIGHT

Head	Description	₦	₦
1001	Licences		13,000,000
1002	Fees		125,000,000
1003	Fine		14,000,000
1004	Rent on property		16,500,000
1005	Taxes		42,750,000
1006	Interest on Investment		250,000
1007	Interest Fixed Deposit		120,000
1008	Statutory Allocation		50,560,000
1009	General Grant		40,440,000
1010	Sales of yam tuber		120,000
1011	Miscellaneous Receipts		<u>50,000,000</u>
			<u>352,740,000</u>

EXPENDITURE

2001	Personal Department	18,780,000	
2002	Accounts Department	9,320,000	
2003	Office of the Chairman	13,540,000	
2004	Public Relation Department	1,190,000	
2005	Cottage Hospital	7,000,000	
2006	Agriculture Department	22,000,000	
2007	Office of the Secretary	31,000,000	
2008	Capital Expenditure	<u>100,000,000</u>	<u>(202,830,000)</u>
	Excess of Revenue Over Expenditure		149,910,000
	General Revenue Balance b/f		<u>1,000,000</u>
	General Revenue Balance c/f		<u>150,910,000</u>

Examiner's Report

Part "a" requires the candidates to explain the term "Council", and to state the basic functions of the Council, under the Public Procurement Act, 2017. Part "b" wanted the candidates to prepare the Statement of Revenue and Expenditure. About 98% of the candidates attempted the question. 80% of them scored above 40% of marks obtainable.

SOLUTION TO QUESTION 5

a.

- i. A board shall consist of three officers, including the President. The President shall be an officer on Grade Level 10 and above; "while other members shall not be lower than grade level 08"

INSIGHT

ii. Officers appointed to serve on a Board of survey must report immediately to the convening authority if they are unable to serve.

iii.

**DANKWA STATE
MINISTRY OF LABOUR
PERSONNEL AND OVERHEAD COST BUDGET FOR YEAR 2017**

SUB- HEAD	DESCRIPTION	NOTES	₦
01	Personnel Costs	1	2,392,260
02	Travels & Tours	2	773,024
03	Utility services	3	1,019,760
05	Stationery	4	515,872
06	Office furniture & Maintenance	5	716,800
07	Vehicle Maintenance	6	548,800
09	Subvention & Grants	7	1,120,000
12	Contribution to foreign bodies	8	<u>616,000</u>
	Total Budget Cost		<u>7,702,516</u>

Workings

1.	Personnel Cost	2,590,000	Incremental
	Less Private Staff Salary	<u>(750,000)</u>	Factor
	₦		
	Total Salaries for 2016	1,840,000 x	110%
		2,024,000	
	Add Staff Allowance 20% x 1,840,000		
	<u>368,000</u>		
	Personnel Cost for 2017		
	<u>2,392,000</u>		
2.	Travels and Tours	690,200	112%
	<u>773,024</u>		
3.	Utility Services	910,500	112%
	<u>1,019,760</u>		

INSIGHT

4. Stationery	460,600	112%
<u>515,782</u>		
5. Office Furniture and Maintenance	640,000	112%
<u>716,800</u>		
6. Vehicle Maintenance	490,000	112%
<u>548,800</u>		
7. Subvention & Grants	1,000,000	112%
<u>1,120,000</u>		
8. Contribution to Foreign Bodies	550,000	112%
<u>616,000</u>		

Examiner's Report

Part "a" tested the candidate's knowledge of the composition of members of Board of Survey. Part "b" requires the candidates to prepare budget on incremental system basis.

Attempt on the question was about 60% of the candidates. Performance was poor as less than 40% of them scoring above 40% of marks obtainable.

SOLUTION TO QUESTION 6

- a.i.
1. Chairman
 2. Director General
 3. Four full time Commissioners
 4. Representative of Head of Civil Service
 5. Representative of Ministry of Finance
 6. Representative of Nigeria Labour Congress
 7. Representative of Trade Union Congress
 8. Representative of Nigeria Union of Pensioners
 9. Representative of Nigerian Employee Consultative Association
 10. Representative of Central Bank of Nigeria
 11. Representative of Stock and Exchange Commission
 12. Representative of Security and Exchange Commission

INSIGHT

13. Representative of National Insurance Commission

- ii. Chairman shall hold office for five years in the first instance and may be re-appointed for another five years.

Other members shall hold office for a term of four years and may be re-appointed for another four years.

b. **Appointments of Members of ICPC**

The Chairman and members of the Commission must be persons of unquestionable integrity, shall be appointed by the president and confirmed by the Senate. They are however not to commence the discharge of their duties until they have declared their assets and liabilities as prescribed in the Constitution of the Federal Republic of Nigeria.

Tenure

The Chairman is to hold office for 5 years and may be reappointed for another terms of 5 years, while other member shall hold office for 4 years and can be reappointed for another 4 years.

Examiner's Report

Part "a" requires the candidates to list members of the National Pension Commission and to state their tenure of office in accordance with the Pension Act 2014. Part "b" is on the appointment and tenure of office of members of ICPC.

About 45% of the candidates attempted the question. Only about 30% of them scored 40% of marks obtainable.

INSIGHT

AT/181/PII.7 ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA

**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2018**

INFORMATION TECHNOLOGY

Time Allowed: 3 hours

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

ATTEMPT ALL QUESTIONS IN THIS SECTION

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

1. Which of the following is the name given to basic facts?
 - A. Input
 - B. Data
 - C. Information
 - D. Output
 - E. Processed Information

2. A decimal number 2354 converted to an octal base number is equal to
 - A. 4564
 - B. 4472
 - C. 4462
 - D. 2644
 - E. 2744

3. Which of the following is **NOT** a micro-computer?
 - A. Laptop
 - B. Workstation
 - C. Desktop
 - D. Analog Computer
 - E. Personal Computer

ATSWA PART II MARCH 2018 DIET

INSIGHT

4. In the course of a Computer Processing Data, it actually performs the following functions **EXCEPT**
- A. Keying data
 - B. Holding data
 - C. Shredding data
 - D. Manipulating data
 - E. Retrieving Processed data
5. The computer that processes data that is represented in discrete value is known as
- A. Hybrid
 - B. Analog
 - C. Micro
 - D. Special purpose
 - E. Digital
6. The physical unit of a computer system is called
- A. Software
 - B. Hardware
 - C. Program
 - D. Translator
 - E. Compiler
7. The following are the functional components of the computer hardware **EXCEPT**
- A. Input device
 - B. Output device
 - C. Control unit
 - D. Memory
 - E. Modem
8. Which of the following combinations form the processor?
- A. CPU and Memory
 - B. Memory and Control Unit

INSIGHT

- C. ALU and Memory
 - D. ALU and Control Unit
 - E. CPU and Motherboard
9. What is the full meaning of this acronym EPROM?
- A. Erasable Programmable Read Only Memory
 - B. Electrically Programmable Read Only Memory
 - C. Erasable Purpose Read Only Memory
 - D. Electrically Purpose Read Only Memory
 - E. Electronic Programmable Read Only Memory
10. Which of the following operations is performed by the Control Unit?
- A. Receives the results of processing from the processor
 - B. Interprets the instructions
 - C. Performs addition and subtraction
 - D. Performs multiplication and division
 - E. Performs logical operations
11. The complete set of instructions that directs computer users on how to use the computer system to perform some tasks is known as
- A. Computer program
 - B. Documentation
 - C. Computer Language Software
 - D. Program comment
 - E. Directive Program
12. Which of the following is a function of the Operating System?
- A. Computer operations traffic control
 - B. Program debugging
 - C. Internet connectivity
 - D. Remote call
 - E. Data control
13. Which of the following is **NOT** a function of System Software?
- A. Provision of suitable environment for program development
 - B. Memory management

INSIGHT

- C. Enabling the use of peripheral devices
 - D. Providing settings for application packages
 - E. Providing utility services
14. Which language translator is capable of translating and also initiating execution?
- A. Compiler
 - B. Pre processor
 - C. Macro processor
 - D. Interpreter
 - E. Assembler
15. A computer program is a
- A. Sequence of instructions expressed in a computer language
 - B. Set of instructions expressed in a computer language
 - C. Collection of instructions expressed in a computer language
 - D. Complete set of instructions that direct computer users
 - E. Sequence of instructions to perform a task
16. To run and prepare a batch job, the first stage involves
- A. Data verification
 - B. Writing on printed sheet
 - C. Storage of output
 - D. Job waiting in queue
 - E. Data validation
17. The acronym SQL means
- A. Structured Query Language
 - B. Structured Query Location
 - C. Systematic Query Language
 - D. Systems Query Location
 - E. Systems Query Language
18. Which of the following is **NOT** an advantage of Batch Processing Technique?
- A. Repeated jobs are done fast (quickly) without user interaction

INSIGHT

- B. No need for special hardware and system support to input data
 - C. Best for small organizations but large organizations can as well benefit from it
 - D. The system can work offline so it impacts less pressure on the processor
 - E. There is less time used for idleness in batch system (The idle time in batch system is very less)
19. Online processing method is considered disadvantageous because
- A. The system has quick response time
 - B. Purchase of any item can be done on the spot
 - C. Any hardware failure can stop the transaction
 - D. It promotes the use of credit cards
 - E. Very useful in online banking
20. An Information centre staff whose duty is to follow the progress of programs to ensure that they are operating correctly and fix any program errors that might occur along the way is
- A. Computer Manager
 - B. Computer Operator
 - C. Data Analyst
 - D. System Analyst
 - E. Computer Programmer
21. Which of the following best describes the mode of transmissions in Walkie-Talkie?
- A. Simplex
 - B. Duplex
 - C. Half Duplex
 - D. Synchronous
 - E. Asynchronous
22. In Communication Systems, which of the following is **NOT** essential for transmitting data from one location to another?

INSIGHT

- A. Data transmission specification
 - B. Sending devices
 - C. Receiving devices
 - D. Cooling devices
 - E. Communication channel
23. The type of network topology where each computer is linked to a central unit, control and maintained by pooling and often used for time-sharing systems is called
- A. Star topology
 - B. Bus topology
 - C. Ring topology
 - D. Hierarchical topology
 - E. Hybrid topology
24. Standard telephone line and MODEMS are composition of which of the following during data transmission?
- A. Network architecture
 - B. Data transmission
 - C. Channels
 - D. Dial-up service
 - E. Broadband
25. The measure of the capability of a communication channel to transmit data/information from one location to another is called
- A. Protocol
 - B. Bandwidth
 - C. Packet
 - D. IP Address
 - E. Network architecture

INSIGHT

26. A crime in which an impostor obtains pieces of personal identification in order to impersonate someone else is called
- A. Espionage
 - B. Identity theft
 - C. Fraud
 - D. Spamming
 - E. Data diddling
27. One way of providing security to prevent unauthorized persons gaining physical access to a company's IT environment when computer personnel are on duty is by using
- A. Password
 - B. Firewall
 - C. Identity cards
 - D. Locks and Keys
 - E. Fire extinguisher
28. The Repetitive Stress Injury (RSI) problems normally associated with computer users do **NOT** include
- A. Hepatitis
 - B. Tendinitis
 - C. Tennis Elbow
 - D. Inability to hold objects
 - E. Sharp pains in the fingers
29. A computer program capable of attaching itself to disks and other files and replicating itself repeatedly without users knowledge is called
- A. Virus
 - B. Worms
 - C. Trojan Horse
 - D. Logic Bomb
 - E. Variant

INSIGHT

30. Which of the following is **NOT** part of implementation activities in a System Development Life Cycle (SDLC)?
- A. Acquisition of hardware and software
 - B. End user training
 - C. Cost-Benefit Analysis
 - D. System testing
 - E. File Conversion

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. A powerful personal computer that has high calculating and graphics capabilities used for product design and testing is called
2. What is the full meaning of the acronym ASCII?
3. A control put in place to ensure that data is not misread, omitted or misinterpreted during processing is called
4. A type of computer used in measuring instruments such as thermometers and voltmeters with pointers on circular dials is called
5. A way which certain non-key functions of an organization is offloaded to an external organization to manage for a fee is called
6. The process of building a smaller version of a program to have the appearance of the completed program to clarify user requirement is known as
7. The unit that performs arithmetic operations and logical operations in a computer is
8. The three basic types of DVD's are DVD-R, DVD-RW and
9. A computer program that provides the platform for other programs to run is called

INSIGHT

10. Name the system software that allows users to prepare their work in computer compatible form
11. Computers are able to place jobs to specific areas of the memory for execution with the help of a
12. Which computer operating environment allows the use of dumb terminals only to be connected to a main computer?
13. The running of more than one job concurrently within/in the processor is known as
14. A data processing method which enables many users to gain access to a centrally located computer through terminals is referred to as
15. A network security system designed to prevent unauthorized access to or from a private network is called
16. A malicious computer coding that copies itself into memory or storage medium until all spaces are occupied is called
17. The technology that uses high frequency radio waves for data transmission on a straight line is called
18. The process of converting analog signals to digital signals is called
19. Those who break into computer systems and networks without authorization for intellectual challenge are called
20. The type of cable that transmits data as pulses of light through tubes of glass is called

**SECTION B: ATTEMPT ANY FOUR QUESTIONS
(50 Marks)**

ATSWA PART II MARCH 2018 DIET

INSIGHT

QUESTION 1

- a. State **FIVE** general characteristics of Information
(5 Marks)
 - b. State **TWO** differences between Data and Information
(2 Marks)
 - c. Convert the binary number 1010111_2 to a decimal number
($3\frac{1}{2}$ Marks)
 - d. Define the term “Word Processing” (2 Marks)
- (Total 12**
 $\frac{1}{2}$ Marks)

QUESTION 2

- a. Define the term “Hardware” (2 Marks)
 - b. With the aid of a diagram, identify the basic components of a computer hardware
(6 Marks)
 - c. List **NINE** examples of input devices
($4\frac{1}{2}$ Marks)
- (Total 12**
 $\frac{1}{2}$ Marks)

QUESTION 3

- a. List **THREE** services provided by the computer bureaux
($4\frac{1}{2}$ Marks)
- b. State **THREE** reasons for using computer bureaux
(3 Marks)
- c. i. Define the term “Database Management System” (DBMS)
(2 Marks)

INSIGHT

ii. State **TWO** examples of DBMS
(1 Mark)

iii. Explain **TWO** uses of a DBMS
Marks)

(2

(Total 12 1/2

Marks)

QUESTION 4

a i. Give **ONE** distinction between centralized processing technique and decentralized processing technique (1 Mark)

ii. Give **TWO** advantages of centralized processing technique over decentralized processing technique (2 Marks)

b i. Define the term “Multi-tasking” (2 Marks)

ii. List **THREE** ways it can be accomplished (1 1/2 Marks)

c i. What is an accounting software package? (2 Marks)

ii. List **TWO** modules such packages may contain (2 Marks)

iii. Give **FOUR** examples of such packages (2 Marks)

(Total 12 1/2 Marks)

QUESTION 5

a. Define the following terms:

i. Network Topology (1 Mark)

INSIGHT

- ii. Repeater (1½ Marks)
- b. Enumerate **THREE** advantages and **THREE** disadvantages of ring topology (6 Marks)
- c. Enumerate **TWO** differences between File Server and Client Computer in relation to computer network (4 Marks)
- (Total 12½ Marks)**

QUESTION 6

- a i. What is the difference between parallel approach and the retrospective parallel Approach as applied to system change-over? (2 Marks)
- ii. What is prototyping (1½ Marks)
- iii. Give **ONE** feature of prototyping (1 Mark)
- b i. What is computer security (2 Marks)
- ii. List **TWO** ways by which computer crimes can be perpetrated (2 Marks)
- c. State **TWO** physical health risks associated with computer usage and indicate **TWO** remedies provided through ergonomics (4 Marks)
- (Total 12 ½ Marks)**

INSIGHT

INFORMATION TECHNOLOGY SOLUTION

MULTIPLE CHOICE QUESTION

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

Examiner's Report

This section consists of 30 questions which cover almost the whole syllabus. The performance in this section is very good.

SHORT ANSWERS QUESTION

1. Workstation/Super microcomputer
2. American Standard code for Information Interchange
3. Data Verification/Data validation
4. Analog
5. Outsourcing
6. Prototyping
7. Arithmetic and Logical Unit (ALU)/processor
8. DVD - ROM
9. Operating System
10. Editor
11. Loader
12. Multi-User
13. Multitasking/multi programming
14. Time sharing processing
15. Firewall
16. WORMS/Virus
17. Microwave
18. Modulation
19. Cracker
20. Fiber optics/optics fiber

Examiner's report

This section consists of 20 questions covering the entire syllabus but the performance is very poor as over 60% of the candidates scored below 50% of the allocated mark.

SOLUTION TO QUESTION ONE

1. a. Characteristics of Information include:
 - It must be detailed enough to allow for effective decision
 - It must contain an appropriate level of detail for the recipient
 - It must relate to the current situation and have acceptable level of integrity
 - It must be cost effective

INSIGHT

- It must be easily understood by the recipient
- It must be precise
- It must be accurate
- It must be verifiable
- It must be properly arranged and organized
- It must be communicated through the right channel
- It must be timely

b. Data are raw facts, events, numbers and transactions which have been

collected, recorded, stored but not yet processed while; Information is processed data which is obtained after subjecting data to a series of processing operations.

In tabular form we have

Data	Information
Data are raw, unchanged fact	This is an organized and sorted fact
It serves as input into the computer system	It serves as an output from the computer system
Observation and recording are done to generate data	Analysis of data are done to obtain information

c. 1010111_2 to Decimal

$$\begin{aligned} & 1 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 \\ & 1 \times 64 + 0 \times 32 + 1 \times 16 + 0 \times 8 + 1 \times 4 + 1 \times 2 + 1 \times 1 \\ & 64 + 0 + 16 + 0 + 4 + 2 + 1 \\ & = 87_{10} \end{aligned}$$

d. Word Processing provides facilities to assist staff including accountants in the creation and editing of texts and graphics in letters, reports, web pages or e-mail messages etc.

Examiner's Report

This question tested candidate's knowledge on characteristics of information, differences between data and information and number bases. Over 85% of the candidates attempted this question and the performance is good as over 80% of those who attempted the question scored over 60% of the allocated mark.

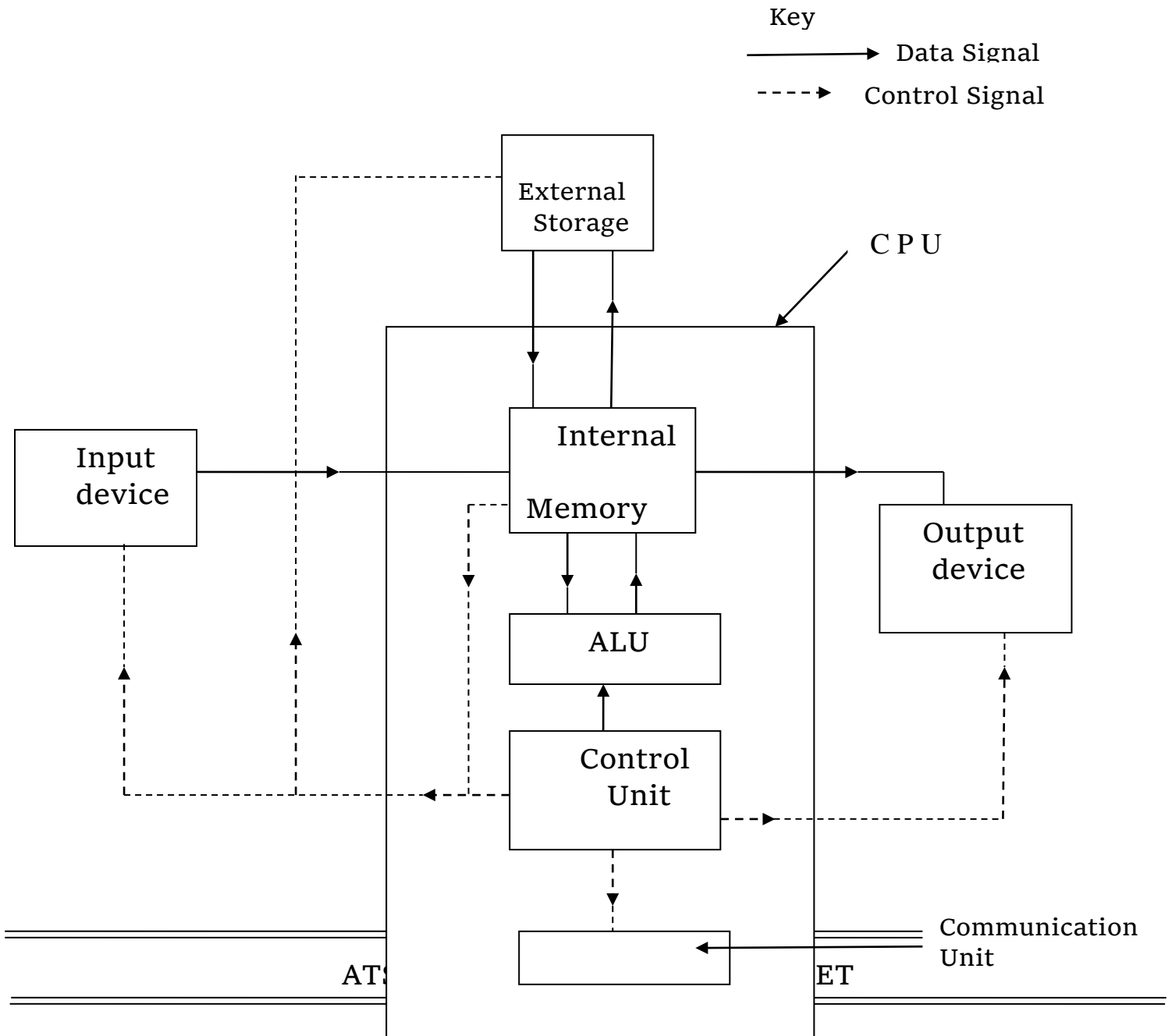
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The major pitfall of the candidates was the inability to define Word Processing

Although, this question appears straightforward and simple, candidates are advised to pay more emphasis on properties of information.

SOLUTION TO QUESTION 2

- 2a. Hardware is the physical component of the computer system that we can see feel and touch. It is used for the connection of the electronic components of the computer system.
- b. Functional components of a computer system are



INSIGHT

- c. Examples of Input devices
 - i. Keyboard
 - ii. Mouse
 - iii. Joystick
 - iv. Light pen
 - v. Image Scanner
 - vi. Graphic Tablet
 - vii. Microphone
 - viii. Bar Code Reader
 - ix. Optical Mark Reader (OMR)
 - x. Magnetic Ink Character Reader (MICR)
 - xi. Optical Character Reader (OCR)
 - xii. Punch Card

Examiner's report

This question tested candidates' knowledge on Hardware of a computer system. It demanded for computer input devices and the architecture of a hardware. Over 90% of the candidates attempted this question but the performance is fair as over 60% of the candidates who answered the question scored less than 40% of the allocated mark.

The major pitfall is in 2(b) where most candidates misunderstood the requirement of the architecture of the hardware. The architecture of the hardware is a major section of the syllabus and students are advised to pay more attention to this area

SOLUTION TO QUESTON 3

- a. Services provided by the computer bureaux include:
 - i. Data Preparation: This consists of the conversion of source data into a machine code/object data for computer processing.
 - ii. Program preparation and testing: This service consists of testing prepared programs for debugging purposes and other characteristics
 - iii. Hiring of computer time: Clients to the bureaux use their computer operators to process their data using their own

INSIGHT

- programs. They only use the computer time and resources of the bureaux except the program
- iv. Hiring of Computer Systems: This allows clients to take the computer system away for a short duration usage. In this case, the system is operated by the client or by his staff in a private safe location.
 - v. Do-it-yourself service: The provision of computing facilities to allow the clients computer operators to process data with their own programs.
 - vi. Time-Sharing facility: This implies access to the bureaux's computer system by means of communication links which in effect provide each user with computing facilities as if he had an in-house computer system.
 - vii. Sales of Computer System Resources: Some well established bureaux offer Computer resource for sales. These resources include printer, mouse. Keyboard, monitor, cables etc.
 - viii. Repairs and Maintenance of Computer Systems
 - ix. System Installation
 - x. Training of staff
- b. Reasons for using computer bureaux include:
- i. To obtain valuable initial experience of processing by computer users before deciding whether or not to install in-house computer
 - ii. To provide standby facility, for an arrangement in case of breakdown of the in-house computer
 - iii. To provide facility for coping with peak data processing loads owing to insufficient capacity of the in-house computer
 - iv. Non-availability of liquid fund for the installation of an in-house computer
 - v. Space restriction for accommodating a computer installation
- c. i. Definition of Database Management System (DBMS)
A DBMS is the software that builds, manages and provides access to a database. It is a system which allows a systematic approach to the storage and retrieval of data in a computer system. They are designed to store large amount of data, as

INSIGHT

well as to provide rapid access to these data and to prepare reports from them.

ii. Examples of DBMS

- MS - Access
- Oracle
- Dbase
- Fox base, etc

iii. Uses of DBMS include:

It is used to

- Avoid data duplication
- Make data independent of the programs which use it
- Ensure consistency in an organization's use of data

Examiner's Report

This question tested candidates' knowledge on the services and use of the computer Bureaux as well as examples and uses of Database Management System (DBMS). Over 70% of the candidates attempted this question and the performance is good as over 80% of those that attempted the question scored 60% and above of the allocated mark.

This question was well understood by the candidates, but the uses of the computer Bureaux and DBMS were badly answered. Candidates are advised to lay more emphasis on computer Bureaux and DBMS.

SOLUTION TO QUESTION 4

- a. i. Distinction between centralized and decentralized processing techniques include:

	Centralized processing Technique	Decentralized Processing Technique
•	Data processing is done in a single location i.e various departments may not be involved in the processing activities.	Each department is processing data in its various location i.e they are independent to each other. The processing is done with the departmental IT staff
•	All terminals and other devices are connected to a central corporate computer i.e server for data proceeding	There is no connection of terminals and other devices to different departments even the headquarters' computer server
•	There is no departmental	Departmental Secrecy is curtain.

INSIGHT

	secret since data are sent to central server	Data are not sent outside the department
•	There is high level of communication cost i.e from various departments. There may be a need to communicate to the computer server	There is less communication cost associated with the discrimination of information since communication is done within the department
•	Less tedious and complex because the data processing is done in a single location	High complexity in coordinating data within the departments
•	Administrative cost is reduced or less because all work/data are sent to one computer server	Increase in administrative cost in terms of coordinating activities
•	Less difficult to implement any policy or effective control	Greater difficulty in implementry any policy or effective control

iii. Advantages of centralized processing technique include:

- Better control over the data processing since the data, program and other devices are located in one place whereas it is spread across the various locations in decentralized processing technique.
- More experienced IT staff are concentrated in centralized processing environment. They are able to handle data processing activities effectively but there is limitation in the skill level of the IT staff in decentralized processing technique.
- There is economics of scale, that is, it is cheaper to run the processing stages. Resources that are needed for the work are concentrated into only one location. While in decentralized technique resources are not concentrated in one location and this increases the running cost i.e economics of scale.

b. i. Multi tasking process is an arrangement that allows the computer

INSIGHT

to work on more than one job or task at a time. (i.e concurrently) Multitasking System used on personal computers usually support a single user running multiple programs at one time.

- ii. Three ways of accomplishing Multitasking include:
 - Context switching: - Users switch back and forth between programs
 - Comparative or Non-pre emptive Multitask:- Here programs Switch occurs when they reach a logical breakpoint.
 - Pre-emptive Multitasking:- Here operating system switches programs based on allocated amount of time and priority

- ci. Accounting software package is an application software that records and processes accounting transactions within some functional modules. The modules may include accounts payable, accounts receivable, general ledger, payroll, trial balance etc.

- ii. The modules are:
 - Accounts receivable
 - General ledger
 - Accounts payable
 - Payroll
 - Trial Balance
 - Billing
 - Stocks/Inventory
 - Purchase order
 - Sales order
 - Book keeping
 - Sun etc.

- iii. Examples of Accounting Packages
 - Quick books
 - Peachtree
 - Dac Easy
 - Freshbooks

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- Microsoft Dynamic GP
- Gnu cash
- TurboCASH
- Odoo
- SAP Business One
- ZupBooks
- Compiere
- Speadsheets
- Etc

Examiner's Report

This question tested candidate's knowledge on the properties of centralised and multi-tasking processing techniques. It also demanded for the knowledge on accounting packages

Over 65% of the candidates attempted this question but the performance is just fair as over 40% of those that attempted the question scored below 40% of the allocated mark.

The major pitfall is the inability to explain centralised processing technique.

Processing techniques are essential part of the syllabus and candidates are advised to pay more attention to it.

SOLUTION TO QUESTION 5

- a.
 - i. Network topology refers to the physical and logical arrangement of computers, printers and other devices in a network.
 - ii. Repeater is a computer network hardware device used to regenerate and amplify signals in a communication link. Repeater amplifies the signal it received and rebroadcast it in order to overcome attenuation.
- b. **The advantages of Ring topology include:**
 - i. Cable faults are easily located, making trouble shooting easier
 - ii. Ring networks are moderately easy to install
 - iii. Amount of cable required is generally less than star topology
 - iv. Transmission capacity is equally shared among all nodes in the network
 - v. Access is granted under heavy loads

INSIGHT

- vi. No need for network server to control the connectivity between workstations

Disadvantages of Ring topology include:

- i. Expansion to the network can cause network disruption
 - ii. A single break in the cable can disrupt the entire network. It is highly dependent on the cables.
 - iii. Repeaters are required in each node interface
 - iv. It is slower than star topology
- c. Differences between file server and client computer in relation to computer network include;

	File server	Client computer
1.	Very fast computer with large RAM and storage space and fast network interface card	Lower speed computers with less RAM and storage and configured with network interface card
2.	It provides a set of services to the computers connected to it	It makes service requests to the server in order to perform a given task
3.	It must be an intelligent high capacity computer	Can be intelligent with lesser capacity or dummy computers
4	File server controls the communication of information between all computers and devices attached to it	Clients' activities as per communication of information is under the control of the server
5	Server shares its resources such as storage and peripherals with the client computers	Clients make request for usage of the storage and peripherals from the server
6	Also called Host computer	Also called workstation or node

Examiner's Report

This question tested candidates' knowledge on Network topologies particular Ring topology.

Less than 40% of the candidates attempted this question and the performance is poor as less than 40% of those who answered the question scored above 50% of the allocated marks.

The major pitfall was the inability to give correct answers to the properties of ring topology and the distinction between file server and client computer. Candidates are advised to read harder.

INSIGHT

SOLUTION TO QUESTION 6

- a.
 - i. While parallel approach uses current transaction data to compare the old and the new system, the retrospective parallel approach on the other hand uses old transaction data that would have been run already in the old system.
 - ii. Prototyping is a system development tool used to allow users to quickly produce a simulation of the output required from a completed system.
 - iii. The feature of prototyping is that it affords the eventual users of the system the opportunity to ensure that the final product meets their exact needs.
- b.
 - i. Computer security is the protection of computer systems from theft or damage to their hardware, software or information, as well as from disruption or misdirection of the services they provide.
 - ii. Computer crimes can be perpetrated in the following ways:
 - Hardware theft
 - Software theft
 - Stealing of computer time
 - Stealing of information
 - On the Internet by Hackers
 - Computer fraud
 - Error by Employees
 - Virus
 - Piracy
- c.
 - i. Physical health risks associated with computer usage include:
 1. Eye strain and headache
 2. Back and neck pains
 3. Repetitive strain injury
 - ii. Remedies provided through ergonomics

INSIGHT

Physical health risk	Remedy
<ul style="list-style-type: none">• Eye strain and headache	<ul style="list-style-type: none">• Take frequent breaks• Avoid glare on the monitor
<ul style="list-style-type: none">• Back and neck pains	<ul style="list-style-type: none">• Use adjustable chairs, tables, monitor stands, keyboard and footrest
<ul style="list-style-type: none">• Repetitive strain injury	<ul style="list-style-type: none">• Use ergonomic keyboards• maintain good posture and healthy life style

Examiner's Report

This question tested candidates' knowledge on

- i. Parallel change over technique
- ii. System Development technique and
- iii. Computer crime

Over 60% of the candidates' attempted this question and the performance is just fair as over 60% of the candidates who attempted the question scored below 60% of the allocated mark.

The major pitfall is the presentation of poor answers on prototyping. Students are advised to study harder.

AT/181/PII.8 ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA

ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS -MARCH 2018

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:

ATSWA PART II MARCH 2018 DIET

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1. Which of the following is **NOT** an example of continuous data?
 - A. Heights of objects
 - B. Quantities of goods
 - C. Ages of men in a community
 - D. Volume of water
 - E. Levels of education

2. The first number in a class interval is called
 - A. Lower Limit
 - B. Lower Class Limit
 - C. Lower Class Boundary
 - D. Upper Class Limit
 - E. Class Interval

3. The geometric mean of the following set of data: 2, 4, 8, 16 and 32 is
 - A. 4
 - B. 8
 - C. 10
 - D. 12
 - E. 14

4. The following data are generated from the incomes (N'000) of 5 market women: 1, 2, 3, 4, and 5. Calculate the standard deviation of the data.
 - A. N1,412
 - B. N1,414
 - C. N1,416
 - D. N1,512
 - E. N1,514

5. Which of the following is **NOT** a measure of association?
 - A. Rank correlation coefficient
 - B. Product moment correlation coefficient
 - C. Spearman's correlation coefficient
 - D. Pearson's correlation coefficient
 - E. Coefficient of determination

6. A long-term oscillation or wave-like fluctuation about the trend line of a Time Series is known as

INSIGHT

- A. Random variation
 - B. Cyclical variation
 - C. Seasonal variation
 - D. Secular variation
 - E. Irregular variation
7. The following are methods of determining seasonal indices **EXCEPT**
- A. Average percentage
 - B. Moving Average
 - C. Link Relative
 - D. Least Squares
 - E. Ratio to Trend
8. A statistical measure designed to show changes in a variable or a group of variables with respect to time, geographical location or other characteristics is known as
- A. Volume Index Number
 - B. Index Number
 - C. Quantity Index Number
 - D. Value Index Number
 - E. Price Index Number
9. Which of the following is **NOT** an unweighted price index number?
- A. Simple Aggregate Price Index
 - B. Simple Price Relative Index Number
 - C. Simple Average of Relative Method
 - D. Current weighted Price Index
 - E. Mean of Price Relatives
10. The probability that an employee comes early to work in any given day is 0.75. The probability that an employee is a male in the Company is 0.47. Obtain the probability that an employee selected from the Company is a female and comes to work early
- A. 0.1975
 - B. 0.2975
 - C. 0.3975
 - D. 0.4975
 - E. 0.5975

INSIGHT

11. Which of the following is **NOT** true about Null hypothesis?
- A. There is no difference between the procedures
 - B. Agreed Hypothesis
 - C. Zeroness in differences
 - D. Null hypothesis is always denoted by H_0
 - E. Null hypothesis is always denoted by H_1
12. Given that the population mean is 16. If the sample mean and variance of 9 observations with the same population are 14 and 25 respectively, determine the value of appropriate t- statistic
- A. -1.188
 - B. -1.200
 - C. 1.200
 - D. -2.188
 - E. 2.188
13. A function f is a mathematical way of describing a relationship between variables with a well-defined domain for the range of f . Given that $f(x) = 4x + 3$, determine the value of f for $x = 1, 2, 3$.
- A. 7, 11, 15
 - B. 7, 15, 11
 - C. 11, 7, 15
 - D. 15, 7, 11
 - E. 15, 11, 7
14. The set-up cost of a small firm is 2.5million Naira, while its cost of producing an item is ₦550. If the sales price of each item produced is ₦1,550, determine the quantity of items to be produced at break-even point.
- A. ₦1,500
 - B. ₦2,500
 - C. ₦3,500
 - D. ₦4,500
 - E. ₦5,500

INSIGHT

15. How much will GH¢1000 amount to at 6 percent per annum interest over 3 years if it is semi-annually compounded?
- A. GH¢119.102
 - B. GH¢119.405
 - C. GH¢1,191.02
 - D. GH¢1,194.05
 - E. GH¢1,195.62
16. Which of the following is a disadvantage of Net Present Value?
- A. It has the advantage to determine the desirability of an investment
 - B. The rate of discount can be varied to allow for different economic circumstances
 - C. All cash flows over the entire life span of the project are considered
 - D. The time value of money is considered and it takes the opportunity cost of money into account
 - E. The final result does not depend on rate of discount used, and expectation about interest rates.
17. If the second derivative of function $f(x) = (x^2 + 3)(x + 7)$ is zero, then the value of x is
- A. $-\frac{7}{3}$
 - B. $-\frac{5}{3}$
 - C. $\frac{3}{7}$
 - D. $\frac{5}{3}$
 - E. $\frac{7}{3}$

INSIGHT

18. The marginal revenue function of a production company is given by $MR = 3x^2 + 100e^{0.05x}$. Calculate the total revenue if 10 items are produced and sold.
- A. 2,197.7
B. 2,297.4
C. 3,297.4
D. 4.197.4
E. 4.297.2
19. Which of the following is **NOT** true about Linear Programming?
- A. It is a mathematical technique which deals with the allocation of limited resources
B. It is a resource allocation tool
C. It mainly deals with the optimization of an objective function
D. It mainly deals with an objective function and certain constraints based on the Limited resources
E. It mainly deals with the minimization of an objective function
20. A bakery produces **TWO** types of bread on daily basis using the machine hours shown on the table below.

Type of Bread	Machine Hours per Unit		Profit (Le)
	M _A	M _B	
White Bread (x)	6	4	3,000
Yellow Bread (y)	1.5	3	2,000
Available Machine hours	140	130	

To maximize the profit, the relevant objective function is given as

- A. $Max.6x + 1.5y$
B. $Max.130x + 140y$
C. $Max.140x + 130y$
D. $Max.3,000x + 2,000y$

INSIGHT

E. $Max. 2,000x + 3,000y$

21. The following statements are true about shadow costs **EXCEPT** that
- A. The shadow costs help management of a business organization to carry out sensitivity analysis on the availability of scarce resources
 - B. The solutions to the dual problem of the primal problem give the shadow Costs (prices), hence the alternative term dual costs (prices)
 - C. Only the binding constraints have shadow costs
 - D. The shadow cost of a binding constraint is the amount by which the Objective function decreases (or increases) as a result of the availability of one unit less or more of the scarce resources
 - E. Not all the binding constraints have dual costs (prices)
22. Which of the following is **NOT** a reason why a business needs to hold stocks?
- A. Take advantage of inflation or possible shortage
 - B. Ensure no stock-outs
 - C. Take advantage of seasonal and price fluctuations
 - D. Take advantage of quantity discount by buying in bulk
 - E. Keep to the barest maximum the delay in the production process which may be caused by lack of raw materials
23. Which of the following is **NOT** an advantage of Re-order level?
- A. Lower stocks are required

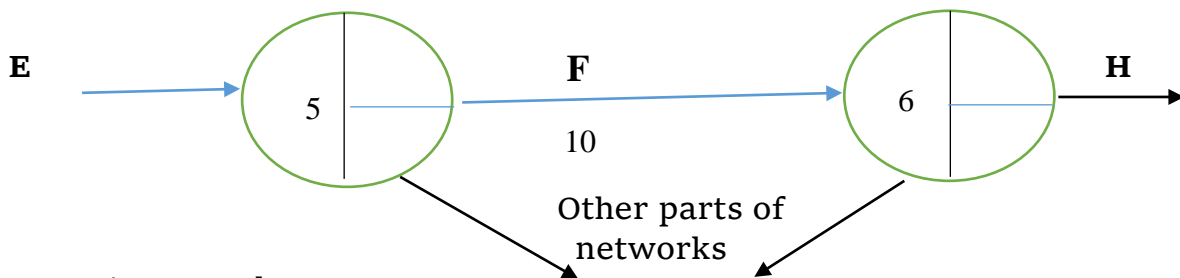
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- B. It is more responsive to changes in consumption
- C. It takes care of differing types of inventory
- D. Items ordered are economic quantities via the EOQ calculations
- E. Items reach re-order level in no particular sequence

24. The following are the terms used in the Network Analysis EXCEPT

- A. Dummy activity
- B. Event
- C. Slack
- D. Float
- E. Dummy diagram

25. Given the network diagram below, calculate the total Float of activity F



- A. 15 days
- B. 20 days
- C. 25 days
- D. 30 days
- E. 35 days

26. The machines that are used in a manufacturing company have components

with a life span of four months. The failure rates in percentages of these

components are given in the following table:

Months	1	2	3	4
Percentage Failures	12	32	34	22

INSIGHT

Given that 500 components are fixed for use at a time, determine the average

number of replacements per month.

- A. 185
- B. 186
- C. 187
- D. 188
- E. 189

27. The table below is a transportation problem. The unit transportation costs, supplies and demands are as shown. Use the North-West - Corner (NWC) method to find the allocation X

	I	II	III	Supply
A	16	14	18	30
B	X	12	14	45
Demand	20	25	30	

- A. 2
- B. 12
- C. 15
- D. 18
- E. 30

28. In an organization, there are 3 competent programmers and the organization wants to develop three application packages. After studying the expertise of the programmers, the Head of Operations estimated the computer time (in hours) required by the experts for the application packages as follows:

	Programmers		
Package	X	Y	Z
I	100	80	60
II	60	70	90
III	90	120	100

INSIGHT

Obtain the optimal assignment of the programmers to the package in order to minimize the time.

- A. 220 Hours
 - B. 230 Hours
 - C. 240 Hours
 - D. 250 Hours
 - E. 260 Hours
29. Which of the following is NOT considered before simulation is carried out?
- A. Daily demand
 - B. Probabilities
 - C. Cumulative Probabilities
 - D. Random Number
 - E. Cumulative demand
30. A company keeps the stocks of a popular brand of its product. Going by previous experience, the daily demand pattern for the popular item with the associated probabilities are as given below:

Daily demand	0	25	50
Probabilities	0.25	0.25	0.5

Use the random numbers: 35, 80, 40,75 to simulate the demand of the product for the next 4 days. Hence, estimate the daily average demand for the product on the basis of the simulated data.

- A. 36.5
- B. 37.5
- C. 38.5
- D. 39.5
- E. 40.5

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. A document consisting of set of questions and filled by an enumerator or investigator is known as.....
2. 'The students' enrollment at the Faculties of Engineering and Management Studies in a Polytechnic for year 2012 are 1,000 and 5,000 respectively. This type of presentation is known as.....
3. The mean deviation of the following data: 10, 14, 13, 11 and 12 is.....
4. Given the regression line $y = 10 + 1.2x$, the value of y when $x = 5$, and the value of x when $y = 15$ are..... and....., respectively
5. The method that loses the extreme values in the construction of trend line is known as the.....method.
6. A price index having $\frac{\sum P_1 q_1}{\sum P_0 q_0} \times 100$ as its formula is called.....
Price
Index
7. In probability theory, a collection of sample points which have certain quality or characteristics in common is known as.....
8. The expected value of X, $E(X)$ in the table below is.....

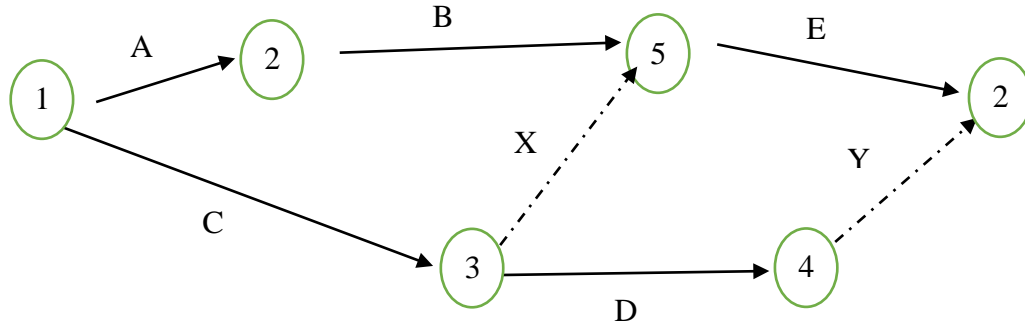
INSIGHT

X	6	10	14	18	20
P(X)	$\frac{1}{5}$	$\frac{4}{10}$	$\frac{1}{5}$	$\frac{1}{10}$	$\frac{1}{10}$

9. The profit function of any business is the difference between.....
and.....
10. If a family man earns ₦50,000 per month with a monthly constant increment of ₦2,500, his salary in the 15th month will be
11. If a building contractor is to embark on a project and finds out that the project is desirable, this shows that the NPV of the project is.....
12. If the total cost function (in L\$'000) of a project is $C(t) = 3t^3 + 4t + 2,500$ where t (in years) is the duration of the project, then the rate of change of the cost function after 5 years is.....
13. In production planning,is usually employed to allocate various materials to production schedules in an optimal way.
14. The linearity of the objective function and the constraints in a typical Linear Programming problem is to guarantee the.....and..... of the functions involved.
15. The minimization problem in the primal becomes the.....in the dual
16. The following information were obtained from a production company that distributes a product: Demand=20,000, Holding Cost is 12% of ₦24 and EOQ=900kg. Calculate the ordering cost.

INSIGHT

17. Given a Network diagram as shown below:



X and Y are the.....

18. In Replacement Analysis, the gradual failure is progressive in nature and thus affects the efficiency and it results in.....in the equipment production capacity.

19. In the profit maximization process of a transportation model, the best applicable method is

20. The principle of.....is employed to carry out the simulation experiment.

SECTION B: ATTEMPT ANY FOUR QUESTIONS (50 Marks)

QUESTION 1

a. In a particular year, a telecommunication company estimated that 48% of its subscribers are civil servants and the rest are traders. There was a network problem on a particular day where only 15% and 25% successful calls were made by civil servants and traders respectively. A subscriber is selected at random.

i. Find the probability that the subscriber makes a successful call

(3½ Marks)

ii. If it is known that a successful call is made, find the probability that it is made by a trader.

(2½ Marks)

INSIGHT

- b. The table below shows the annual tax returns (in N'000) paid by 40 randomly selected Civil Servants in a government establishment in year 2015:

Annual Tax Returns (N'000)	Number of Civil Servants
10 but less than 20	6
20 but less than 30	7
30 but less than 40	11
40 but less than 50	9
50 but less than 60	4
60 but less than 70	3

Calculate the:

- 5th Decile Tax Returns
 - 2nd Quartile Tax Returns
 - Comment on the results in (i) and (ii).
- 12½ Marks)**

(6½
(Total

QUESTION 2

- a. The monthly income (Le'000) and monthly expenditure (Le'000) of 6 selected families in a certain social club are given in the table below:

Monthly Income (x)	85	70	65	50	40	35
Monthly Expenditure (y)	30	15	20	16	12	10

- Fit a simple linear regression equation of y on x (4½ Marks)
 - Estimate the monthly income of a family with monthly expenditure of Le25,000 (1½ Marks)
- b. An automobile dealer's record of sales for 100 days is given in the table below:

Number of cars sold per day	Number of days
-----------------------------	----------------

INSIGHT

0	25
1	46
2	17
3	8
4	4

- i. Calculate the respective probabilities of the number of cars sold per day i.e. $P(0)$, $P(1)$, $P(2)$, $P(3)$, and $P(4)$
(2½ Marks)
- ii. Calculate the expected number of cars sold per day
(4 Marks)

(Total 12½ Marks)

QUESTION 3

- a. The following table gives the prices (GH¢) per unit and the quantities purchased of household items in the years 2016 and 2017:

	2016		2017	
	Price	Quantity	Price	Quantity
A	25	40	30	50
B	30	55	35	45
C	15	20	25	30
D	20	30	15	25

You are required to:

Calculate the Paache's price index taking 2016 as the base year and interpret your result.

(5 Marks)

- b. The total cost of 6 biros and 5 rulers is GH¢300 while the total cost of 5 biros and 6 rulers is GH¢305. Determine the cost of 50 rulers and 60 biros.

(7½ Marks)
12½ Marks)

(Total

QUESTION 4

ATSWA PART II MARCH 2018 DIET

INSIGHT

- a. A firm keeps stock of a popular brand of its product. The daily demand pattern for the popular brand with the associated probabilities is given in the table below:

Daily Demand	0	100	200	300	400
Probabilities	0.03	0.19	0.18	0.43	0.17

By using the following sequences of random numbers: 03, 99, 11, 04, 61, 93, 71, 61, 68, 94, simulate the demand for the next 10 days.

(6 Marks)

- b. Mobile Oil Plc has three trucks A,B and C which make weekly dispatches to four stations at Lagos (X), Ibadan (Y), Ogun (Z), and Osun (R). The transport cost per station of petrol along the route is shown in the table below as well as the weekly quantities available from each truck together with the requirement of each station.

	X	Y	Z	R	Supply Capacity
A	15	12	15	18	1,000
B	9	9	18	19	2,000
C	6	15	21	24	4,000
Demand	2,000	1,000	1,500	2,500	

Use the Least Cost Method to obtain the initial basic transportation cost.

(6½

Marks)

(Total

12½ Marks)

QUESTION 5

- a. The equipment that is used in a production line contains 1,197 identical components. The failure rates, in percentage of these components, are given in the table below

INSIGHT

Months	1	2	3	4	5
Percentage failures	9	29	33	18	11

The cost of replacing a single component is ~~N~~21 for a group replacement and ~~N~~90 for individual replacement. Calculate the monthly cost of replacing each component as they fail.

(6 Marks)

b. For the network diagram shown below:

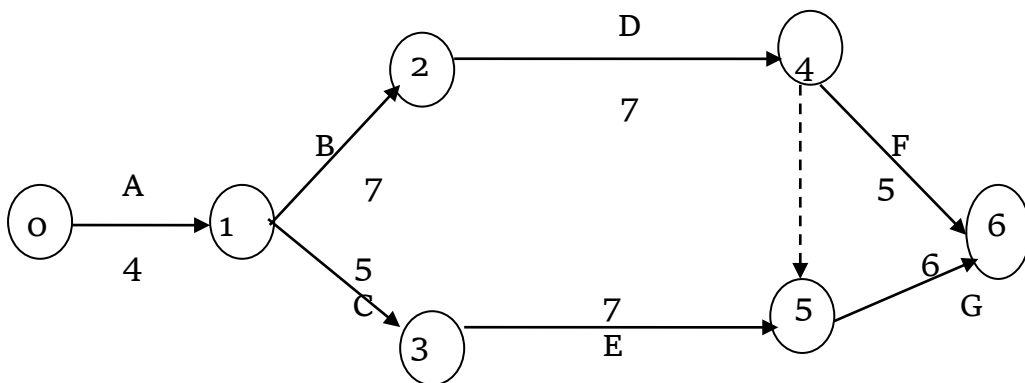
i. Use the forward and backward pass method to identify the critical path given that the duration is in weeks.

(4½ Marks)

ii. Identify the critical activities and hence find the minimum time to complete the project in weeks.

(2

Marks)



(Total 12½

Marks)

QUESTION 6

INSIGHT

- a. The normal, minimum and maximum usages of an inventory are 1,500 units, 900 units and 2,100 units, respectively. The lead time varies between 6 and 9 weeks and the Economic Order Quantity (EOQ) is 30,000 units.

Calculate the Re-order and maximum levels.

(5 Marks)

- b. i What is the present value of ₦2.6m at 7% simple interest rate over 5 years?

(3
Marks)

- ii. Mr. Olujas is planning to buy a warehouse in 3 years' time. If the purchase value of the warehouse is L\$3,200,000.00, how much should he invest now if the interest rate is 9% compounded annually?

(4½ Marks)

(Total 12½

Marks)

FORMULAE

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

Economic Order Quantity

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

INSIGHT

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

Slope of a regression equation

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

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

The 95% confidence interval for μ

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

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

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

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

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

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

EOQ with stock-out

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

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

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

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

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

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

Spearman's rank correlation coefficient

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

EOQ with gradual replenishment

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

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

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

Production cost = Ordering cost + Holding cost

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

INSIGHT

SOLUTIONS TO MULTIPLE CHOICE QUESTION

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

MCQ WORKINGS

$$\begin{aligned} 3. \quad \text{GM} &= \sqrt[5]{2 \times 4 \times 8 \times 16 \times 32} \\ &= \sqrt[5]{2^1 \times 2^2 \times 2^3 \times 2^4 \times 2^5} \\ &= \sqrt[5]{2^{1+2+3+4+5}} \\ &= \sqrt[5]{2^{15}} \\ &= 2^3 = 8 \qquad \qquad \qquad (\text{B}) \end{aligned}$$

INSIGHT

4.
$$\bar{x} = \frac{\sum x}{n} = \frac{1+2+3+4+5}{5} = 3$$

X	$(x - \bar{x})^2$
1	4
2	1
3	0
4	1
5	4
	10

$$\text{S.D} = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = \sqrt{\frac{10}{5}} = \sqrt{2}$$

= 1.414 x 1000

= R1,414 (B)

10. Let A = event of employee comes early

B = event of employee is male

C = event of employee is female

∴ P(A) = 0.75

P(B) = 0.47

P(c) = 1 - P(B)

= 1 - 0.47

= 0.53

∴ Probability of female employee coming early is
Since this events are independent

∴ P(A n C) = P(A) x P(C)

= 0.75 x 0.53

= 0.3975 (C)

12. $\mu = 16$

$\bar{x} = 14$

S = $\sqrt{25} = 5$

n = 9

The test statistics is

$$t = \frac{\bar{x} - \mu}{\frac{S}{\sqrt{n}}}$$

$$t = \frac{14 - 16}{\frac{5}{\sqrt{9}}} = \frac{-2}{\frac{5}{3}} = -1.200 \quad \text{(B)}$$

INSIGHT

13. $f(x) = 4x + 3, x = 1, 2, 3$
 $f(1) = 4(1) + 3 = 7$
 $f(2) = 4(2) + 3 = 11$
 $f(3) = 4(3) + 3 = 15$
 The value of f is 7, 11, 15

(A)

14. Total cost = $c(x) = 2,500,000 + 550x$
 Total Revenue = $R(x) = Px = 1,550x$
 Where x is the number of items produced
 At Break-even, $C(x) = R(x)$
 i.e $2,500,000 + 550x = 1,550x$
 $1,000x = 2,500,000$
 $x = 2,500$

(B)

15. $A_3 = p(1 + \frac{i}{m})^{mt}$, where P = Principal, i = Interest, t = year and
 $m = \text{semi-annual} = 2$

$$= 1000 \left(1 + \frac{0.06}{2} \right)^{2(3)}$$

$$= 1000 (1.19405) = 1194.05$$

$$= \text{GH¢ } 1,194.05$$

(D)

17. $f(x) = (x^2 + 3)(x + 7)$
 $= x^3 + 7x^2 + 3x + 21$

$$\frac{df(x)}{dx} = 3x^2 + 14x + 3$$

$$\frac{d^2f(20)}{d^2x} = 6x + 14 = 0, \text{ where } \frac{d^2f(20)}{d^2x} < 0$$

$$x = \frac{-14}{6} = \frac{-7}{3}$$

(A)

18. $\int_0^{10} (3x^2 + 100e^{0.05x}) dx = \int_0^{10} 3x^2 dx + \int_0^{10} 100e^{0.05x} dx$

$$= x^3 \Big|_0^{10} + 2000e^{0.05x} \Big|_0^{10}$$

$$= 1000 + 2000(1.6487 - 1)$$

$$= 1000 + 2000(0.6487)$$

$$= 1000 + 1297.4$$

$$= 2297.4$$

(B)

INSIGHT

25. For Activity F,
 Total float = latest Head time - Earliest Tail time - Activity duration

$$= 45 - 10 - 10$$

$$= 25 \text{ days} \quad (C)$$

OR

Total Float = latest finishing Time - Earliest starting Time - Activity Duration

$$= 45 - 10 - 10$$

$$= 25$$

26.

Monthly (x_i)	% failure	Probability (P_i)	$P_i x_i$
1	12	0.12	0.12
2	32	0.32	0.64
3	34	0.34	1.02
4	<u>22</u>	<u>0.22</u>	<u>0.88</u>
-	100	1.00	2.66

$$t = \frac{\sum P_i x_i}{\sum P_i} = \frac{2.66}{1}; N = \text{total no of items used}$$

represents the average life span of an item

Average number of replacements per month is given as

$$R = \frac{N}{t} = \frac{500}{2.66} = 187.97$$

$$\approx 188 \quad (D)$$

27.

	I	II	III	Supply
A	16	14	18	0
	20	10		0
B	14	12	14	
		13	30	0
Demand	20	0	0	

$$x = 15 \quad (C)$$

28.

Cost Table:

	X	Y	Z
I	100	80	60
II	60	70	90
III	90	120	100

Table 1: Row iteration

INSIGHT

	X	Y	Z
I	40	20	0
II	0	10	30
III	0	30	10

Table 2: Column Iteration

	X	Y	Z
I	40	10	0
II	0	0	30
III	0	20	10

X → Package III, Y → Package II and
Z → Package I

∴ total time = 90 + 70 + 60 = 220 Hours (A)

NOTE:

- Where table 1 is obtained by subtracting the lowest entry in each row of the cost table from all entries in that row.
 - How table 2 is obtained
For Column iteration, subtracting the lowest entry in each column of the table obtained in table 1 from all the entries in the column.
- iii. To check whether an optimal assignment has been made. This is obtained by drawing line horizontally or vertically through the total opportunity cost in such a manner as to minimise the number of lines necessary to cover all zero cells. This is obtained when the number of lines is equal to the number of rows or columns.
- iv. Since an optimal assignment is achieved in step (iii), where the number of lines drawn is equal to the number of rows or columns = 3

30.

Daily demand	Probability	Cumm. Probability	Random Number interval
0	0.25	0.25	00 - 24
25	0.25	0.50	25 - 49
50	0.50	1.00	50 - 99

Days	RN	Dd.
1	35	25
2	80	50
3	40	25

INSIGHT

$$\begin{array}{l} 4 \quad | \quad 75 \quad | \quad 50 \\ \therefore \text{Expected average} = \frac{150}{4} = 37.5 \end{array} \quad (\text{B})$$

Examiner's Report

All candidates attempted the questions and about 55 percent scored above average marks.

SHORT ANSWER QUESTIONS

1. Schedule
2. Text presentation
3. 1.2
4. 4.167
5. Moving average
6. Unweighted
7. Event
8. 11.8
9. Revenue function, cost function
10. N85,000
11. Positive
12. L\$229,000
13. Operations Research
14. Additivity and Divisibility
15. Maximisation Problem
16. N58.32
17. Dummy Activities
18. A decrease or reduction
19. Least Cost and Vogel's Approximation
20. Use of Random numbers

INSIGHT

SAQ WORKINGS

$$3. \quad M_D = \frac{\sum |di|}{N}, \text{ where } di = x - \bar{x}$$

$$\bar{x} = 12$$

$$Di = -2, 2, 1, -1, 0$$

$$\sum |di| = 6$$

$$\therefore M_D = \frac{6}{5} = 1.2 \text{ or } (1\frac{1}{5})$$

$$4. \quad Y = 10 + 1.2(5) = 16$$

$$15$$

$$10 + 1.2(x) \Rightarrow x$$

$$= \frac{5}{1.2} = 4.167$$

$$8. \quad E(x) = \sum P(x)x = \frac{6}{5} + \frac{10(4)}{10} + \frac{14}{5} + \frac{18}{10} + \frac{20}{10}$$
$$= 1.2 + 4 + 2.8 + 1.8 + 2 = 11.8$$

$$10. \quad U_n = a + (n-1)d$$

$$U_{15} = 80,000 + (15-1)2,500$$

$$U_{15} = 50,000 + 35,000 = \text{R}85,000$$

$$12. \quad c(t) = 3t^3 + 4t + 2,500$$

$$\frac{dc}{dt} = 9t^2 + 4$$

$$\text{At } t = 5$$

$$\frac{dc}{dt} = 9(5^2) + 4 = 225 + 4 = 229$$

$$\therefore \text{the rate of change of the cost function} = \text{L}229,000$$

$$16. \quad EOQ = \sqrt{\frac{2CoD}{C_h}}$$

$$\text{Where } D = 20,000, \quad EOQ = 900 \text{ kg}$$

$$C_h = \frac{12}{100} \times 24 = 2.88$$

$$\Rightarrow 900 = \sqrt{\frac{2 \times Co \times 20,000}{2.88}}$$

$$900^2 \times 2.88 = 2 \times 20,000 \times Co$$

$$\frac{2,332,800}{40,000} = Co$$

$$\therefore Co = \text{R}58.32$$

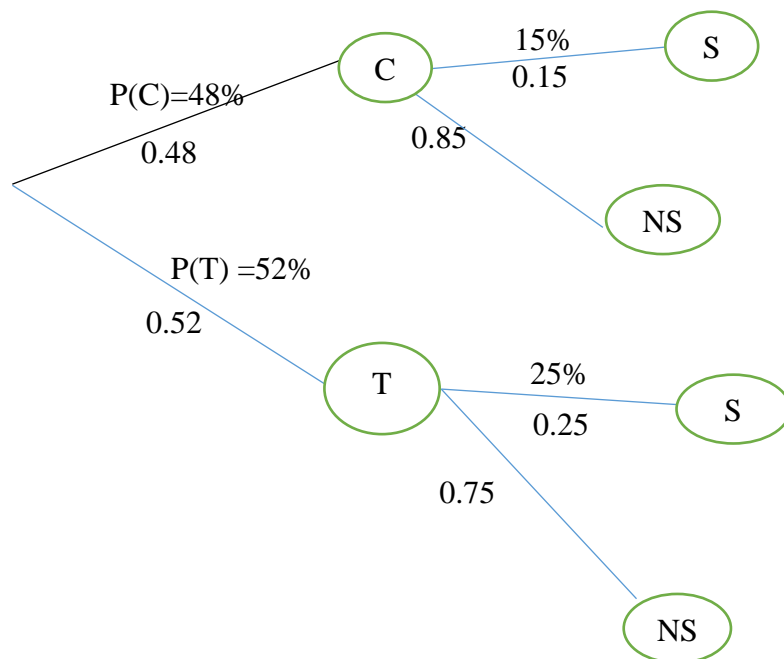
INSIGHT

Examiner's Report

All the candidates attempted the questions and about 80 percent scored below average mark.

SOLUTION TO QUESTION 1

- a. Let C represent the event of Civil servants subscribers
Let T represent the event of trader's subscribers
Let S represent the event or successful call
 $P(C) = 48\%$, $P(T) = 100 - 48 = 52\%$
Using tree diagram, we have



$$\begin{aligned} \text{(i)} \quad P(S) &= P(C) \cdot P(S/C) + P(T) \cdot P(S/T) \\ &= (0.48)(0.15) + (0.52) \cdot (0.25) \\ &= 0.072 + 0.13 \\ P(S) &= 0.202 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad P(T/S) &= \frac{P(T \cap S)}{P(S)} \\ &= \frac{P(T) \cdot P(S/T)}{P(S)} \end{aligned}$$

INSIGHT

$$= \frac{0.52 \times 0.25}{0.202} = \frac{0.13}{0.202}$$

$$0.64$$

b.

Class interval	F	cf
10 < 20	6	6
20 < 30	7	13
30 < 40	11	24
40 < 50	9	33
50 < 60	4	37
60 < 70	3	40

(i) 5th decile = D_5

$$D_5 = L_{D_5} + \left(\frac{\frac{5N}{10} - \sum f_{D_5}}{f_{D_5}} \right) C$$

$$D_5 \text{ position} = \frac{5N}{10} = \frac{5}{10} \times \frac{40}{1} = 20^{\text{th}}$$

D_5 Class = 30 < 40

$$D_5 = 30 + \left(\frac{20-13}{11} \right) 10 = 30 + 6.364$$

$$D_5 = 36.364 \Rightarrow D_5 = \text{R}36,364.00$$

(ii) 2nd quartile = Q_2

$$Q_2 = L_{Q_2} + \left(\frac{\frac{2N}{4} - \sum f_{Q_2}}{f_{Q_2}} \right) C$$

$$Q_2 \text{ position} = \frac{2N}{4} = \frac{2}{4} \times 40 = 20^{\text{th}}$$

Q_2 class = 30 < 40

$$Q_2 = 30 + \left(\frac{20-13}{11} \right) 10 = 30 + 6.364$$

$$Q_2 = 36.364 \Rightarrow Q_2 = \text{R}36,364.00$$

(iii) It shows that D_5 is equal to Q_2

Examiner's Report

The question tested the candidates' understanding of the measures of partitions and conditional probability. About 40 percent of the candidates

INSIGHT

attempted the question out of which not more than 40 percent of the candidates scored above average. The major pitfall is the inability of most of the candidates to know when to use class limit and class boundary. Candidates are advised to read the ICAN study pack and other relevant textbooks when preparing for future ICAN examinations.

SOLUTION TO QUESTION 2

a.

x	Y	x^2	xy
85	30	7225	2550
70	15	4900	1050
65	20	4225	1300
50	16	2500	800
40	12	1600	480
35	10	1225	350
$\sum x =$	$\sum y =$	$\sum x^2 =$	$\sum xy =$
345	103	21675	6530

Let the fitted simple linear regression equation be

$$y = a + bx$$

Where

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

$$b = \frac{39180 - 35535}{130050 - 11902} = \frac{3645}{11025}$$

$$b = 0.3306$$

$$b = 0.33$$

$$a = \frac{\sum y}{n} - b \frac{\sum x}{n}$$

$$a = \frac{103}{6} - (0.33) \left(\frac{345}{6} \right)$$

$$a = 17.67 - 18.975$$

$$a = -1.808 \approx -1.81$$

The fitted simple linear regression equation is $y = -1.81 + 0.33x$

(iii) Monthly expenditure = Le 25000

$$\Rightarrow y = 25$$

$$25 = -1.81 + 0.33x$$

$$x = \frac{25 + 1.81}{0.33} = \frac{26.81}{0.33}$$

$$x = 8.242$$

\therefore The monthly income is Le81,242

b(i)

INSIGHT

$$P(0) = \frac{25}{100} = 0.25$$

$$P(1) = \frac{46}{100} = 0.46$$

$$P(2) = \frac{17}{100} = 0.17$$

$$P(3) = \frac{8}{100} = 0.08$$

$$P(4) = \frac{4}{100} = 0.04$$

(ii)

x	$P(x)$	$xP(x)$
0	0.25	0
1	0.46	0.46
2	0.17	0.34
3	0.08	0.24
4	0.04	<u>0.16</u>
		$\sum xP(x) = 1.20$

The expected number of cars sold per day is 2

Examiner's Report

The question tested the candidates' knowledge of the applications of the concepts of simple linear regression analysis and replacement theory in business. About 90 percent of the candidates attempted this question out of which about 65 percent scored above the average mark. Poor understanding of the concepts of linear regression and elementary probability caused the poor performance of these candidates in this question. Candidates are advised to learn the concept of probability to enhance their performance in future examinations.

SOLUTION TO QUESTION 3

a.

Items	P_0	q_0	P_1	q_1	P_0q_1	P_1q_1
A	25	40	30	50	1250	1500
B	30	55	35	45	1350	1575
C	15	20	25	30	450	750
D	20	30	15	25	<u>500</u>	<u>375</u>
					$\sum P_0q_1 = 3550$	$\sum P_1q_1 = 4200$

The Paache's price index is

INSIGHT

$$\begin{aligned} I_p &= \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100 \\ &= \frac{4200}{3550} \times 100 \\ &= 118.3\% \end{aligned}$$

By comparing with year 2016, the price index has gone up by 18.3% In year 2017

b.

Let x represent the cost of a biro and y the cost of a ruler then

$$\begin{aligned} 6x + 5y &= 300 \dots\dots(i) \\ 5x + 6y &= 305 \dots\dots(ii) \\ (i) \times 5 & \quad 30x + 25y = 1500 \dots\dots(iii) \\ (ii) \times 6 & \quad 30x + 36y = 1830 \dots\dots(iv) \\ (iv) - (iii) & \quad 11y = 330 \\ & \quad y = \text{GH}\text{¢}30 \end{aligned}$$

Substitute for y in equation (i)

$$\begin{aligned} 6x + 150 &= 300 \\ 6x &= 150 \\ x &= \text{GH}\text{¢}25 \end{aligned}$$

∴ Total cost of 50 rulers and 60 biros will be $50 \times 30 + 60 \times 25 = \text{GH}\text{¢}3,000$

Examiner's report

Part (a) of the question tested the candidates' knowledge and understanding of index numbers and simultaneous equations. About 98 percent of the candidates attempted the question and the average score was about $3\frac{1}{2}$ marks out of 5 marks allocated to it. This is a clear indication that the candidates demonstrated good knowledge and application of index numbers. Part (b) of the question tested application of simultaneous equations. About 99% of the candidates attempted the question with an average score of about 5 marks out of $7\frac{1}{2}$ marks allocated to the question. The observed pitfall is the inability of the candidates to differentiate between Paashe's and Laspeyre's index numbers. Candidates are advised to note the pitfall and prepare well for future examinations.

SOLUTION TO QUESTION 4

INSIGHT

Daily Demand	Probabilities	Cumulative Probability	Random Number
0	0.03	0.03	00-2
100	0.19	0.22	03-21
200	0.18	0.40	22-39
300	0.43	0.83	40-82
400	0.17	1.00	83-99

Days	Random Number	Demand
1	03	100
2	99	400
3	11	100
4	04	100
5	61	300
6	93	400
7	71	300
8	61	300
9	68	300
10	97	400

	X	Y	Z	R	Supply Capacity
A			15 1000		1000
B		9 1000	18 500	19 500	2000
C	6 2000			24 2000	4000
DEMAND	2000	1000	1500	2500	
			500	2000	

Initial basic Allocation Transportation Cost

ATSWA PART II MARCH 2018 DIET

INSIGHT

Route from	Route to	Unit shipped	Cost per unit	Total Cost
C	X	2000	6	12,000
B	Y	1000	9	9,000
A	Z	1000	15	15,000
B	Z	500	18	9,000
B	R	500	19	9,500
C	R	2000	24	48,000
				N102,500

Month (x_i)	% failure	$P_i x_i$	Prob (P_i)
1	9	0.09	0.09
2	29	0.29	0.58
3	33	0.33	0.99
4	18	0.18	0.72
5	11	0.11	0.55
	100	1.00	2.93

Examiner's Report

The question tested the candidates' knowledge and application of simulation and transportation problem. About 95 percent of the candidates attempted the question out of which 60 percent of the candidates scored $6\frac{1}{2}$ and above. The major challenge with some of the solutions provided by the candidates has to do with their inability to allocate random numbers to different demand categories. Candidates should practise more problems in these topics for better performance in future examinations.

SOLUTION TO QUESTION 5

- a. Let R be average number of monthly replacements,
N be total number of components used and t be average life span of each component

$$R = \frac{N}{t}$$

INSIGHT

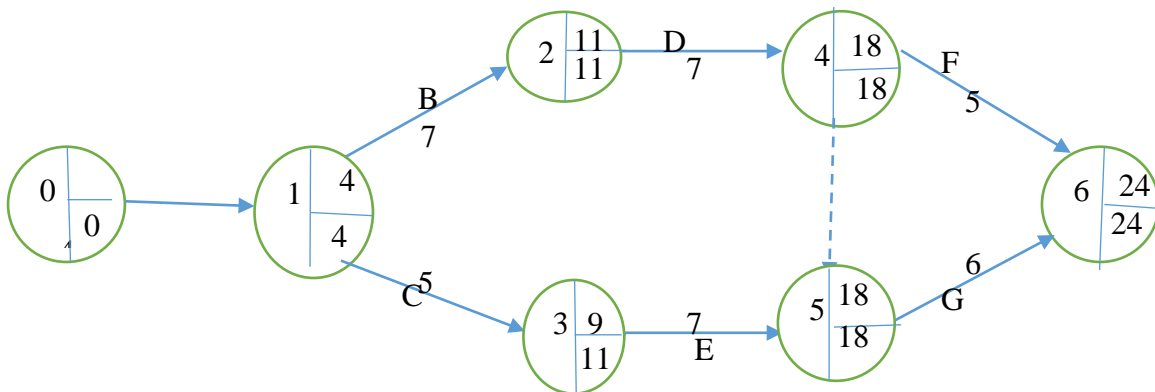
$$t = \frac{\sum P_i x_i}{\sum P_i}$$

$$t = \frac{2.93}{1} = 2.93$$

$$R = \frac{1,197}{2.93} = 408.5 \text{ components per months}$$

∴ Average monthly cost of replacing each components = 408.5 x
 ₦90
= ₦36,765.00

b.



The critical path is



(iii) The critical activities are A,B,D,G and the minimum completion time for the project is 24 weeks.

Examiner's Report

The question tested the candidates' understanding of the applications of replacement and network analysis. About 48 percent of the candidates attempted the question out of which about 35 percent of them scored

INSIGHT

above the average marks. The poor performance of the candidates might be due to their lack of adequate preparation. Therefore, the candidates are advised to prepare very well before examination for better performance.

SOLUTION TO QUESTION 6

a. The control levels are

$$\begin{aligned} \text{(i) Re-order level(ROL)} &= \text{Max usage} \times \text{max lead time} \\ \text{(ii) Max. level} &= \text{ROL} + \text{EOQ} - (\text{Min. usage} \times \text{min. lead} \\ &\quad \text{time)} \\ \text{(i) ROL} &= 2100 \times 9 = 18,900 \\ \text{(ii) Max. level} &= \text{ROL} + \text{EOQ} - (\text{Min usage} \times \text{min. lead} \\ &\quad \text{time)} \\ \text{Min . usage} &= 900 \\ \text{EOQ} &= 30,000 \end{aligned}$$

$$\begin{aligned} \text{Max Level} &= 18900 + 30,000 - (900 \times 6) \\ &= 48,900 - 5400 \\ &= 43,500 \end{aligned}$$

b.

$$\begin{aligned} \text{i. } A_n &= P(I + r.n) \\ P &= \frac{A_n}{I + rn} \\ &= \frac{2.6}{I + (0.07)(5)} \\ &= \text{R1.925,925.93} \end{aligned}$$

$$\begin{aligned} \text{ii. } A_n &= P(I + r)^n \\ P &= \frac{A_n}{(i + r)^n} \\ &= \frac{3,200,000}{(I + 0.09)^3} \\ &= \text{L\$2,461,538.46} \end{aligned}$$

INSIGHT

Examiner's Report

The question tested the candidates' knowledge of the concepts of inventory control, simple and compound interest. About 90 percent of the candidates attempted the question with about 75 percent of them scoring below the average mark.

The major pitfall was their inability to use the formula correctly. Adequate preparation is highly essential for better performance of the candidates in future examinations.