# 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

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**FOREWORD**

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

(i)     Candidates preparing to write future examinations of the Institute of Chartered Accountants of Nigeria (ICAN) at an equivalent level;

(ii)    Unsuccessful candidates in the identification of those areas in which they lost marks with a view to improving their knowledge and presentation in subsequent examinations;

(iii)   Lecturers and students interested in acquisition of knowledge in the relevant subject contained therein; and

(iv)    The profession in a bid to improving pre-examination and screening processes.

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

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

**NOTE**

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

# INSIGHT

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# INSIGHT

ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2017

**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.      The removal of the value of an asset from an entity's statement of financial position is known as

    A.      Derecognition
    B.      Impairment
    C.      Write off
    D.      Depreciation
    E.      Removal

2.      OPD Limited acquired a new crushing machine on 3 April 2015.  The cost price of the equipment was ₦7,350,000.  The supplier allowed a trade discount of ₦255,000.  The cost of installing the machine was ₦67,500.  At what cost should the machine be measured in the financial statements of OPD Limited

    A.      ₦7,095,000
    B.      ₦7,162,500
    C.      ₦7,282,500
    D.      ₦7,350,000
    E.      ₦7,417,500

3.      Which of the following is **NOT** an Asset?

    A.      Goodwill
    B.      Accruals
    C.      Inventories
    D.      Prepayments
    E.      Bills Receivable

4.  Prime Cost of goods manufactured by companies is defined as

    A.  Direct cost of material plus opening work-in-progress
    B.  Opening inventory and factory overhead
    C.  Direct cost of materials plus cost of direct labour plus direct factory overhead
    D.  Cost of factory overhead plus wages
    E.  Opening inventory of materials plus purchase of raw materials less closing inventory of raw material

5.  Which of the following would **NOT** be reported in statement of Cash flows?

    A.  Purchase of Property, Plant and Equipment
    B.  Proceeds from Sale of non-current asset
    C.  Issuance of shares to acquire Property, Plant and Equipment
    D.  Proceeds from issue of debenture
    E.  Payment of dividends

6.  AICO Limited purchased a non-current asset (Motor Vehicle) at the beginning of year 2012 for L\$9,600,000 and applied a depreciation rate of 25% per annum using reducing balance method.  The company sold the vehicle for L\$4,500,000 at the beginning of year 2016.  What is the profit or loss on disposal?

    A.  L\$450,000
    B.  L\$1,012,500
    C.  L\$1,462,500
    D.  L\$1,762,500
    E.  L\$2,062,500

7.  Which of the following is **NOT** part of the financial statements of an entity under IFRS?

    A.  Statement of financial position
    B.  Statement of comprehensive income
    C.  Statement of value added
    D.  Statement of changes in equity
    E.  Significant accounting policies and explanatory notes

8. The double entry required to reflect Goodwill in the books of a Partnership upon admission of a new partner is

   A. Dr Capital Account
      Cr Goodwill Account (of sleeping partners)
   B. Dr Capital Account
      Cr Appropriation Account
   C. Dr Goodwill Account
      Cr Capital Account (of old partners)
   D. Dr Goodwill Account
      Cr Capital Account (of new partners)
   E. Dr Appropriation Account
      Cr Capital Account (of active partners)

9. Depreciation charged on non-current assets is known as

   A. The salvage value of a non-current asset
   B. The amount of money spent in replacing non-current assets
   C. The amount spent to buy a non-current asset
   D. The part of the cost of non-current asset consumed during its period of use by the company
   E. The part of cost of non-current asset reserved to be consumed in future period

10. In a Sales Ledger Control account, the irrecoverable debts written off should be shown in the accounts

   A. As a balance carried down
   B. As a debit entry
   C. Should not be posted at all
   D. As a credit entry
   E. Both as a debit and as a credit entry

11. Why is a memorandum Joint Venture Account needed by venturers?

   A. For profit or loss determination
   B. To show the indebtedness of one venturer to another
   C. For determination of venturers' borrowings
   D. To show the venturers' capital contributions
   E. To enable the venturers to memorise the accounts

12. When cash is received on application by a company issuing shares, the journal required to post the transaction in the record of the company is

    A.    DR – Cash account
           CR – Share/Stated Capital account

    B.    DR – Cash account
           CR – Application account

    C.    DR – Share/Stated Capital account
           CR – Application account

    D.    DR – Cash account
           CR – Allotment account

    E.    DR – Cash account
           CR – Share Premium account

**Use the following to answer questions 13 and 14.**

The inventory of Jagaban Limited on 1 January 2015 was ₦7.5million while it was ₦5million at 31 December 2015. Turnover figure in 2015 was ₦87.5million and purchases amounted to ₦62.5million.

13. What is the Gross Profit or Loss for 2015
    A.   ₦2.5 million loss
    B.   ₦5.0 million profit
    C.   ₦12.5 million profit
    D.   ₦22.5 million profit
    E.   ₦22.5 million loss

14. What is the cost of goods sold?
    A.   ₦22.5 million
    B.   ₦62.5 million
    C.   ₦65.0 million
    D.   ₦70.0 million
    E.   ₦75.0 million

15. A statement of affairs is similar to
    A.   Ledger Account
    B.   Statement of Financial Position
    C.   Income and Expenditure Account
    D.   Income Statement
    E.   Trial Balance

16. The closing balance of Elec Limited accounts receivable is GH¢3,500,000 while the opening balance is GH¢2,500,000. Amount received on trade receivable for the period is GH¢7,500,000. The sales for the period is
    A. GH¢6,000,000
    B. GH¢7,500,000
    C. GH¢8,500,000
    D. GH¢10,000,000
    E. GH¢11,000,000

17. Which of the following will **NOT** affect the composition of a partnership?
    A. Admission of a new partner
    B. Review of partner's capital contribution
    C. Death of a partner
    D. When a partner becomes of unsound mind
    E. Retirement of a partner

18. Which of the following is **NOT** an attribute of the Statement of Income and Expenditure under the accrual basis?
    A. Records revenue items
    B. Gives effect to depreciation
    C. Records the opening and closing balances of cash-in-hand and cash-at-bank
    D. Records credit items in the receipts and payment accounts
    E. Records accruals, prepayments and stock

19. Which of the following 'best describes' a Trial Balance?
    A. It shows the financial position of the business
    B. It is a special account
    C. It shows all entries in the books
    D. It is a list of ledger balances in the books of account
    E. It is a summary of the accounts in the books

20. Mensah, Pascal and Saleh went into a joint operation trading in a newly invented electronic device on a profit or loss sharing ratio 5:3:2 respectively. Calculate the share of profit of Pascal from the profit of GH¢1,034,200 recorded at the end of the joint operation
    A. GH¢103,420
    B. GH¢206,840
    C. GH¢310,260
    D. GH¢413,680

E.     GH¢517,100

21.    Which of the following is an Acid Test Ratio used to assess?

A.     Investment Potential
B.     Profitability
C.     Liquidity
D.     Efficiency
E.     Activity

22.    What is the effect of overcast Opening Inventory on the Profit of a business for the year?

A.     No effect on the profit
B.     Understates the profit
C.     Overstates the profit
D.     Reduced profit to nil balance
E.     Tripled the amount of Profit

**Use the following information to answer questions 23 and 24.**

MUT Enterprises sends goods on sale or return to distributors and charge them out as ordinary sales.  The following details are relevant to the year ended 31 December 2015.

- Closing Inventory at Cost Le312,000
- Sales (including goods on sale or return Le450,000 of which Le90,000 have not yet been sold by the distributor) Le1,800,000
- Trade receivables (including goods sent out on sale or return Le264,000)
- The goods sent on sale or return were at cost plus 25% for profit

23.    Calculate the closing inventory for the year ended 31 December 2015

A.     Le 383,000
B.     Le 384,000
C.     Le 402,000
D.     Le 410,000
E.     Le 412,000

24. Calculate the sales for the year

    A.    Le 1,510,000
    B.    Le 1,610,000
    C.    Le 1,710,000
    D.    Le 1,800,000
    E.    Le 1,900,000

25. Debit balance in the Forfeited Shares Account is to be written off into

    A.    Share Premium Account
    B.    Capital Reserve Account
    C.    Retained Profit Account
    D.    Capital Redemption Reserve Fund Account
    E.    Revaluation Surplus Account

26. The debit balance in Call on Application Account is called

    A.    Call in advance
    B.    Forfeited shares
    C.    Call in arrears
    D.    Forfeited shares reissue
    E.    Call on shares

**Use the following information to answer questions 27 and 28**

Mazi Social Club has the following information in its books for the year ended 31 December 2015.

Subscriptions Account balances
1 January 2015 – in advance ₦32,000 and in arrears ₦50,000
31 December 2015 – in advance ₦14,000 and in arrears ₦10,000

Subscription received during the year for:
- 2014 – ₦40,000
- 2015 – ₦310,000
- 2016 – ₦4,000

27. What is the subscription for the year to be reflected in Income and Expenditure account for the year ended 31 December 2015
    A. ₦310,000
    B. ₦288,000
    C. ₦354,000
    D. ₦332,000
    E. ₦396,000

28. What is the subscription in arrears for the year ended 31 December 2015

    A. ₦10,000
    B. ₦14,000
    C. ₦32,000
    D. ₦50,000
    E. ₦60,000

29. In accounting for Container Inventory, which of the following ledger accounts is **NOT** to be opened when using Container Profit or Loss Method?

    A. Containers Inventory Account
    B. Containers Suspense Account
    C. Container sent to Customer Account
    D. Container Profit or Loss Account
    E. Container Retention Account

30. The required accounting entries to record profit on consignment in the books of the vendor is

    A. DR – Goods on Consignment Account
       CR – Trading Account
    B. DR – Consignment to Consignee Account
       CR – Profit or Loss Account
    C. DR – Profit or Loss Account
       CR – Consignment to Consignee Account
    D. DR – Trading Account
       CR – Goods on Consignment Account
    E. DR – Cash Book
       CR – Profit or Loss Account

# 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:**

i.      What is the formula for calculating Quick Asset Ratio.......................................

ii.     The document sent by consignee in a form of returns to the consignor on regular basis is called ...........................................

iii.    Under which activity should interest received be reported in the Statement of cash flows  ......................................................

iv.     The technical term for the difference between current assets and current liabilities is called ...........................................

v.      The issue of shares to existing shareholders at a price which is lower than the market price is known as ...................................

vi.     The Net Book Value of assets and liabilities under GAAP is known as ................................... under IFRS.

vii.    What is the name by which the carrying amount of an asset in excess of its recoverable amount called?

viii.   List **TWO** elements of Financial Statements.

ix.     The **TWO** assumptions underlying the Preparation and Presentation of financial statements are ............................... and .............................

x.      How do you correct prior period errors in financial statements in line with the provisions of IAS 8?

xi.     State the accounting concept that is being justified in the rule of Garner Vs Murray under Partnership dissolution .............................

xii.     The accounting entries in the books of the consignor to record goods sent to the consignee are ..............................

xiii.    The accounting entries in the Head Office books to record goods at cost price sent to branch are ..............................

xiv.     What are the two main causes of differences between the Head Office Current Account balance and Branch Current Account balance?

xv.      State the accounting entries for assets taken over by a partner at valuation when a partnership is dissolved ........................

xvi.     The estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated cost necessary to make the sales is called ...........................

xvii.    How much will be reimbursed to the petty cashier under the imprest system of petty cash, given a desired float of ₦250,000 and the following cash expenses made:
  •   Transport allowance – ₦32,500
  •   Vehicle repairs – ₦45,800
  •   Casual labour – ₦46,500
  •   IOU – ₦25,000

xviii.   The type of ratio that measures the ability of an entity to meet its current liabilities as and when due is known as .........................

xix.     In the preparation of manufacturing accounts the total of direct material, direct labour and direct expenses is known as ....................................

xx.      The statement that is exclusively meant to analyse any increase or decrease in an entity's shareholders' funds for an accounting or a reporting period is called ...............................

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

**QUESTION 1**

GABADA Nigeria Limited a Lagos based general merchandising company decided to open a branch in Port-Harcourt with effect from 1 January

2015.   During the month of July 2015, the Head Office recorded the following transactions in respect of the Port-Harcourt branch at the Head office as it maintains the financial accounts of the branch along with that of its own operations.

|  | N |
|---|---|
| Opening balance (1 July 2015) | |
| Branch inventory (at cost) | 620,000 |
| Branch receivables | 540,000 |
| Branch bank balance | 478,600 |
| Transactions of the branch during the month of July: | |
| Goods transferred to branch (at cost) | 1,800,000 |
| Goods transferred from branch to head office (at cost) | 60,000 |
| Cash sales paid into bank | 420,000 |
| Credit sales | 2,600,000 |
| Goods returned to branch by credit customers (at selling price) | 72,000 |
| Cheque received from credit customers | 2,760,000 |
| Cash transferred from branch bank to head office bank account | 2,720,000 |
| Salaries and wages for the branch | 180,000 |
| Discount allowed to credit customers | 52,000 |
| Bad debt written off | 8,000 |
| Dishonoured cheques of branch credit customers | 140,000 |
| Rent and rates for the branch | 120,000 |
| General expenses | 60,000 |
| Branch inventory (31 July 2015) | 300,000 |

You are required to prepare the following accounts:
a.    Goods sent to branch account
b.    Branch inventory account
c.    Branch receivable account
d.    Branch bank account

**(Total 12½ Marks)**

**QUESTION 2**

Adendum Plc issued 200,000 ordinary shares of 50k each at 70k per share payable as follows:

(i)     15k on application
(ii)    35k on allotment (including premium)
(iii)   20k on first and final call

250,000 shares were applied for.

Application for 200,000 were allotted while application for the remaining 50,000 shares were refused

Holders of 20,000 shares failed to pay up on first call.

**You are required to:**

Show the journal entries required to record the above transactions with detailed narrations

**(Total 12½ Marks)**

**QUESTION 3**

The following are summaries of the Assets and Liabilities of Koffi Enterprises as at:

|  | 1 January 2015 | 31 December 2015 |
|---|---|---|
|  | GH¢ | GH¢ |
| Trade Receivables | 418,600 | 531,900 |
| Trade Payables | 291,800 | 218,400 |
| Inventories | 375,000 | 410,000 |
| Loan – Mensah | 300,000 | 250,000 |
| Cash in hand | 17,500 | 12,500 |
| Bank balance | 127,300 | (62,800) |
| Plant and Machinery | 450,000 | 500,000 |
| Land and Building | 1,500,000 | 1,500,000 |
| Furniture | 80,000 | 70,000 |

During the year the business paid the following expenses by cheque:

Stationery GH¢5,000;
Transportation of goods GH¢7,000

The proprietor withdrew by cheque GH¢5,000 per month for personal use.

**You are required to:**

Prepare a comparative Statement of Affairs (in vertical format) showing Koffi Enterprises Capital as at 1 January 2015 and 31 December 2015 indicating the Profit or Loss for the year ended 31 December 2015.

**(Total 12½ Marks)**

## QUESTION 4

Nnamdi, a landlord granted a lease to Weah Limited to mine sharp sand from land owned by him. The agreement states a minimum of L$200,000 per year and a royalty of L$25 per tonne of the sand mined

Short workings are recoverable in the two years following the year in which they arise.

During the first year, the following quantities of sharp sand were mined:

| | |
|---|---|
| 2011 | 6,000 tonnes |
| 2012 | 7,000 tonnes |
| 2013 | 9,000 tonnes |
| 2014 | 12,000 tonnes |

Weah Limited has 31 December as its accounting year end, the date on which payment to Nnamdi, the landlord is made.

**You are required to:**

Record these transactions in the books of Weah Limited for each of the four years.

**(Total 12½ Marks)**

## QUESTION 5

On 1 January 2015, Adekigbe decided to invest his retirement benefit of ₦500,000 in wholesale business. He lodged the amount in the business bank account and made the following payments by cheque: Motor Van ₦300,000 and Utilities ₦14,250.

Detailed accounts were not kept, but the position at the end of 31 December 2015 was: Stock of goods in store ₦75,000; Customers owed ₦62,500 and there was ₦375,875 in the bank.

There were payables for supplies amounting to ₦50,000 and accrued utilities of ₦7,500

Also, he paid the following by cheque:    Suppliers  ₦750,000,  Personal expenses ₦80,000

It was agreed that on 31 December 2015, the Motor Van be depreciated at 10% for the year

**You are required to prepare for the financial year:**

a.   Cash Book,
b.   Statement of Profit or Loss and other comprehensive income (in vertical form) and
c.   Statement of Financial Position (in vertical format)

**(Total 12½ Marks)**

## QUESTION 6

The following trial balance was extracted from the records of SAMETED Limited as at 31 December 2015.

|  | Le'000 | Le'000 |
|---|---|---|
| Share/Stated Capital (Le1 each) |  | 3,000 |
| Preference Share Capital (Le1 each) |  | 1,500 |
| Share Premium |  | 250 |
| Revaluation reserve |  | 300 |
| General reserve |  | 1,200 |
| Retained earnings as at 1 January 2015 |  | 500 |
| Loan note |  | 800 |
| Land and Building (Land – Le1,500+Building Le4,000) | 5,500 |  |
| Patents | 500 |  |
| Motor Vehicles (at cost) | 1,500 |  |
| Opening inventory | 100 |  |
| Accounts receivable | 800 |  |
| Accounts payable |  | 450 |
| Bank | 750 |  |

| | | |
|---|---:|---:|
| Electricity expenses | 80 | |
| Wages expenses | 500 | |
| Telephone expenses | 70 | |
| Sales/revenue | | 3,500 |
| Purchases | 1,500 | |
| Loan interest | 80 | |
| Other expenses | 120 | |
| | 11,500 | 11,500 |

**Additional information**

(i)    Depreciation is charged at 10% on Building and 15% on Motor Vehicle

(ii)    Closing inventory is Le250,000

(iii)    Amounts payable:
  1. Ordinary dividend                Le60,000
  2. Preference dividend        Le30,000
  3. Taxation        Le26,000

(iv)    Authorised Share/Stated Capital is as follows:
  4. Ordinary Share/Stated Capital        Le3,500,000
  5. Preference Share/Stated Capital Le2,000,000

**You are required to:**

Prepare the Statement of profit or loss and other Comprehensive income and the Statement of financial position of SAMETED Limited as at 31 December 2015.

**(Total 12½ Marks)**

**SUGGESTED SOLUTIONS**

**MULTIPLE CHOICE SOLUTIONS**

1.    A

2.    B    i.e. (₦7,350,000 – ₦255,000) + ₦67,500 = ₦7,162,500

3.    B

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4. C

5. C

6. C

7. C

8. C

9. D

10. D

11. A

12. B

13. D

14. C

15. B

16. C

17. B

18. C

19. D

20. C

21. C

22. B

23. B

24. C

25. B

26. C

27.  B

28.  A

29.  E

30.  B

**EXAMINER'S REPORT**
The 30 questions were attempted by all candidates and good performance was recorded as about 75% of them scored above average marks.

**Tutorial notes**

6.

**Profit or loss on disposal**

| Cost of assets | 9,600,000 | Cumulative depreciation | 6,562,500 |
|---|---|---|---|
| Profit on disposal | 1,462,000 | Sales proceeds | 4,500,000 |
| | 11,362,500 | | 11,362,500 |

**Workings 13 & 14**

| Turnover | | 87,500,000 |
|---|---|---|
| Opening stock | 7,500,000 | |
| Purchases | 62,500,000 | |
| | 70,000,000 | |
| Less: Closing stock | 5,000,000 | |
| Cost of Goods sold | 65,000,000 | 65,000,000 |
| Gross profit | | 22,500,000 |

16.  Calculation of sales in using trade debtors control account

| | ₦ |
|---|---|
| Closing balance | 3,500,000 |
| Bank payment | 7,500,000 |
| | 11,000,000 |
| Less: Opening balance | 2,500,000 |
| Sales | 8,500,000 |

**Tutorial**

23.

| | N'000 | N'000 |
|---|---|---|
| | | 312 |
| Unadjusted closing stock (cost) | 90 | |
| Add: Un-sold goods with distribution | 18 | |
| Less: Profit (20% x N90,000) | | 72 |
| | | 384 |

24.

| | N'000 |
|---|---|
| Unadjusted sales | 1,800 |
| Less: Goods on sale or return still unsold | 90 |
| | 1,710 |

**Tutorial**

Questions 27 & 28

| | N'000 | | N'000 |
|---|---|---|---|
| Balance b/d | 50 | Balance b/d | 32 |
| Income & Expenditure | 288 | Receipt & Payments | 310 |
| Balance c/d | 14 | Balance c/d | 10 |
| | 352 | | 352 |
| Balance b/d | 10 | Balance b/d | 14 |

**SHORT ANSWER QUESTIONS**

1. $\dfrac{Current\ Assets - Inventories}{Current\ Liabilities}$

2. Account sales

3. Operating Activities/Financing Activities

4. Working capital or Net current Assets

5. Rights issue

6. Carrying amount

7.    Impairment loss

8.    Assets/Liabilities/Equities/Income/Expenses

9.    Accrual bases and going-concern

10.   Retrospectively through opening retained earnings

11.   Prudency concept

12.   Dr. Consignment to Agent Account
      Cr. Goods sent on Consignment Account

13.   Dr. Branch Inventories Account ⎫     with the cost price
      Cr. Goods Sent to Branch Account ⎭

14.   Goods in transit and Cash in transit

15.   Dr. Partner's Capital Account
      Cr. Realisation Account

16.   Net realisable value

17.   ₦124,800

18.   Liquidity ratio

19.   Prime cost

20.   Statement of Changes in Equity

**Workings**

17.

|                        | ₦       |
|------------------------|---------|
| Re-imbursable expenses | 32,500  |
| Transport expenses     | 45,800  |
| Vehicle repairs        | 46,500  |
| Casual labour          | 124,000 |

**EXAMINER'S REPORT**

The 30 questions were attempted by all candidates.  Poor performance was recorded as about 20% of the candidates scored average marks. This result clearly showed that the candidates did not prepare well for the

examinations. Candidates are advised to ensure that they prepare well for subsequent examinations.

**SOLUTION 1**

(i)

**GABADA NIGERIA LIMITED**
**Goods sent to Branch Account**

|  | N'000 |  | N'000 |
|---|---|---|---|
| 2015 July branch inventory (Return) | 60,000 | July Branch stock | 1,800,000 |
| July Head office trading account | 1,740,000 |  |  |
|  | 1,800,000 |  | 1,800,000 |

(ii)

**Branch Inventory Account**

|  | N'000 |  | N'000 |
|---|---|---|---|
| July 1 Balance b/f | 620,000 |  |  |
| July Goods sent to branch | 1,800,000 | Goods sent to branch returned | 60,000 |
| July Branch receivables | 72,000 | Branch bank – Cash sales | 420,000 |
| July Branch P & L accounts | 888,000 | Branch receivable – credit sales | 2,600,000 |
|  |  | Balance c/d | 300,000 |
|  | 3,380,000 |  | 3,380,000 |

(iii)

**Branch receivables account**

|  | N'000 |  | N'000 |
|---|---|---|---|
| July 1 Balance b/f | 540,000 | July Branch inventory return | 72,000 |
| July Branch inventory | 2,600,000 | July Discount allowed | 52,000 |
| July Branch bank (dishoured cheque) | 140,000 | July Bad debts | 8,000 |
|  |  | July Branch bank | 2,760,000 |
|  |  | Balance c/d | 388,000 |
|  | 3,280,000 |  | 3,280,000 |

(iv)

**Branch bank account**

|  | ₦'000 |  | ₦'000 |
|---|---|---|---|
| July 1 Balance b/f | 478,600 | July Branch receivables dishoured cheque | 140,000 |
| July  Branch inventory | 420,000 | July  Head  office bank | 2,720,000 |
| July  Branch receivables | 2,760,000 | July rent and rates | 120,000 |
|  |  | July Salaries and wages | 180,000 |
|  |  | July General expenses | 60,000 |
|  |  | July balance c/d | 438,600 |
|  | 3,658,600 |  | 3,658,600 |

## EXAMINER'S REPORT

The question which tests candidates' knowledge on the preparation of branch account was attempted by about 90% of the candidates.  They put up good performance as about 75% of them scored above average marks.

## SOLUTION 2

|  |  | DEBIT | CREDIT |
|---|---|---|---|
|  |  | ₦ | ₦ |
| 1. | Bank/Cash Account | 37,500 |  |
|  | Application Account |  | 37,500 |
|  | Being cash received from application for 250,000 shares at 15k each |  |  |
|  |  |  |  |
| 2. | Application Account | 30,000 |  |
|  | Share Capital Account |  | 30,000 |
|  | Being account due at 15k per share on issue of 200,000 shares |  |  |
|  |  |  |  |
| 3. | Application Account | 7,500 |  |
|  | Bank/Cash |  | 7,500 |
|  | Being return of cash to unsuccessful applicants |  |  |
|  |  |  |  |
| 4. | Allotment Account | 70,000 |  |
|  | Share Capital Account |  | 30,000 |
|  | Share Premium account |  | 40,000 |

| | | | |
|---|---|---|---|
| | Being allotment money expected at 35k per share including premium | | |
| | | | |
| 5. | Bank Account | 70,000 | |
| | Allotment Account | | 70,000 |
| | Being money received on allotment of 200,000 shares | | |
| 6. | First Call Account | 40,000 | |
| | Ordinary share capital account | | 40,000 |
| | Being amount called up on 200,000 shares at 20k per share | | |
| | | | |
| 7. | Bank Account | 36,000 | |
| | First call Account | | 36,000 |
| | Being amount received on first call 180,000 shares at 20k per share | | |

**EXAMINER'S REPORT**

The question which tests candidates' knowledge of journal entries to record the issue and allotment of shares of Limited Liability Company was attempted by about 30% of candidates. Poor performance was displayed as only about 20% of the candidates were able to score average marks.

**SOLUTION 3**

**KOFI ENTERPRISES**
**STATEMENT OF AFFAIRS AT 1 JANUARY 2015**

| | 1 January, 2015 | | | 31 December 2015 | | |
|---|---|---|---|---|---|---|
| Non Current Assets: | GH¢ | GH¢ | GH¢ | GH¢ | GH¢ | GH¢ |
| | '000 | '000 | '000 | '000 | '000 | '000 |
| Land & Building | | 1,500 | | | 1,500 | |
| Plant & Machinery | | 450 | | | 500 | |
| Furniture | | 80 | | | 70 | |
| | | | 2,030 | | | 2,070 |
| Current Assets | | | | | | |
| Inventories | | 375 | | | 410 | |
| Trade receivables | | 418.6 | | | 531.90 | |
| Bank balance | | 127.3 | | | - | |
| Cash balance | | 17.5 | | | 12.5 | |
| | | 938.4 | | | 954.4 | |
| Less: Current Liabilities | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Loan – Mukail Ade | 300 | | | 250 | |
| Trade payables | 291.8 | | | 218.4 | |
| Bank overdraft | ___ | | | 62.8 | |
| | | 591.8 | | | 531.2 |
| | | | 346.6 | | 423.2 |
| | | | 2,376.6 | | 2,493.20 |
| Capital 1 December | | | | | 2,493.20 |
| Capital 1 January | | | - | | 2,376.60 |
| | | | | | 116.6 |
| Add: Drawings | | | ___ | | 60 |
| | | | | | 176.6 |
| Less: Expenses | | | | | 12 |
| Net profit for the year | | | | | 164.6 |

**Examiner's Comment**

The question on preparation of comparative statement of affairs was attempted by about 85% of the candidates. Good understanding of the requirement of the question was displayed by candidates while 75% of them scored above average

**SOLUTION 4**

**NNAMDI ACCOUNT (LANDLORD)**

| 2011 | L$ | 2011 | L$ |
|---|---|---|---|
| December 31 Bank | 200,000 | Royalties payable | 150,000 |
| | | Shortworkings | 50,000 |
| | 200,000 | | 200,000 |
| | | | |
| 2012 | | 2012 | |
| December 31 Bank | 200,000 | Royalties payable | 175,000 |
| | | Shortworkings | 25,000 |
| | 200,000 | | 200,000 |
| 2013 | | 2013 | |
| December 31 Short workings | 25,000 | Royalties payables | 225,000 |
| Bank | 200,000 | | ___ |
| | 225,000 | | 225,000 |
| | | | |
| 2014 | | 2014 | |
| Short workings | 25,000 | Royalties payables | 300,000 |

| | | | |
|---|---|---|---|
| Bank | 275,000 | | |
| | 300,000 | | 300,000 |

### SHORT WORKINGS ACCOUNT

| 2011 | L$ | 2011 | L$ |
|---|---|---|---|
| 2011  Nnamdi a/c | 50,000 | 31 December  Bank c/d | 50,000 |
| | | | |
| 2012 | | 2012 | |
| Bank b/d | 50,000 | 31 December  balance c/d | 75,000 |
| | 25,000 | | |
| | 75,000 | | 75,000 |
| | | | |
| 2013 | | 2013 | |
| Bank b/d | 75,000 | 31 December  Nnamdi a/c | 25,000 |
| | | P & L a/c | 25,000 |
| | | Balance c/d | 25,000 |
| | 75,000 | | 75,000 |
| | | | |
| 2014 | | 2014 | |
| Balance b/d | 25,000 | 31 December  Nnamdi a/c | 25,000 |

### ROYALTIES PAYABLE ACCOUNT

| 2011 | L$ | 2011 | L$ |
|---|---|---|---|
| 31 December  Nnamdi a/c | 150,000 | 31 December  P & L a/c | 150,000 |
| | | | |
| 2012 | | 2012 | |
| 31 December  Nnamdi a/c | 175,000 | 31 December  P & L a/c | 175,000 |
| | | | |
| 2013 | | 2013 | |
| 31 December  Nnamdi a/c | 225,000 | 31 December  P & L a/c | 225,000 |
| | | | |
| 2014 | | 2014 | |
| 31 December Nnamdi a/c | 300,000 | 31 December  P & L a/c | 300,000 |

### EXAMINER'S REPORT

The question on royalty accounts was attempted by about 90% of the candidates.  50% of them displayed understanding of the requirements of the question and scored above average marks.  About 10% of them posted credit items into debit side of the ledger accounts.

### SOLUTION 5
#### Cash Book

# INSIGHT

| | ₦ | | ₦ |
|---|---|---|---|
| Capital | 500,000 | Motor van | 300,000 |
| Trade Receivables | 1,020,125 | Utilities | 14,250 |
| | | Trade Payables | 750,000 |
| | | Drawings | 80,000 |
| | | Balance c/d | 375,875 |
| | 1,520,125 | | 1,520,125 |

### Statement of Profit or loss for the year ended
### 31 December, 2015

| | ₦ | ₦ |
|---|---|---|
| Turnover | | 1,082,625 |
| Purchases | 800,000 | |
| Less: Closing Inventory | 75,000 | |
| | | 725,000 |
| | | 357,625 |
| Utilities (₦14,250 + ₦7,500) | 21,750 | |
| Depreciation: | | |
| Motor van | 30,000 | |
| | | 51,750 |
| | | 305,875 |

### Statement of Financial Position as at 31 December, 2015

| Non-current Asset | Cost ₦ | Depreciation ₦ | Carrying Amt ₦ |
|---|---|---|---|
| Motor van | 300,000 | 30,000 | 270,000 |
| Current assets | | | |
| Inventories | | 75,000 | |
| Trade receivables | | 62,500 | |
| Bank balance | | 375,875 | |
| | | 513,375 | |
| | | | |
| Current liabilities | | | |
| Trade payables | 50,000 | | |
| Accruals (utilities) | 7,500 | 57,500 | 455,875 |
| | | | 725,875 |
| Financed by: | | | |
| Capital | | | 500,000 |
| Net Profit | | | 305,875 |
| | | | 805,875 |
| Less: Drawings | | | 80,000 |
| | | | 725,875 |

**Notes:**

### Trade Receivables Account

| | N | | N |
|---|---|---|---|
| Sales | 1,082,625 | Bank | 1,020,125 |
| | | Balance c/d | 62,500 |
| | 1,082,625 | | 1,082,625 |

**Trade Payables Account**

| | N | | N |
|---|---|---|---|
| Bank | 750,000 | Purchases | 800,000 |
| Balance c/d | 50,000 | | |
| | 800,000 | | 800,000 |

Depreciation on Motor Van
10% x N300,000       =       N30,000

**EXAMINER'S REPORT**

The question on preparation of accounts from incomplete records was attempted by about 50% of the candidates. The performance was poor as only about 45% scored above average marks.

Candidates are advised to ensure adequate coverage of the syllabus for better performance in future examinations.

**SOLUTION 6**
(i)

**SAMETED LIMITED**
**STATEMENT OF COMPREHESIVE INCOME FOR THE PERIOD ENDED**
**31 DECEMBER, 2015**

| | N'000 | N'000 |
|---|---|---|
| Sales income | | 3,500 |
| Less cost of sales | | |
|   Opening inventory | 100 | |
|   Add purchases | 1,500 | |
| | 1,600 | |
| Less closing inventory | 250 | 1,350 |
| Gross profit | | 2,150 |
| Less expenses | | |
|   Electricity | 80 | |
|   Wages | 500 | |
|   Telephone | 70 | |
|   Loan interest | 80 | |
|   Other expenses | 120 | |
|   Depreciation (N400 + N225) | 625 | 1,475 |
| Profit before tax | | 675 |
| Less taxation | | 26 |

| Profit after tax | | 649 |
|---|---|---|

**Workings**

Retained profit = Profit for the year less dividends paid

= N̶649,000 – N̶60,000 – N̶30,000 = N̶559,000

**SAMETED LIMITED**
**STATEMENT OF FINANCIAL POSITION AS AT**
**31 DECEMBER, 2015**

| | N'000 | N'000 | N'000 |
|---|---|---|---|
| Non-current assets | | | |
| Land and building | | | 5,100 |
| Motor vehicles | | | 1,275 |
| Patents | | | 500 |
| | | | 6,875 |
| Current assets | | | |
| Inventory | 250 | | |
| Accounts receivables | 800 | | |
| Bank | 750 | 1,800 | |
| Current liabilities | | | |
| Accounts payable | 450 | | |
| Tax payable | 26 | | |
| Dividends payable | 90 | 566 | 1,234 |
| | | | 8,109 |
| Debenture loan | | | 800 |
| | | | 7,309 |
| | | | |
| Capital and reserves | | | |
| | | **Authorised** | **Issued** |
| | | **N'000** | **N'000** |
| Share capital | | 3,500 | 3,000 |
| Ordinary share capital | | 2,000 | 1,500 |
| Preference share capital | | 5,500 | 4,500 |
| | | | |
| Reserves | | | |
| Share premium | | 250 | |
| Revaluations reserve | | 300 | |
| General reserve | | 200 | |
| Retained earnings (N̶1,500 + N̶559) | | 2,059 | 2,809 |
| | | | 7,309 |

**EXAMINER'S REPORT**

# INSIGHT

About 75% of the candidates attempted the question on the final accounts of Limited Liability Company. They put up good performance as about 70% scored above average marks.

# INSIGHT

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA**
**ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA**
**PART II EXAMINATIONS – MARCH 2017**

**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.  The Auditor-General shall submit his report to each house of the National Assembly within ................. days of receipt of the Accountant-General's financial statements

    A.   30 days
    B.   45 days
    C.   60 days
    D.   75 days
    E.   90 days

2.  ......................... is used to amend the existing provisions in the financial regulations or the introduction of new policy guidelines

    A.   Fiscal responsibility Act, 2007
    B.   Appropriation Act
    C.   Treasury circular
    D.   Gazettes
    E.   Finance Act of 1958

3.  The Act that has it's main purpose as that of institutionalizing prudency, transparency and accountability in the management of Nigerian resources is called .............

    A.   The Public Procurement Act 2007
    B.   The Nigeria Sovereign Investment Authority Act 2011
    C.   The Fiscal Responsibility Act 2007
    D.   The Financial Regulation
    E.   The Commitment Act

4.  The methods and principles applied by an entity to record its financial transactions are known as

    A.  Accounting Principles
    B.  Accounting Policies
    C.  Accounting Methods
    D.  Accounting Bases
    E.  Accounting Concepts

5.  Federal Pay Offices all over the Federation are examples of ........................ Accounting unit

    A.  Self-Accounting unit
    B.  Sub-Self Accounting unit
    C.  Non-Self Accounting unit
    D.  Below-the-line Account
    E.  Above-the-line Account

6.  Which of the following is **NOT** among the powers of the Fiscal Responsibility Commission?

    A.  Formulate and provide general policy guidelines for the discharge of the Commission's functions
    B.  Superintend over the implementation of such policy guidelines
    C.  Receive declaration by the public officers in its commission
    D.  Appoint employees to ensure proper and efficient performance of its functions
    E.  Determine the condition of service of employees and fix their remunerations, allowances and benefits

7.  Which of the following is **NOT** a function of the Code of Conduct Bureau?

    A.  Engages in the conversion and transfer of assets that is derived from any offence
    B.  Receives assets declarations by public officers in accordance with the provisions of the Act
    C.  Takes and retains custody of any assets declaration
    D.  Receives complaints about non-compliance with or breach of the Act
    E.  Examines the assets declarations and ensures that they comply with requirements of the Act

8.  According to the Pension Reform Act 2014, the Pension Funds shall be managed only by ……………………… licenced by the Pension Commission

    A.  Pension Fund Custodians
    B.  Pension Fund Adviser
    C.  Pension Fund Administrators
    D.  Pension Fund Contributors
    E.  Pension Fund Contributory Scheme

9.  Which of the following best states the duty of an Internal Auditor?

    A.  Evaluating the corrections, validity and professionalism of the accounts and records submitted by the management and expressing true and fair view or otherwise
    B.  Checking the books of account of the organization to ascertain whether or not the existing financial regulations and professionalism are being complied with
    C.  Consider whether the information stated in the report of the directors or management for the year are in tandem with the final account prepared
    D.  Ascertain that there has been proper authority for the acquisition, retirement and utilization of the public sector organisation's property
    E.  Conducting special investigations or carrying out spin-off assignments that require more confidential and technical handling than the internal auditors can afford or be saddled with

10. The installation of proper internal control and accounting systems is **ONE** of the functions of the

    A.  Sub-accounting officer
    B.  Officer controlling expenditure
    C.  Internal Audit
    D.  Accounting Officer
    E.  Imprest Holder

11. **ONE** of the records kept by the store keeper to ensure that all the items in the store agree with those in the store ledgers is

    A.  Bin-Tally card
    B.  Bill Board
    C.  Basic card
    D.  Store issue card

E.     Vote book

12.    Loss of stores may be written off where the following conditions are met **EXCEPT**

A.     The loss is not due to negligence of the store officer
B.     The loss cannot be traced to outright fraud
C.     The store keeper is unable to maintain store records
D.     Where the value of the items lost is not more than ₦200
E.     Where internal control system exists and have no weakness

13.    With reference to accounting documentation, the accounting records listed below are key to accounting for investment **EXCEPT**

A.     Cash book
B.     Investment register
C.     Approved budget provisions
D.     Schedule of price quotations
E.     Tally card

14.    The public officer whose appointment is regulated by Section 86 of the 1999 Constitution of Nigeria is

A.     The Accountant-General of the Federation
B.     The Senate President
C.     The Chief Justice of the Federation
D.     The Auditor-General for the Federation
E.     The Attorney-General of the Federation

15.    Which of the following is **NOT** a function of the Board of Survey?

A.     To survey on cash, bank balances and stamps of all ministries
B.     To conduct enquiries in ministries and extra-ministerial departments on special issues
C.     Examination of all cases of "alarm" raised and brought before it
D.     Investigation of misappropriation cases
E.     To dispose off unserviceable vehicles if need be

16.    Board of Enquiry is set up when

i.      There is probability of fraud
ii.     Loss is substantial
iii.    Collusion is suspected
iv.     The Officer's skill is improved

A.     ii
B.     i and iv
C.     i, ii and iii
D.     iv

E.     iii and iv

17. Which of the following is **NOT** an agency approved by The Federal Government of Nigeria to collect revenue into the Federation Account?

    A.    Federal Inland Revenue Service
    B.    Nigerian National Petroleum Corporation
    C.    Department of Petroleum Resources
    D.    Nigeria Customs Service
    E.    Nigeria Prisons Service

18. Which of the following is **NOT** a member of the National Council on Public Procurement?

    A.    Minister of Finance as Chairman
    B.    Attorney-General and Minister of Justice
    C.    Secretary to the Government of the Federation
    D.    Economic Adviser to the President
    E.    President of the Federal Republic of Nigeria

19. Loss of funds **CANNOT** arise from **ONE** of the following

    A.    Misappropriation of funds and fraud
    B.    Reduction in value of exchange currency
    C.    Falsification of records
    D.    False claim
    E.    Theft

20. In accordance with IPSAS 1, a complete set of financial statements comprises of the following **EXCEPT**

    A.    Statement of financial performance
    B.    Cash flow statement
    C.    Statement of unallocated stores
    D.    Statement of financial position
    E.    Statement of changes in net assets/equity

21. IPSAS as agreed by FAAC is to be used for financial statements preparation by

    A.    Local Governments
    B.    State Governments
    C.    Federal Government
    D.    In preparation of Federation Accounts
    E.    Federal, States and Local Governments

22. Treasury Single Account can be described as

    A. A bank account or a linked bank account through which a government transacts all its receipts and payments
    B. All the governments operate one single account for receipts and payments
    C. All the tiers of government produce one set of financial statements
    D. Each tier of government produces one single account of its operations
    E. All tiers of government operate, transact business and receive funds through the Federation Account

23. Which of the following is **NOT** an information to be provided by Integrated Payroll and Personnel information System (IPPIS)?

    A. Data base of public servants
    B. Disclosure of payment status of salary of every public servant
    C. Provision of actual personnel emolument cost
    D. Provision about career progression of public servants and their promotion
    E. Ensuring easy storage of personnel record for salary administration and pension

24. Stores can become unserviceable through the following **EXCEPT**

    A. Obsolescence
    B. Dilapidation
    C. Abuse
    D. Constant update and repair
    E. Accidental destruction

25. Which of the following items is **NOT** expected to be found in the safe of Public Sector Accounts Department?

    A. Cash
    B. Receipt booklets
    C. Licence booklets
    D. Stamps and cheques
    E. Account of unallocated stores

26. Which of the following is **NOT** a member of the Pension Transition Arrangement Directorate?

    A. Representative of Civil Service Pension Department
    B. Representative of Police Pension Department
    C. A member of National Assembly
    D. The Customs, Immigration and Prison Pension Departments' representative

E.    A representative of Pension Service Department

27.    An Expenditure Warrant which empowers the Accountant-General of the Federation to fund the payment of salaries as approved in the annual budget is

i.    Provisional General Warrant
ii.    Supplementary General Warrant
iii.    Annual General Warrant

A.    i
B.    i and ii
C.    iii
D.    ii and iii
E.    i, ii and iii

28.    In which of the following situations should Contingency Fund **NOT** be used?

A.    Unexpected damage by flood of an important bridge in the country
B.    Unforeseeable natural disasters in the country
C.    Unexpected accident of large installation on public properties
D.    Unusual damage by earthquake
E.    Supplementing unapproved item of budget

29.    Appropriation Act means

A.    The enacted Act of Parliament in each year in which public money is appropriated for services
B.    The submission of the annual budget by the Governor or President to the Legislature
C.    The approval of the proposed budget by the legislature
D.    The Accountant-General's approval of the year's expenditure
E.    The issue of warrant by the Federal Minister of Finance

30.    Which of the following uses monetary and fiscal measures of control over public expenditure?

A.    Judiciary
B.    Legislature
C.    Executive
D.    Accountant-General of the Federation
E.    Auditor-General for the Federation

# 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.      In accordance with Financial Regulations 226, arrears of revenue which have become impossible to collect is ..............................

2.      What legal authority enables the government to incur expenditure before the passage of the Appropriation Bill?

3.      A documentary evidence of payment or receipt of money that is available for future accounting and auditing purposes is called a/an ...........................

4.      The contributions of the Federal Government to the retirement benefits of employees of the public service shall be a charge on the ...................

5.      According to the Pension Reform Act 2014, the Pension Funds shall be managed by only ...................... Licensed by the Commission.

6.      In government accounting, the Ministry or department through which accounts are processed is referred to as ..............................

7.      A structured representation of the financial position and financial performance of an entity is known as ..............................

8.      An Officer who is entrusted with the receipt, custody and disbursement of public money and keeps recognized cash book and other approved account transactions which are embodied in the final accounts of the government is a ................................

9.      Before a Ministry or extra ministerial office or other arm of government becomes a self accounting unit, it will require the approval of ...........................

10.     The chart which contains all items of non-expendable store in individual office or quarter in addition to store ledger information is called .................................

11.     A lump sum paid to a retired officer who has served for the statutory period of time is known as ...........................

12. The statutory retirement age of Public Officers in Nigeria is ...............................

13. Assets which collectively constitute or represent a pension fund under the Pension Reform Act 2014 is called ...............................

14. The Officer recognized by the Constitution of the Federal Republic of Nigeria 1999 (as amended) to audit the accounts of all accounting officers and all persons entrusted with the collection, custody, receipt, issue or payment of public money is .......................................

15. In the operation of selective tenders, the number of contractors competing should not be less than ...............................

16. The Chief Accounts Officer and Chief Financial Adviser to the Local Government is ..............................

17. Transcript can be classified into **TWO**, namely: main transcript and ...............................

18. Ministry of Works is an example of a sub-self accounting unit. **True or False?**

19. The cards opened at the beginning of every financial year for each serving officer is known as ...................................

20. Under IPSAS 2 Cash Flow Statements, cash flows are reported under operating, investing and .......................... activities.


**SECTION B**              **ATTEMPT ANY FOUR QUESTIONS**

**QUESTION 1**

a.   i.   State **FIVE** functions or duties of a Revenue Collector as an Officer of
          the Government                                      (5 Marks)

     ii.  List **FOUR** documents used for Revenue collection        (2 Marks)

b.   i.   Define Public Accounts Committee                   (2½ Marks)

ii.    List **THREE** roles of the Public Accounts Committee          (3 Marks)

**(Total    12½ Marks)**

**QUESTION 2**

Capital Development Fund is a very important fund for every country's public expenditure.  It provides facilities for industrial development and improvement in the standard of living.  The Government of JOETIGBA STATE is planning some capital development for 2015. You are provided with data of the capital development receipts in the current year and the expected growth of receipt in the coming year:

**SUMMARY OF BUDGETED CAPITAL DEVELOPMENT PLAN FUND RECEIPTS 2014**

| Economic Code | Revenue Head | ₦m Actual Approved | ₦m Approved Estimate |
|---|---|---|---|
| 13010100/200 | Domestic Aid & Grant | 34,214 | 40,300 |
| 13020300/400 | Foreign Aid & Grant | 132,110 | 150,000 |
| 140101000 | Transfer from CRF | 432,000 | 400,000 |
| 14020202 | Education Trust Fund Receipt | 62,177 | 50,000 |
| 14020203 | Petroleum Development Fund Receipt | 82,900 | 80,000 |
| 14020204 | Ecological Fund Receipts | 41,111 | 40,000 |
| 14020205 | Millennium Development Goal Debt Receipt | 61,200 | 50,000 |
| 14030100 | Domestic Loans | 171,811 | 150,000 |
| 1403200 | Foreign Loans | 920,400 | 900,000 |

The expected growth in receipts for the year 2015 is 30%

You are required to prepare Summary of Budgeted Capital Development Fund receipt for the year 2015                **(Total 12½ Marks)**

**QUESTION 3**

"SHORTFALL AND EXCESS ACCOUNT" is a reconciliation account for the correction of anomalies and discrepancies in stores.

DANWAKE LOCAL GOVERNMENT operates unallocated stores system to provide for the need of each department in the Local Government. The information below is relevant:

|  | ₦000 |
|---|---|
| Total Value of Deficiencies 2015 | 1,725 |
| Total Value of Excesses 2015 | 3,149 |
| Transfer to Unallocated Store Deficiencies 2015 | 15,417 |
| Claims written off | 3,125 |
| Stores written off | 4,725 |
| Revaluation of store | 1,259 |
| Balance on hand at the end of 2014 | 135,159 |
| Value of claims forwarded 2014 | 21,459 |
| Value of claims raised 2015 | 59,112 |
| Claims met 2015 | 62,150 |
| Claims abandoned | 1,750 |
| Claims from shortfall and excess a/c | 3,120 |
| Deficiency Sub-head | 1,790 |

**You are required to:**

i.    Briefly explain unallocated store                                             (1½ Marks)

ii.   Prepare unallocated store shortfall and excess accounts      (5½ Marks)

iii.  Prepare unallocated store claim account for the period ended 31 December 2015
      (5½ Marks)

**(Total 12½ Marks)**


**QUESTION 4**

a.    An enquiry may be required to investigate circumstances leading to an abnormal situation usually in connection with loss of fund or stores.   In   consideration   of   the   above,   enumerate   **FIVE** circumstances for setting up a Board of Enquiry.
                                    (5 Marks)


b.    Copies of the Board of Enquiry proceedings and report together with copies of supporting documents are usually forwarded to the Secretary, Permanent Board of Survey and Enquiry.  List **THREE** persons that receive one copy each through the Secretary, Permanent Board of Survey and Enquiry.  (1½ Marks)

c.      A situation may arise in any of the Ministries or Extra Ministerial Departments where one or a group of officers are charged with the responsibility of carrying out the function of the Board of Survey. State **TWO** classifications of the Board of Survey.
(3 Marks)

d.      List **TWO** charges from Consolidated Revenue Fund.            (3 Marks)

(**Total      12½ Marks)**

## QUESTION 5

a.      The Accountant-General of IKPOBA STATE instructed that monthly Bank Reconciliation Statements for the only single account approved for the Ministry of Poverty Alleviation at Bank XYZ, A/c No. 01234567890 be prepared.

The information below is provided from the cash office for the month of December 2015:

|  | ₦000 |
|---|---|
| Balance available | 372,150 |
| Unclaimed Mandate | 82,105 |
| e-receipt not recognized by Bank | 199,015 |
| Debit from bank not yet recognized (bank charge) | 111,211 |
| Wrongly coded e-receipt not known | 125,800 |
| Balance in Bank Statement | 269,629 |

You are required to prepare the Bank Reconciliation Statement as at 31 December 2015.                                    (10½ Marks)

b.      Briefly explain how you will prepare a reconciliation of the Bank Account with the Cash Book in accordance with FR 716.
(2 Marks)

(**Total 12½ Marks)**

## QUESTION 6

# INSIGHT

The Personnel Department of the Ministry of BOOMAG is about preparing its year 2017 Personnel Budget. As a new Accountant in that Department, you have been called upon to prepare the Personnel budget. You ascertained the following from the records:

| Office | No.in Post | Grade level | Salary per annum ₦ | Estimated Salary Increment ₦ |
|---|---|---|---|---|
| Director of Establishment | | 16 | 165,000 | 8,500 |
| Deputy Director | 1 | 15 | 135,000 | 10,100 |
| Assistant Director | 2 | 14 | 127,500 | 4,675 |
| Assist. Chief Accountants | 2 | 13 | 105,000 | 4,590 |
| Principal Accountants | 4 | 12 | 90,000 | 4,420 |
| Senior Estab. Officer | 8 | 10 | 75,000 | 3,400 |
| Establishment Officer I | 6 | 09 | 63,750 | 3,060 |
| Establishment Officer II | 8 | 08 | 56,250 | 2,550 |
| Principal Estab. Assistant | 12 | 10 | 75,000 | 3,400 |
| Senior Estab. Assistant | 10 | 09 | 63,750 | 3,060 |
| H.E.O. (Accounts) | 12 | 08 | 56,250 | 2,550 |
| E.O. (Estab) | 15 | 07 | 52,500 | 2,295 |
| Field Estab. Officer | 21 | 06 | 46,500 | 2,125 |
| Senior Clerical Officer | 18 | 05 | 37,500 | 1,700 |
| Clerical Officer | 25 | 04 | 31,500 | 1,530 |
| Asst. Clerical Officer | 20 | 03 | 30,000 | 1,275 |
| Office Assistant | 5 | 03 | 30,000 | 1,275 |
| Driver | 10 | 03 | 30,000 | 1,275 |
| Cleaner | 15 | 02 | 22,500 | 1,020 |

**Additional relevant information includes;**

(i)    All the salary levels shown above are step 1 of each grade. It is the management policy to forward Personnel Cost Budget based on step 4 of the grade level.

(ii)   **ONE** Deputy Director and an Assistant Director are due for promotion during the budget year. **TWO** Principal Establishment Assistants are to retire at the end of current year.

(iii)  During the year 2017, **FOUR** Senior Establishment Officers will be employed to strengthen the Establishment Department.

(iv)  Staff allowances constitute 20% of staff salaries.

# INSIGHT

**You are required:**

Prepare the Personnel Cost Budget for the year 2017 based on the above information.

**(Total 12½ Marks)**

# INSIGHT

**SUGGESTED SOLUTIONS**

**MULTIPLE CHOICE     QUESTIONS**

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

**EXAMINER'S REPORT**

This consists of 30 compulsory Multiple Choice Questions that covers every areas of the syllabus.  Attempt was massive as about 99% of the candidates attempted these questions.  The performance was good as over 70% scored above 50% of total marks obtainable.

**SHORT ANSWER QUESTIONS**

1. Abandoned Revenue
2. Provisional General Warrant
3. A voucher
4. Consolidated Revenue Fund
5. Pension Fund Administrator
6. Accounting Unit
7. Financial Statements
8. Sub Accounting Officer
9. Accountant-General
10. Inventory chat or Board
11. Gratuity
12. 70 Years
13. Pension Fund Assets
14. Auditor-General for the Federation
15. Five
16. Council Treasurer/ Director of Finance
17. Supplementary Transcript
18. False
19. Personal Emolument Card
20. Financing

**EXAMINER'S REPORT**
This consists of 20 compulsory Short Answer Questions that cover the entire segments of the syllabus.  About 98% of the candidates attempted the questions.  The performance was fair as about 60% of the candidates scoring above 50% of total marks obtainable.

**SOLUTION 1**
(a)
    i.    Function/Duties of a Revenue Collector
        These are to ensure (that):
        a. Efficient internal checks against the occurrence of malpractices

        b. Proper provision is made for the custody of public moneys and securities documents

        c. All  moneys collected were properly accounted for

d.  Any defect that comes to his notice in the procedure of revenue collection

e.  Receipts of public revenue are lodged promptly

f.  all officers under his authority entrusted with the receipt of public fund are supervised

g.  Any minor deficit which is not caused by theft or fraud and report in writing is made good to the appropriate officer e.g. Minister of Finance

h.  All cash and stamps in his care agrees with the balances in cash book and stamp register

i.  All moneys collected by him on behalf of the Government are classified under proper heads and sub-heads of the estimate or other approved classification.

ii)  Documents used for Revenue Collections are:
a.  Treasury Receipt Books

b.  Tellers or Pay In Slips

c.  Cash books

d.  Paper money receipts

e.  Cheque summary register.

(b)

i.  Public Accounts Committee is a Standing Committee in the two houses of the National Assembly.  The Committee receives the audited accounts and other special reports, examines and debate the contents of the reports.

The Chairman of the Committee is also from the opposition parties.

OR  Public Accounts Committee is the legislative organ performing a Post-mortem function on the Auditor-General's report on audited financial statements submitted to each House of State and National Assembly.  The Public Accounts Committee (PAC) is a Committee of the National Assembly responsible for the consideration of Public Accounts.

ii.    Roles of Public Accounts Committee (PAC) are to:
- Provide a forum in which Accounting Officers are called upon to explain in public, matters for which their departments had been queried by the Auditor-General.

- Inform the National Assembly and the general public of defects in financial administration and the explanation of accounting officers when confronted with them.

- Serve as a vital link between the Auditor-General and the National Assembly.

- Enforce the audit sanction required by law.

- Recommend to the President any action to be taken on the offending officer.

- The Committee also performs such other functions may be assigned to it from time to time.

**EXAMINER'S REPORT**
The question is in two (2) parts. One tested the candidates' knowledge of a Revenue Collector's Functions/Duties and documents used for Revenue Collection. Part two requires the definition and roles of the Public Accounts Committee.
About 98% of the candidates attempted the question, while less than 40% of them scoring above 50% of total marks obtainable.

**SOLUTION 2**

**JOETIGBA STATE**
**SUMMARY OF BUDGETED DEVELOPMENT RECEIPTS FOR YEAR 2015**

| ECONOMIC CODE | REVENUE HEADS | 2014 ESTIMATE | 2014 ACTUAL | 2015 ESTIMATE |
|---|---|---|---|---|
| | **GROWTH RATE (%)** | | | **30%** |
| | | | | |
| | | **NGN** | **NGN** | **NGN** |
| | | **(₦'M)** | **(₦'M)** | **(₦'M)** |
| 13010100/200 | Domestic Aid and Grant | 40,300 | 34,214 | 44,478 |
| 13020300/400 | Foreign Aid and | 150,000 | 132,110 | 171,743 |

| | | | | |
|---|---|---|---|---|
| | Grant | | | |
| 140101000 | Transfer from CRF | 400,000 | 432,000 | 561,600 |
| 14020202 | Education Trust Fund Receipt | 50,000 | 62,177 | 80,830 |
| 14020203 | Petroleum Development Fund Receipt | 80,000 | 82,900 | 107,770 |
| 14020204 | Ecological Fund Receipts | 40,000 | 41,111 | 53,444 |
| 14020205 | Millennium Development Goal | 50,000 | 61,200 | 79,560 |
| | Debt Receipt | | | |
| 14030100 | Domestic Loans | 150,000 | 171,811 | 223,354 |
| 1403200 | Foreign Loans | 900,000 | 920,400 | 1,196,520 |
| | Total | 1,860,300 | 1,937,923 | 2,519,299 |

**EXAMINER'S REPORT**

The question tested the candidates' knowledge of the Preparation of Budgeted Capital Development Plan Fund receipt. About 80% of the candidates attempted the question, while about 40% of them scoring above 50% of marks obtainable.

**SOLUTION 3**

(i) According to the Financial Regulations 2004 (Revised to January 2009), Unallocated Stores are those purchased for general stock rather than for a particular work or service, for which the final vote of charge cannot be stated at the time of purchase. Their cost is debited to an Unallocated Stores sub-head in the Expenditure Estimates. They are held on charge by both value and unit and when issued for use are charged to the appropriate sub-head of expenditure as an Allocated Store, and the corresponding credit is posted to the Unallocated Stores sub-heads.

(ii)

**DANWAKE LOCAL GOVERNMENT**
**DEPARTMENT OF SUPPLIERS**
**UNALLOCATED STORES**
**ANNUAL BALANCE STATEMENT**
**SHORTFALL AND EXCESS ACCOUNT**

| | ₦'000 | | ₦'000 |
|---|---|---|---|
| Total value of deficiency 2015 | 1,725 | Total value excess 2015 | 3,149 |
| | | | |
| Claims written-off | 3,125 | Transfer to U/A deficiency | 15,417 |

| Store writer | 4,725 | | |
|---|---|---|---|
| Balance on hand December 2015 | 10,250 | Revaluation | 1,259 |
| | 19,825 | | 19,825 |
| | | Balance b/d | 10,250 |

(iii)

**DANWAKE LOCAL GOVERNMENT**
**DEPARTMENT OF SUPPLIERS**
**UNALLOCATED STORES**
**ANNUAL BALANCE STATEMENT**
**CLAIMS ACCOUNTS**

| | ₦'000 | | ₦'000 |
|---|---|---|---|
| Value of claims 2014 | 21,459 | Claims settled | 62,156 |
| | | | |
| Value of claims 2015 | 59,112 | Claims abandoned | 1, 700 |
| | | Shortfall and Excess | 3,120 |
| | | Stores Deficiencies | 1,790 |
| | | Value claims c/d | 11,811 |
| | 80,571 | | 80,571 |
| Value of claim b/d | 11,811 | | |

**EXAMINER'S REPORT**

The question is on Unallocated Store. It tested candidates' knowledge on the preparation of Unallocated Store Shortfall and Excess Account as well as Unallocated Store Claim Account. About 30% of the candidates attempted the question and only about 10% of them scored over 50% of the marks allocated.

**SOLUTION 4**

(a)　i.　　If fraud is probable
　　　ii.　　If the loss is substantial
　　　iii.　If several officers are involved
　　　iv.　If the responsibility of officers is not clearly defined
　　　v.　　If the loss took place over a period of time

(b)    i.      Permanent Secretary of the Ministry or Department
       ii.     The Accountant-General
       iii.    Secretary, Federal Public Service Commission
       iv.     The Auditor-General

(c)    i.      Survey of cash
       ii.     Survey of stamps
       iii.    Survey of stores, plants, building or equipment

(d)    i.      All recurrent expenditures e.g. personal cost, overhead etc
       ii.     Salaries and consolidated allowances of statutory officers e.g. The Judiciary, the Auditor-General of the Federation
       iii.    Pension and gratuities
       v.      Transfer to development fund
       v.      Transfer to contingencies fund

## EXAMINER'S REPORT

The question is on Board of Survey and Enquiry. It tested the candidates' understanding of circumstances for setting up a Board of Enquiry. The question also required charges from Consolidated Revenue Fund. About 98% of the candidates attempted the question with about 70% scoring above 50% of the marks allocated.

## SOLUTION 5
(a)

### IKPOBA STATES
### MINISTRY OF POVERTY ALLEVATION BANK XYZ
### ACCOUNT NO 01234567890
### BANK RECONCILIATION STATEMENT AS AT DECEMBER 2015

|  | ₦ | ₦ |
|---|---|---|
| Balance available: |  | 372,150 |
| Unclaimed mandate | 82,105 |  |
| Credit in bank not known | 125,800 | 207,905 |
| Sub-total |  | 580,055 |
| Less e-receipt not received by bank | 199,015 |  |
| Debit from bank not known | 111,211 | 310,226 |
| Balance per bank reconciliation |  | 269,829 |
| Bank statement |  | 265,829 |
| Variance A – B |  | NIL |

(b)    Where a bank account is maintained, a bank reconciliation statement and certified bank statement as at the last business day of the month shall be attached to the cash book. Bank reconciliation statements will be prepared as follows, individual

items being specified to explain any variation from the balance shown in the cash book.

| | N |
|---|---|
| Cash book balance as at end of the month | xxx |
| Add cheques issued but not presented to bank | xxx |
| Add receipts (credits) in the bank not in cash book | xxx |
| | xxx |
| Deduct payments (debits) in bank not in cash book | (xx) |
| Deduct receipts (credits) in cash book not in bank | (xx) |
| Bank balance as at the end of the month | xxx |

Signature of Sub-Accounting Officer

**EXAMINER'S REPORT**

The question tested the candidates understanding of the preparation of the Bank Reconciliation Statement as well as Reconciliation of the Bank Account with the Cash Book.

About 95% of the candidates attempted this question while about 60% of them scoring above 50% of marks allocated.

**SOLUTION 6**

**MINISTRY OF BOOMAG**
**PERSONNEL COST BUDGET FOR YEAR 2015**

| Office | Working Notes | Number of staff | Grade Level | Estimated salary ₦ |
|---|---|---|---|---|
| Cleaners | Wk 1 | 15 | 02 | 383,400 |
| Drivers/Office Assistant/Clerical Officer | (11) | 35 | 03 | 1,183,875 |
| Clerical officer | (111) | 25 | 04 | 902,250 |
| Senior Clerical officer | (1v) | 18 | 05 | 766,800 |
| Field Establish officer | (v) | 21 | 06 | 1,110,375 |
| Sub-total: Grade Level 01 – 06 | | 114 | | 4,346,700 |
| E. O. (Establish) | (vi) | 15 | 07 | 890,775 |
| H. E. O. (Accounts ) + Establish Officer II | (vii) | 20 | 08 | 1,278,000 |
| Senior Establish Assistant + Establish officer I | (viii) | 16 | 09 | 1.166,880 |
| Principal Establish Assistant + Senior Establish officer) | (ix) | 22 | 10 | 1,874,400 |
| | | | 11 | - |
| Principal Accountant | (x) | 4 | 12 | 413,040 |
| Assistant Chief Accountant | (xi) | 2 | 13 | 237,540 |
| Sub Total: Grade Level 07 – 13 | | 79 | | 5,860,635 |
| Assistant Director | (xii) | 1 | 14 | 141,525 |
| Deputy Director | (xiii) | 1 | 15 | 150,000 |
| Director | (xiv) | 1 | 16 | 190,500 |
| | | - | 17 | - |
| Sub-total Grade Level 14 – 17 | | 3 | | 482,325 |
| Grand total | | 196 | (Total Basic) | 10,689,660 |
| Allowances (20%) | | | | 2,137,932 |

| Total Personnel Cost | | | | 12,827,592 |
|---|---|---|---|---|

**WORKING NOTES**

Personnel Cost Budget can be calculated using this formular

Estimated salary = $\left[(x-n)i + B\right]n$

Where X = Required step of the grade level

   L  = Constant

   I  = Incremental rate

   B = Base or starting salary

   N = Number in post

   GL

| | | | | | | Estimated Salary ₦ |
|------|-----------------------------------|---|----------------------------------|---|-------------------|
| i. | Cleaners (02) $\left[(x-n)i + B\right]$ | = | $\left[(4-1)+1,020+22,500\right]15$ | = | 383,400 |
| ii. | Drivers/Office Asst./Asst Clerical Officer (03) | = | $\left[(4-1)+1,275+30,000\right]35*$ | = | 1,183,875 |
| | $\left[10+15+20=35*\right]$ | | | | |
| iii. | Clerical officer (04) | = | $\left[(4-1)+1,530+31,500\right]25$ | = | 902,250 |
| iv. | Senior Clerical Officer (05) | = | $\left[(4-1)+1,700+37,500\right]18$ | = | 766,800 |
| v. | Field Establish officers (06) | = | $\left[(4-1)+2,125+46,500\right]21$ | = | 1,110,375 |
| | Grade Level 01 – 06 | | 144 | | 4,346,700 |
| vi. | E.O. Establish (07) | = | $\left[(4-1)+2,295+52,500\right]15$ | = | 890,775 |
| vii. | H. E. O. Accountant + Estab. Officer II (08) | = | $\left[(4-1)+2,550+56,250\right]20*$ | = | 1,278,000 |
| | (12 + 8 = 20*) | | | | |
| viii. | Senior Est. Asst. + Estab Officer I (09) | = | $\left[(4-1)+3,060+63,750\right]16$ | = | 1,166,880 |
| | Principal Estab. Asst. + Senior Estab. Officer | = | 12 + 8 = 20 | | |
| | Add Newly recruited senior Est. Officer | | 4 | | |
| | | | 24 | | |
| | Less Senior Estab (retired) | | 2 22 | | |
| ix | Principle Estab Asst + Senior Estab officer (10) | = | $\left[(4-1)+3,400+75,000\right]22$ | = | 1,874,400 |
| x. | Principal Accountant (12) | = | $\left[(4-1)+4,420+90,000\right]4$ | | 413,040 |

| xi. | Asst. Chief Accountant (13) | = | $[(4-1)+4,590+105,000]2$ | | 237,540 |
|---|---|---|---|---|---|
| | Grade Level 07 - 13 | | 79 | | 5,860,635 |
| xii. | Asst. Director (14) | = | $[(4-1)+4,675+127,500]1$ | | 141,525 |
| xiii. | Deputy Director (15) | = | $[(4-1)+5,100+135,000]1$ | | 150,300 |
| xiv | Director (16) | = | $[(4-1)+8,500+165,000]1$ | | 190,000 |
| | (17) | | | | - |
| | Total Basic Salary | | 3 | | 482,325 |
| | | | 196 | | 10,689,660 |

**EXAMINER'S REPORT**

The question is on the Personnel Budget. It tested the candidates' understanding of the preparation of the Personnel Cost Budget.
About 40% of the candidates attempted this question, while less than 20% of them scoring above 50% of marks obtainable.

# INSIGHT

**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.     Given that the Economic Order Quantity is 480 units, holding cost is GH¢2 per unit and ordering cost is GH¢36 per order, calculate the annual demand
    A.    3,200
    B.    6,400
    C.    6,600
    D.    6,800
    E.    7,200

2.     The demand for a product depends on the price P according to

$$D(P) = \frac{5000}{P^2} - \frac{1}{2}, \quad p > 0,$$

   where P is in Naira

   Find the rate of change of demand with respect to price when P = 100
    A.    $-\frac{1}{100}$
    B.    $-\frac{1}{1000}$
    C.    $-\frac{1}{50}$
    D.    $-\frac{1}{5}$
    E.    $-\frac{1}{10}$

3.     A sample of 9 items is randomly selected from a normal population with mean 7 and variance 25.  If the sample mean is 8, the test statistic for the data is

A.    0.70
B.    0.65
C.    0.60
D.    0.55
E.    0.50

4.    Which of the following is a measure of location?
A.    Mean deviation
B.    Range
C.    Mode
D.    Quartile deviation
E.    Standard deviation

5.    The profit function of a company producing an item x is 1,000x – 1,500,000.  How many units of the item must be produced and sold for the company to earn a profit not greater than ₦800,000?
A.    230
B.    2,300
C.    23,000
D.    25,000
E.    40,000

6.    Which of the following is **NOT ONE** of the main steps involved in the formulation of linear programming problems?
A.    Define all variables and their units
B.    Determine the objective of the problem
C.    Express the objective function mathematically
D.    Determine the slack and surplus variables
E.    Express the constraints mathematically

7.    The ages of individuals in the household of an Accountant are
6, 52, 13, 49, 35, 25, 31, 29, 31, 29.  The quartile deviation of the ages is
A.    8.25
B.    10
C.    25
D.    30
E.    35

8.    The sum to infinity of the sequence $1, -\frac{1}{3}, \frac{1}{9}, -\frac{1}{27}, \ldots\ldots\ldots$ is

A. $-\dfrac{3}{4}$

B. $-\dfrac{4}{3}$

C. $\dfrac{1}{3}$

D. $\dfrac{3}{4}$

E. $\dfrac{4}{3}$

9.    An essential component in a counting machine is used in large quantities. The following pieces of information on failure rates have been collected

| | Month after replacement | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Percentage of failures | 25 | 35 | 30 | 10 |

The average number of replacement per month with 675 pieces of the component in the machine is

A.    600

B.    500

C.    400

D.    300

E.    200

10. The following pieces of information obtained on the age (x) and years of experience (y) of ten employees of a company are

$\Sigma x = 500$, $\Sigma y = 60$, $\Sigma xy = 3{,}500$

$\Sigma x^2 = 26{,}000$, $\Sigma y^2 = 350$

Calculate the regression coefficient b of the regression equation

$Y = a + bx + \ell$

A.    0.35

B.    0.25

C.    0.20

D.    0.15

E.    0.5

11.    Initial feasible solution of a transportation problem can be obtained using the following methods **EXCEPT**

A.    Vogel's Approximation Method

B.    Stepping Stone Method

C.    North West Corner Method

D.      Simplex Method

E.      Least Cost Method

12.   The trend line of a Time Series data given below is estimated to be
      Y  =  50 + 2.5t

| Year | T | Y |
|------|---|---|
| 2010 | 1 | 65 |
| 2011 | 2 | 70 |
| 2012 | 3 | 55 |
| 2013 | 4 | 60 |
| 2014 | 5 | 50 |

Calculate the seasonal variation for the year 2012 using the Additive Model.

A.      -4.5

B.      -2.5

C.      0

D.      2.5

E.      4.5

13.   Which of the following is **NOT** an underlying basic assumption of a linear programming model?

A.      The contribution of each variable to be directly proportional to the value of the variable

B.      Number of decision variables is equal to the number of constraints

C.      Non-negativity of the decision variables

D.      Linearity of the objective function

E.      Existence of optimal solution corresponding to the optimal value of the objective function

14.   The monthly output of a certain product is $Q(x) = 800x^{2.5}$, where x is the capital investment in millions of Naira.  Estimate the effect on the output if an additional capital investment of ₦1,000,000 is made

A.      20

B.      80

C.      200

D.      800

E.     2000

15.   An Accountant made **FIVE** withdrawals in a month to pay certain bills in his office.  The amounts are 55, 75, 80, 95, 49 in thousands of Naira.  Find the geometric mean of the withdrawals
   A.     ₦35,400.00
   B.     ₦66,711.47
   C.     ₦68,752.22
   D.     ₦70,800.00
   E.     ₦75,000.00

16.   Which of the following is **NOT** a problem in the construction of index numbers?
   A.     Selection of items to be included in the index
   B.     Choice of base year
   C.     Choice of weight
   D.     Choice of type of the index number
   E.     Definition of the purpose for which index number is to be compiled

17.  An exponential function is given by $y = a^x$, where 'a' is the base and x is the exponent.  If $0 < a < 1$, then y is
   A.     An exponentially growing function
   B.     An exponentially decaying function
   C.     An implicit  function
   D.     A logarithmic function
   E.     A quadratic function

18.   Which of the following is **NOT** relevant in the Operations Research in business?
   A.     Capital rationing
   B.     Cost benefit analysis
   C.     Optimal allocation of resources
   D.     Estimation of project's cost
   E.     Risk management

19.   Which of the following is **NOT** a quality of a good questionnaire?
   A.     There should not be any ambiguous question
   B.     There should not be any leading question
   C.     The questions should be well structured

D.    The questions should be many in order to accommodate all required information

E.    The language used should be simple

20.   An Aptitude Test is conducted in order to admit 240 students into a Federal Government Institution.  If 400 candidates came from Zone A, 800 from Zone B, 600 from Zone C, 600 from Zone D, 200 from Zone E and 400 from Zone F and Quota Sampling is to be used to select the Candidates to be admitted, how many candidates will be admitted from Zone E?

A.    16
B.    20
C.    24
D.    40
E.    50

21.   A maximization problem with objective function, Z = 10x + 25y has the following corner points of the boundary of the feasible region: P (0,0), Q (0,50), R (25,30), S (40, 20) and T (40, 0).

The point that gives the optimal solution is
A.    P
B.    Q
C.    R
D.    S
E.    T

22.   The demand function for a certain commodity is $P = 10 - 0.04\sqrt{q}$.

Find the elasticity of demand when 2500 units are demanded
A.    -10.5
B.    - 8
C.    5
D.    8
E.    10.5

23. In the Simplex Method of solving linear programming problem, the conversion of maximization problem to a standard form will require the information of ..................... variables
    A. Surplus
    B. Decision
    C. Artificial
    D. Slack
    E. Dummy

24. Mr. Adegoke Abiodun deposits Le6,500 in a Savings account earning 12% interest per annum. How much will he earn altogether if interest is compounded annually for 5 years?
    A. Le3,900.00
    B. Le4,955.22
    C. Le10,400.00
    D. Le11,455.22
    E. Le15,455.22

25. If the distribution of incomes of employees of SOLOTOP Company is skewed, then the most appropriate average is
    A. Mean
    B. Median
    C. Mode
    D. Geometric mean
    E. Harmonic mean

26. A typical transportation problem can only be solved if
    A. The distances involved are moderately short
    B. It is balanced
    C. The unit cost of transportation is in foreign currency
    D. The supply and the demand capacities are at their maximum values
    E. The supply and demand points are centrally located

27. The future value that accrues when ₦7,000 is invested at 9% compounded continuously is S (t) = $7,000\,e^{0.09t}$, where t is the number of years. Find the rate at which the money is growing when t = 10
    A. ₦154.96
    B. ₦1,549.55
    C. ₦3,099.09
    D. ₦15,495.50

E.    ₦17,219.22

28    Which of the following is **NOT** an advantage of the periodic review system of inventory?
A.    Obsolete items will be eliminated from time to time
B.    It allows for the spreading of the purchasing unit load
C.    It requires larger stock
D.    Production planning will be more efficient
E.    Range of stock items will be ordered at the same time

29.    Which of the following is **NOT** among the assumptions of economic order quantity model?
A.    Rates of demand vary
B.    Price per unit is known and constant
C.    No stock-outs are allowed
D.    Stock holding cost is known and constant
E.    Ordering cost is known and constant

30.    In a test of hypothesis problem, $H_0 : \mu = 4.5$  vs $H_1 : \mu \neq 4.5$, the calculated t – value is – 1.94 and the tabulated t- value is 1.71. Based on the above information, the following are the possible decisions **EXCEPT**
A.    $H_0$ should be rejected
B.    There is not enough evidence to support the claim that $\mu$ is different from 4.5
C.    There is enough evidence to support the claim that $\mu$ is different from 4.5
D.    Reject $H_0$ in favour of $H_1$
E.    Evidence supports the claim that $\mu < 4.5$ or $\mu > 4.5$

**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:**

# INSIGHT

1. The relationship between the response variable and the explanatory variable is characterized by a mathematical model known as ..............................

2. A project is desirable if the net present value is .............................

3. In network analysis, the total float of an activity is the amount of time by which the ........................... of the activity could be ................... without affecting the project duration.

4. An index number shows changes in a variable or group of variables with respect to ........................

5. If the cost function of a commodity is $c(x) = 0.1x^2 + 55x + 4000$, then the average cost function is ..............................

6. The **TWO** major assumptions of a linear programming problem are ......................... of the objective function and constraints and ....................... of the decision variables.

7. The following data are the number of years which **NINE** Chartered Accountants spent before becoming Fellows of the Institute of Chartered Accountants of Nigeria: 19, 6, 28, 13, 25, 15, 1, 12, 16. The median of the data set is ....................................

8. Suppose that the supply function for x units of a product is $P = x^2 - x$ Cedis. If the equilibrium quantity is $x = 5$, what is the producer's surplus?

9. The Economic Order Quantity is the order quantity that ........................ the total ........................ involved.

10. Raw facts in numerical form are called .......................................

11. The partial derivative of the function $f(x,y) = 2x^2y + 3\sqrt{xy}$ with respect to x at the point (4,9) is ...........................

12. The interquartile range of the following set of data: 16, 28, 15, 13, 6, 19, 15 is ..........................

13. Maintenance and repair costs are **TWO** main costs that increase with time in the replacement of items that ........................ gradually.

14. If, in a lottery game of 2000 tickets, there are 30 grade A prizes and 50 grade B prizes, the probability that a player of the lottery does **NOT** win any prize is ............................

15. Find the revenue from no production to when production is 2, if the rate of change of the revenue function is $4x^3 + e^x$ (where x is the number of units produced).

16. The graph of Time Series values plotted against different time points is known as ............................

17. Operations Research is the scientific method of allocating .................... resources to competing activities in an ...................... way.

18. The expression used for determining or computing the approximate value obtained from a sample is called an ..........................

19. An exponential function is a function which has a .......................... base and a .................. exponent.

20. Using the North West Corner method in allocating commodities to destinations for the following transportation problem, what will be the sum of the allocations in cells BQ and CR?

| Source | Destination P | Q | R | Availability |
|---|---|---|---|---|
| A | | | | 180 |
| B | | | | 200 |
| C | | | | 120 |
| Demand | 250 | 150 | 100 | |

**SECTION B:**                                   **ATTEMPT ANY FOUR QUESTIONS**

**QUESTION 1**

a. The scores of a sample of **EIGHT** candidates of a private tutorial centre for the Quantitative Analysis of ATSWA Examination for a particular diet are:
53, 64, 47, 48, 63, 54, 45, 50.

You are required to construct a 95% confidence interval for the overall mean score of the examination. (Given that $t_{0.025, \ 7}$ = 2.365). (6½ Marks)

b.  Mabel makes L$6,750,000 a year and gets L$450,000 annual increment. In how many years will her salary double?
(6 Marks)
**(Total 12½ Marks)**

## QUESTION 2

a.  The Chief Executive of a company is interested in investing part of the company's annual profit in some funds. His Personal Assistant did some research and came up with the following descriptive statistics of potential average returns in thousands of Leone:

|  | Fund A | Fund B | Fund C | Fund D | Fund E | Fund F |
|---|---|---|---|---|---|---|
| **Mean** | 80 | 70 | 63 | 53 | 122 | 75 |
| **Standard Deviation** | 15 | 15 | 12 | 8 | 18 | 9 |

i.   As an Accountant, what statistical tool can you use to analyse the above data? (1 Mark)

ii.  Analyse the above data and recommend **THREE** of the funds to the Chief Executive. Please justify your answer. (5½ Marks)

b.  In an inventory control system, the Economic Order Quantity is 400 units, the cost of an order is Le5 and the holding cost per unit of item is Le2 per annum. Calculate the:

i.   Annual demand (2½ Marks)

ii.  Inventory Cycle in weeks (3½ Marks) **(Total 12½ Marks)**

## QUESTION 3

a.  The prices per unit of some commodities A, B, C, D for the years 2010, 2011 and 2012 are given in the table below:

| Commodity | Price Per Unit (in Cedis) | | |
|---|---|---|---|
| | 2010 | 2011 | 2012 |
| A | 35 | 45 | 75 |
| B | 45 | 57 | 70 |
| C | 25 | 30 | 35 |
| D | 21 | 23 | 30 |

   i.   Calculate the Simple Aggregate Price Index for 2011 and 2012 using 2010 as base year
        (6 Marks)

   ii.  Compare the two results                                             (½ Mark)

b.  Waso Rental Company rents a compact car for GH¢9,900 per day and Soloy Rental Company rents a similar car for GH¢6,000 per day plus an initial fee of GH¢23,400.

   Use algebra to find how many days it would be cheaper to rent from Soloy Rental Company.  Provide solution with a suitable graph.          (6 Marks)
                    **(Total 12½ Marks)**

**QUESTION 4**

a.  A company has **FOUR** plants whose production capacities are limited but they can service **FOUR** warehouses which are located at Locations P, Q, R, and S.  The **FOUR** plants are sited at Locations X, Y, Z and W.  The pieces of information about the transportation cost (in L$'000) of moving a truck load from **ONE** plant to a warehouse are given in the table below:

| | P | Q | R | S | Production Capacity (kg) |
|---|---|---|---|---|---|
| X | 12 | 13 | 10 | 11 | 1,000 |
| Y | 11 | 12 | 14 | 10 | 800 |
| Z | 14 | 11 | 15 | 12 | 900 |
| W | 9 | 8 | 6 | 7 | 750 |

| Warehouse requirements (kg) | 900 | 750 | 950 | 850 | 3,450 |
|---|---|---|---|---|---|

**You are required to:**

i.    Determine how many kilograms of output of each plant to be transported to each warehouse for minimum total transportation cost using North West Corner rule.
                    (4 Marks)

ii.    Calculate the associated total transportation cost.    (2 Marks)

b.    The owner of a small construction business needs a new truck. He can buy a diesel truck for L\$7,600,000 and it will cost him L\$76 per kilometer to operate. He can buy a gas engine truck for L\$7,120,000 and it will cost him L\$96 per kilometer to operate.

i.    Find the number of kilometers he must drive before the costs are equal.                    ($5^1/_2$ Marks)

ii.    Hence, if he drives additional kilometer, which is the better buy?

                    (1 Mark)

**(Total 12½ Marks)**

**QUESTION 5**

a.    Determine the initial feasible solution for the cost table shown: (6 Marks)

**Destination**

| Origin | I | | II | | III | | Dummy | Supply |
|---|---|---|---|---|---|---|---|---|
| A | | 2 | | 3 | 200 | 4 | | 700 |
| B | | 5 | | 6 | 200 | 7 | | 400 |
| | | 5 | | 8 | | 6 | | |

| | | | | | |
|---|---|---|---|---|---|
| C | | | | | 600 |
| Demand | 200 | 300 | 1000 | 200 | |

b.  The profit function of XYZ Company is $P(x) = 6,400x - 18x^2 - \frac{1}{3}x^3 - 40,000$ Naira, where x is the number of units.  Find

   i.  The number of units that will maximize the profit       ($5\frac{1}{2}$ Marks)

   ii.  The maximum profit                                                (1 Mark)

   **(Total 12½ Marks)**


## QUESTION 6

a.  The following table shows the profits (in millions of Naira) of XYZ company in **TWO** years:

| Year | $Q_1$ | $Q_2$ | $Q_3$ | $Q_4$ |
|---|---|---|---|---|
| 2011 | 25 | 45 | 30 | 50 |
| 2012 | 47 | 65 | 50 | 70 |

   i.  Use the Least Squares Method (taking first quarter of 2011 as the origin) to fit the regression line for this data.
   (5 Marks)

   ii.  Use your regression line in (i) above to predict the profit for the second quarter of 2013.                               ($1\frac{1}{2}$ Marks)

b.  An agricultural firm has a ploughing machine whose purchase price is ₦25,000.  The maintenance cost, the resale price, and annual capital loss at the end- of different years are given in the table below:
(The company's policy is to replace as the machine deteriorates)

| Year | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Annual Maintenance Cost | 2,000 | 2,200 | 2,500 | 3,000 | 4,000 | 6,000 |
| Resale price at the end of the year | 22,000 | 20,300 | 19,000 | 17,000 | 13,000 | 8,000 |
| Annual capital loss | 3,000 | 4,700 | 6,000 | 8,000 | 12,000 | 17,000 |

**You are required to compute:**

# INSIGHT

i. Total cost (3 Marks)

ii. Average total cost (2 Marks)

iii. From (ii) above, determine the best replacement point.(1 Mark) **(Total 12½ Marks)**

# INSIGHT

## FORMULAE

**Economic Order Quantity**

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

**No of Orders,** $\quad N = \dfrac{d}{Q}$

**Inventory Cycle** $\quad = \dfrac{N}{52}$ **Weeks**

**The regression equation:** $\quad y = \hat{a} + \hat{b}x$

**Slope of a regression equation**

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

**Intercept on y axis:** $\quad \hat{a} = \dfrac{\sum y}{n} - b\dfrac{\sum x}{n}$

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

**The 95% confidence interval for** $\mu \quad = \quad \bar{x} \pm t_{\frac{\alpha}{2}, n-1}\dfrac{S}{\sqrt{n}}$

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

**Sample variance,** $\quad \mathbf{S^2} = \dfrac{\sum\left(x - \bar{x}\right)^2}{n-1} \quad$ **or** $\quad \mathbf{S^2} \quad =$

$$\frac{\sum x^2 - \dfrac{\left(\sum x\right)^2}{n}}{n-1}$$

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

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

**Coefficient of variation** $\quad = \quad \dfrac{S}{\bar{x}}$

**SUGGESTED SOLUTION**

**SECTION A**

**PART 1 – MULTIPLE CHOICE QUESTIONS**

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

**WORKINGS**

1. $Q = \sqrt{\dfrac{2cd}{h}}$

   $480 = \sqrt{\dfrac{2 \times 36 \times d}{2}}$

   $d = \dfrac{(480)^2}{36} = 6{,}400$

2. $D(P) = 5000P^{-2} - \dfrac{1}{2}$

   $\dfrac{dD(P)}{dP} = -2(5{,}000)P^{-3}$

   $\dfrac{dD(100)}{dP} = \dfrac{-2(5{,}000)}{(100)^3} = -\dfrac{1}{100}$

3. $Z_{cal} = \dfrac{\bar{x} - \mu}{\sigma / \sqrt{n}}$

   $= \dfrac{8 - 7}{5 / \sqrt{9}} = 0.60$

5. $1{,}000x - 1{,}500{,}000 \leq 800{,}000$

   $1{,}000x \leq 2{,}300{,}000$

   $x \leq 2{,}300$

7. Rearrange to obtain 6, 13, 25, 29, 29, 31, 31, 35, 49, 52

   $Q_1 = \dfrac{n+1}{4}th$        $Q_3 = 3\left(\dfrac{n+1}{4}\right)th$   item

   $= \dfrac{10+1}{4}th = 2.75$ item      $= 35 + 0.25 (49 - 35)$

   $= 13 + 0.75 (25 - 13)$       $= 35 + 0.25 (14)$

   $= 13 + 0.75 (12)$         $= 35 + 3.5$

   $= 13 + 9$               $= 38.5$

   $= 22$

   $\therefore \quad \dfrac{Q_3 - Q_1}{2} = \dfrac{38.5 - 22}{2} = 8.25$

8. $S_\infty = \dfrac{a}{1 - r},$

   If $a = 1,$    $r = -\dfrac{1}{3}$

$$\therefore S_\infty = \frac{1}{1-\left(-\frac{1}{3}\right)}$$

$$= \frac{1}{1+\frac{1}{3}} \qquad S = \frac{3}{4}$$

9.  The average number of replacements per month

$$= \frac{675}{(1\times0.25)+(2\times0.35)+(3\times0.30)+(4\times0.1)}$$

$$= \frac{675}{2.25}$$

$$= 300$$

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

$$= \frac{10(3,500)-(500)(60)}{10(26,000)-(500)^2}$$

$$= \frac{5,000}{10,000} \qquad = \qquad 0.5$$

12.  For Year 2012, t = 3

$$\therefore Y = 50 + 2.5(3) = 57.5$$

Seasonal variation $= Y - \hat{Y}$

$$= 55 - 57.5$$

$$= -2.5$$

14.  Note that the effect on the output is the rate of change of output with respect to the quantity.

$$Q(x) = 800x^{2.5}$$

$$\frac{dQ(x)}{dx} = 800(2.5)x^{1.5}$$

$$= 2000\,x^{1.5}$$

$$\therefore \frac{dQ(1)}{dx} = 2000$$

15.  $GM = \sqrt[5]{(55,000)(75,000)(80,000)(95,000)(49,000)}$

$$= \sqrt[5]{1,536,150,000}$$

$$= ₦68,752.22$$

20.  Since it is Quota Sampling, the number of students will be equal

i.e. $\frac{240}{6} = 40$

21.    P (0,0),    $Z$    =    10(0) + 25(0)    =    0

Q (0,50),    $Z$    =    10(0) + 25(50)    =    1,250

R (25,30),    $Z$    =    10(25) + 25(30)    =    1,000

S (40,20),    $Z$    =    10(40) + 25(20)    =    900

T (40,0),    $Z$    =    10(40) + 25(0)    =    400

Since  $Z$ =  1250 is the highest, then Q (0,50) gives the optimal.

22.    P    =    $10 - 0.04\sqrt{q}$

=    $10 - 0.04q^{\frac{1}{2}}$

$\dfrac{dp}{dq}$    =    $-0.02q^{-\frac{1}{2}}$

$\dfrac{dp}{dq}$    (when q = 250)

=    $\dfrac{-0.02}{\sqrt{2500}}$    =    $\dfrac{-0.02}{50}$    =    - 0.0004

and  P    =    $10 - 0.04\sqrt{2500}$
=    $10 - 0.04(50)$
=    8

$\therefore$ the elasticity of demand    =    $\left(\dfrac{-p}{q}\right)\left(\dfrac{dq}{dp}\right)$

=    $\dfrac{-8}{2500(-0.0004)}$

=    8

24.    P  =  6,500,            i  =  0.12
A    =    $P(1 + i)^n$
A    =    $6,500(1 + 0.12)^5$
=    $6,500(1.12)^5$
=    ₦11,455.22

27.    $S^1(t)$ =    $7,000(0.09)e^{0.09t}$

$S^1(0)$ =    $7,000(0.09)e^{0.09(10)}$

=    $630e^{0.9}$
=    1,549.55

**Examiner's Report**

# INSIGHT

The questions are supposed to cover the entire syllabus. We observed the following performances:

In questions 1 – 10; about 30percent of the candidates scored minimum of 4 marks;

In questions 11 – 20; about 35percent of the candidates scored minimum of 4 marks; and In questions 21 – 30; about 30percent of the candidates scored minimum of 5 marks.

Generally, about 27percent of the candidates scored minimum of 4 marks

## PART II – SHORT ANSWER QUESTIONS

1. Regression Equation or Regression Model

2. Positive or Greater than zero or > 0

3. Duration, Extended (in that order)

4. Time

5. $0.1x+55+4000/x$

6. Linearity, non-negativity (in that order)

7. 15

8. ¢70.83

9. Minimises, Cost (in that order)

10. Data

11. 146.25

12. 6

13. Wear – Out or Deteriorate

14. 0.96

15. 22.39

16. Time Plot or Historigram

17. Scarce or Limited, Optimal (in that order)

18. Estimator

19. Constant, Variable (in that order)

20. 230

**Workings**

5.     Average Cost function $=$     $\dfrac{c(x)}{x}$

$=$     $\dfrac{0.1x^2 + 55x + 4000}{x}$

$=$     $0.1x + 55 + \dfrac{4000}{x}$

7.     1, 6, 12, 13, 15, 16, 19, 25, 28

∴     median     $=$     15     (i.e. it is the middle term)

OR

Sum   n = 9

Median Position   $=$     $\left(\dfrac{n+1}{2}\right)^{th}$

$=$     $\dfrac{9+1}{2}$   $=$   $\dfrac{10}{2}$

$=$     $5^{th}$ Position

∴     the $5^{th}$ position number = 15

∴     Median     $=$     15

8 .   The Producer's Surplus     $x_0y_0 - \int_0^5 (x^2 - x)dx$     $=$     20 x 5 - $\int_0^5 (x^2 - x)dx$

$=$     $100 - \left[\dfrac{x^3}{3} - \dfrac{x^2}{2}\right]\Big|_0^5$

$=$     $100 - \dfrac{125}{3} + \dfrac{25}{2}$

$=$     100 – 41.67 + 12.5

$=$     ¢70.83

11.     f(x,y) $=$     $2x^2y + 3x^{1/2}y^{1/2}$

$\dfrac{\partial f}{\partial x}$   $=$     $4xy + \dfrac{3}{2}x^{-1/2}y^{1/2}$

$$\frac{\partial f}{\partial x}(4,9) = 4(4)(9) + \frac{3}{2}(4)^{-\frac{1}{2}}(9)^{\frac{1}{2}}$$

$$= 144 + \frac{3}{2} \times \frac{1}{2} \times \frac{3}{1}$$

$$= 144 + \frac{3}{4} \times \frac{3}{1}$$

$$= 144 + \frac{9}{4}$$

$$= 146.25$$

12. Rearrange the data in ascending order:  6, 13, 15, 15, 16, 19, 28

$Q_1$'s position $= \left(\dfrac{n+1}{4}\right)^{th} = \dfrac{8}{4} = $ 2$^{nd}$ giving $Q_1$

13

$Q_3$'s position $= \left[\dfrac{3(n+1)}{4}\right]^{th} = \dfrac{3(8)}{4} = $ 6$^{th}$ giving $Q_3$

19

∴ Inter quartile range $= Q_3 - Q_1 = 19 - 13 = 6$

14. Probability of not winning any prizes

$$2,000 - \frac{30+50}{2,000} = 2,000 - \frac{80}{2,000} = \frac{1920}{2000}$$

$$= \frac{24}{25} = 0.96$$

15. $\displaystyle\int_a^b R(x)dx = \int_0^2 \left(4x^3 + e^x\right)dx = x^4 + e^x \Big|_0^2$

$$= \left(2^4 + e^2\right) - \left(0^4 + e^0\right)$$
$$= 16 + e^2 - 1$$
$$= 15 + e^2$$
$$= 22.39$$

20.

| SOURCE | DESTINATION | | | AVAILABILITY |
|---|---|---|---|---|
| | P | Q | R | |
| A | 180 | | | ~~180~~  0 |
| B | 70 | 130 | | ~~200~~  ~~130~~  0 |

| C | | 20 | 100 | ~~120~~ 0 | |
|---|---|---|---|---|---|
| DEMAND | ~~250~~ | ~~150~~ | ~~100~~ | 500 | |
| | 70 | 20 | 0 | | |
| | 0 | 0 | | | |

Sum of the allocation in Cells of BQ and CR

= 130 + 100 = 230

**Examiner's Report**

The questions cover the key aspects of the syllabus.

In questions 1 – 10; about 30percent of the candidates scored minimum of 4 marks; and

In question 11 – 20; about 20 percent of the candidates scored minimum of 4 marks.

Generally, about 25percent of the candidates scored minimum of 4 marks.

**SECTION B**

SOLUTION 1

(a)  The 95% confidence interval for the overall mean score is given as

$$\bar{x} \pm t_{\frac{\alpha}{2},(n-1)} \left( \frac{S}{\sqrt{n}} \right)$$

i.e.  $\bar{x} \pm t_{0.025,7} \left( \dfrac{S}{\sqrt{n}} \right)$  since $n < 30$; ($n = 8$)

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

$$= \frac{53 + 64 + 47 + 48 + 63 + 54 + 45 + 50}{8} = \frac{424}{8}$$

$$\bar{x} = 53$$

$$S^2 = \frac{\sum (x - \bar{x})^2}{n-1}$$

$$= \frac{\begin{aligned}(53-53)^2 + (64-53)^2 + (47-53)^2 + (48-53)^2 + \\ (63-53)^2 + (54-53)^2 + (45-53)^2 + (50-53)^2\end{aligned}}{8-1}$$

$$S^2 = \frac{356}{7} = 50.86$$

$$S = \sqrt{50.86} = 7.13$$

The 95% CI for $\mu$ is

$$= \quad 53 \pm 2.365 \left( \frac{7.13}{\sqrt{8}} \right)$$

$$= \quad 53 \pm 5.96$$
$$= \quad (53 - 5.96,\ 53 + 5.96)$$
$$= \quad (47.04,\ 58.96)$$

1 (a)  ALITER

| $x$ | $x^2$ |
|---|---|
| 53 | 2809 |
| 64 | 4096 |
| 47 | 2209 |
| 48 | 2304 |
| 63 | 3969 |
| 54 | 2916 |
| 45 | 2025 |
| 50 | 2500 |
| $\sum x$ = 424 | $\sum x^2$ = 22,828 |

$$S^2 \quad = \quad \frac{\sum x^2 - \dfrac{\left(\sum x\right)^2}{n}}{n-1} \quad = \quad \frac{22{,}828 - \dfrac{(424)^2}{8}}{8-1}$$

$$= \quad \frac{22828 - 22472}{7} \quad = \quad \frac{356}{7}$$

$$= \quad 50.86$$

$$S \quad = \quad \sqrt{50.86} \quad = \quad 7.13$$

(b)       AP with    a    =    6,750,000

d    =    450,000

$a_n$    =    a + (n – 1) d

we need $n$ such that

a + (n – 1)d    =    2 (6,750,000)

$\therefore$    6,750,000 + (n – 1) 450,000 = 2 (6,750,000)

(n – 1) 450,000   = 6,750,000

n – 1  =   15

$$n = 15 + 1$$

$$n = 16$$

i.e.   Mabel's salary will be doubled in 16years

**Examiner's Report**

The question tests the candidates' knowledge of the application and understanding of confidence interval with Arithmetic Progression (AP).

About 70 percent of the entire candidates attempted the question and the general performance which is below 50 percent seems to suggest that the candidates lack adequate understanding of the construction of confidence interval.

Adequate preparation is essential by studying the ICAN Study Text and other relevant textbooks.

**SOLUTION 2**

a.

i)   Coefficient of variation
    (It is a measure that is used to compare two or more variables measured on different scales)

ii)        CV   =   Standard Deviation  ×  100
                        Mean

| | Funds | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| Mean | 80 | 70 | 63 | 53 | 122 | 75 |
| Std.dev | 15 | 15 | 12 | 8 | 18 | 9 |
| CV % | 18.75 | 21.42 | 19.05 | 15.09 | 14.75 | 12.00 |

Recommendation in order of priority gives
   i.  Fund F
  ii.  Fund E
 iii.  Fund D

The lower the coefficient of variation, the lesser the variation of the data i.e. the fund with least CV should be preferred.

b.

(i)        Q   =   $\sqrt{\dfrac{2cd}{h}}$

$$400 = \sqrt{\frac{2 \times 5 \times d}{2}}$$

$$d = \frac{(400)^2}{5} = 32,000 \text{ units}$$

(ii)     No of orders     $\left(\dfrac{d}{Q}\right) = \dfrac{32000}{400}$

∴ Inventory cycle     $\dfrac{d}{Q}\bigg/52 = \dfrac{80}{52}$

$= 1.54$ weeks

**Examiner's Report**

The question tests candidates' understanding of the Concept of Investments and Inventory Control in solving business problem.

About 45percent of the candidates attempted the question. About 60percent of the candidates that attempted the question scored below 5 marks. The candidates found it difficult in interpreting the question.

Candidates should endeavour to understand the Concept of Investment and Inventory Control clearly.

**SOLUTION 3**

a.

| | PRICE Per Unit (in Cedis) | | |
|---|---|---|---|
| Commodity | 2010 | 2011 | 2012 |
| A | 35 | 45 | 75 |
| B | 45 | 57 | 70 |
| C | 25 | 30 | 35 |
| D | 21 | 23 | 30 |
| | 126 | 155 | 210 |

i.   Simple Aggregate Price Index for

2011 $= \dfrac{155}{126} * \dfrac{100}{1}$          2012 $= \dfrac{210}{126} * \dfrac{100}{1}$

$= 123.02\%$          $= 166.67\%$

ii.   The index for 2012 is higher than that of 2011 i.e. the price has increased.

b.   Let x be number of days to rent a car

∴     Cost of renting a car with WASO Rental     =     9,900x

∴     Cost of renting a car with Soloy Rental    =     6,000x +
23,400

Thus,          $6,000x + 23,400 < 9,900x$

or          $23,400 < 9,900x - 6,000x$

$23,400 < 3,900x$

$\dfrac{23,400}{3,900} < x$

$6 < x$

It will be cheaper to rent a car from Soloy Rental Company for more than 6 days.



**Examiner's Report**

The question tests the candidates' ability in solving Simple Index numbers and application of simple Linear Inequalities in business mathematics.

About 80 percent of the candidates attempted the question out of which about 45 percent scored minimum of 6½ marks.

The major pitfall was due to the use of wrong formula. Use of ICAN Study Text and Insight in addition to other relevant textbooks by candidates is highly recommended.

**SOLUTION 4**

a.

i)

| Destination / Source | P | Q | R | S | SUPPLY |
|---|---|---|---|---|---|
| X | 12  ⟨90⟩ | 13  ⟨10⟩ | 10  - | 11  - | 0  ~~100~~  ~~1000~~ |
| Y | 11  - | 12  ⟨65⟩ | 14  ⟨15⟩ | 10  - | 0  ~~150~~  ~~800~~ |
| Z | 14  - | 11  - | 15  ⟨80⟩ | 12  ⟨10⟩ | 0  ~~100~~  ~~900~~ |
| W | 9  - | 8  - | 6  - | 7  ⟨75⟩ | 0  ~~750~~ |
| DEMAND | ~~900~~  0 | ~~750~~  ~~650~~  0 | ~~950~~  ~~800~~  0 | ~~850~~  ~~750~~  0 | |

ii.   Total transportation cost is

= (900 × 12) + (100 × 13) + (650 × 12) + (150 × 14) + (800 × 15) + (100 × 12) + (750 × 7)

= 10,800 + 1,300 + 7,800 + 2,100 + 12,000 + 1,200 + 5,250

= ₦40,450

b.

i)   Let x be the number of Kilometres through which owner drives before the costs are equal

Cost of maintaining diesel truck

$$f(x) = 76x + 7,600,000$$

Cost of maintaining gasoline engine truck

$$g(x) = 96x + 7,120,000$$

When the costs are equal, then

$$76x + 7,600,000 = 96x + 7,120,000$$

$$96x - 76x = 7,600,000 - 7,120,000$$

$$20x = 480,000$$
$$x = \underline{\frac{480,000}{20}}$$
$$x = 24,000$$

∴ He must drive 24,000 kilometres for the costs to be equal.

ii. $f(24,001)$ = 76 (24,001) + 7,600,000
  = 1,824,076 + 7,600,000
  = 9,424,076

$g(24,001)$ = 96(24,001) + 7,120,000
  = 2,304,096 + 7,120,000
  = 9,424,096

Since f(x) is less than g(x) in this situation, the owner of a small construction should buy the diesel truck

**Examiner's Report**
The question tests the ability of the candidates in solving Transportation Problems and application of Investment Appraisal in solving problems.

About 95 percent of the candidates attempted the question. The performance was on the average with about 80 percent of the candidates scoring 6 marks out of the allocated maximum of 12½ marks.

The pitfall is their inability to solve Investment Appraisal and Analysis Problems.

Candidates are advised to study appropriate recommended textbooks on Quantitative Analysis including the ICAN Study text, the ICAN Insight and other relevant textbooks.

**SOLUTION 5**

a.

**Destination**

| Origin | I | II | III | Dummy | Supply |
|--------|---|----|----|-------|--------|
| A | 2 | 3 300 | 4 200 | 0 200 | 700 |
| B | 5 200 | 6 | 7 200 | 0 | 400 |
| C | 5 | 8 | 6 600 | 0 | 600 |
| Demand | 200 | 300 | 1000 | 200 | |

∴ The initial feasible solution is obtained as

Total Cost = (300 × 3) + (200 × 4) + (200 × 5) + (200 × 7) + (600 × 6)

= 900 + 800 + 1000 + 1,400 + 3,600

= 7,700

b.

i. Since $P = 6,400x - 18x^2 - \frac{1}{3}x^3 - 40,000$

∴ $\frac{dP(x)}{dx} = 6400 - 36x - x^2 = 0$

= $(64 - x)(100 + x) = 0$

$64 - x = 0$ or $100 + x = 0$

$x = 64$ or $x = -100$

since $x > 0$, then $x = 64$ at the turning point

To test for the nature of the turning point, we compute

$\frac{d^2P(x)}{dx^2} = -36 - 2x$

$\frac{d^2P(64)}{dx^2} = -36 - 2(64) < 0$

then $x = 64$ gives the maximum profit

∴ The number of units that will maximize the profit is 64 and the maximum profit is obtained as

$$P(64) = ₦[6400 (64) – 18 (64^2) – \tfrac{1}{3} (64)^3 – 40000]$$

$$= ₦ (409,600 – 73,728 – 87,381.33 – 40000)$$

$$= ₦208,490.67$$

**Examiner's Report**

The question tests the candidates' ability in solving Transportation Problem that involves unbalance and application of differentiation in business.

About 75percent of the candidates attempted the question out of which about 30percent of them scored minimum of 6 marks.

The major pitfall of the candidates was lack of understanding of balanced transportation problem and differentiation of profit function. Use of ICAN Study Text and Insight in addition to other relevant textbooks by the candidates is highly recommended.

**SOLUTION 6**

a.

   i.

| Year | Qrt | t | Y | tY | t² |
|------|-----|---|---|----|----|
| 2011 | 1 | 0 | 25 | 0 | 0 |
|      | 2 | 1 | 45 | 45 | 1 |
|      | 3 | 2 | 30 | 60 | 4 |
|      | 4 | 3 | 50 | 150 | 9 |
| 2012 | 1 | 4 | 47 | 188 | 16 |
|      | 2 | 5 | 65 | 325 | 25 |
|      | 3 | 6 | 50 | 300 | 36 |
|      | 4 | 7 | 70 | 490 | 49 |
| Total | - | 28 | 382 | 1,558 | 140 |

The Trend $Y = a + bt$

with $\hat{b} = \dfrac{n\sum tY - \left(\sum t\right)\sum (Y)}{n\sum t^2 - \left(\sum t\right)^2}$

and $\hat{a} = \dfrac{\sum Y}{n} - \hat{b}\dfrac{\sum t}{n}$

Substituting gives

$$\hat{b} \quad = \quad \frac{8(1,558) - (28)(382)}{8(140) - 28^2} \quad = \quad \frac{12,464 - 10,696}{1,120 - 784}$$

$$= \quad \frac{1,768}{336} \quad = \quad 5.2619$$

$$\hat{a} \quad = \quad \frac{382}{8} - 5.2619\left(\frac{28}{8}\right)$$

$$= \quad 47.75 - 18.4166 \quad = \quad 29.3334$$

∴ The trend is Y = 29.3334 + 5.26t

ii)    for second quarter of 2013, is when t = 9

When  x  =  9;  so the profit is

Y(9)        =      29.3334 + 5.2619(9)

Y    =    29.3334  +  47.3571

=    76.6905

∴  Profit    =    76.6905 × 1,000,000

=    ₦76,690,500

6 (a) ALITER

The trend $y = a + bx$,

where    b  $= \dfrac{\sum t_i y_i}{\sum t_i}$ ;    $\bar{y}_i \; = \dfrac{\sum y_i}{n}$ ;    a = $\bar{y} - bt$

and    $t_i \; = \; x_i - x_m$ ;    $i$  =  1, 2, ......, n

$x_m = \dfrac{3+4}{2}$ = 3.5

| Year | Qrt | $x$ | $t_i = x_i - x_m$ | $y_i$ | $t_i y_i$ | $t^2$ |
|---|---|---|---|---|---|---|
|  | 1 | 0 | −3.5 | 25 | − 87.5 | 12.25 |
| 2011 | 2 | 1 | −2.5 | 45 | 112.5 | 6.25 |
|  | 3 | 2 | −1.5 | 30 | −45 | 2.25 |
|  | 4 | 3 | −0.5 | 50 | −25 | 0.25 |
|  | 1 | 4 | 0.5 | 47 | 23.5 | 0.25 |
| 2012 | 2 | 5 | 1.5 | 65 | 97.5 | 2.25 |
|  | 3 | 6 | 2.5 | 50 | 12.5 | 6.25 |
|  | 4 | 7 | 3.5 | 70 | 245 | 12.25 |
|  |  |  | Total | 382 | 221 | 42 |

$$b = \frac{\sum t_i y_i}{\sum t^2} = \frac{221}{42} = 5.2619$$

$$\bar{y} = \frac{382}{8} = 47.75$$

$$a = \bar{y} - bt = 47.75 - 5.2619\,(3.5) = 29.3334$$

$$y = 29.3334 + 5.2619\,x$$

ii.  For the second quarter of 2013, puts $x = 9$

so the profit is

$$= [29.3334 + 5.2619(9)]\,(1,000,000)$$

$$\therefore \text{ Profit } = 76.6905 \times 1,000,000$$

$$= ₦76,690,500$$

b.

| $C_0$ | $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ |
|---|---|---|---|---|---|
| Year Of service | Annual Maintenance Cost (AMC) | Cumulative Annual Maintenance Cost (CAMC) | Annual Capital Loss (ACL) | Total Cost (TC) | Average Total Cost (ATC) |
| 1 | 2000 | 2000 | 3000 | 5000 | 5,000.00 |
| 2 | 2200 | 4200 | 4700 | 8900 | 4,450.00 |
| 3 | 2500 | 6700 | 6000 | 12700 | 4,233.33 * |
| 4 | 3000 | 9700 | 8000 | 17700 | 4,425.00 |
| 5 | 4000 | 13700 | 12000 | 25700 | 5,140.00 |
| 6 | 6000 | 19700 | 17000 | 36700 | 6,116.67 |

Note:  columns  $C_4 = C_2 + C_3$;  and  $C_5 = C_4 \div C_0$

The average total cost is minimum in the $3^{\text{rd}}$ year.  Hence, the best replacement period is at the end of year 3 i.e. the ploughing machine should be replaced at the end of the $3^{\text{rd}}$ year.

**Examiner's Report**

# INSIGHT

The question tests the candidates' ability on the application of Time Series and Replacement analysis in solving business problems.

About 80percent of the candidates attempted the question out of which about 25percent of them scored minimum of 5 marks.

The major pitfall of the candidates that attempted this question was due to the inability of the candidates to locate the origin rightly in time series application and compute appropriate table in replacement analysis.

Full concentration on the part of the candidates when dealing with the Concepts of Time Series and Replacement Analysis is highly recommended.

# INSIGHT

**ASSOCIATION OF ACCOUNTANCY BODIES IN WEST AFRICA
ACCOUNTING TECHNICIANS SCHEME, WEST AFRICA
PART II EXAMINATIONS – MARCH 2017**

**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.    Convert the decimal number 29 to a binary number

    A.    11100

    B.    111001

    C.    110001

    D.    11101

    E.    11111

2.    The ........................ displays buttons of open applications and windows as well as different toolbars for different tasks

    A.    Menu bar

    B.    Title bar

    C.    Toolbar

    D.    Taskbar

    E.    Control panel

3.    Which of the following is **NOT** an essential attribute of information?

    A.    It must be precise

    B.    It must be unverifiable

    C.    It must be easily understood

    D.    It must not only relate to current situation but have acceptable level of integrity

    E.    It must be cost effective

4.    Which of the following is **NOT** correct in respect of a mini computer?

    A.    Cost is higher compared to a micro computer

    B.    It can be installed by an unskilled person

C.   It can be used in networking

D.   Cost is lower compared to mainframe computer

E.   It is used by medium-sized companies

5.   Give the full meaning of **EBCDIC** with respect to data representation

A.   Extended Binary Coded Decimal Interchange Code

B.   External Binary Coded Decimal Interchange Code

C.   External Bit Coded Decimal Interchange Code

D.   External Byte Coded Decimal Interchange Code

E.   Extended Byte Coded Decimal Interchange Code

6.   Central Processing Unit (CPU) cycle time can be measured in terms of the

A.   Number of instructions executed in a second

B.   Total number of instructions executed within a stated time-frame

C.   Number of instructions executed per hour

D.   Number of instructions executed in computer idle time

E.   Number of instructions executed in peak period

7.   Data is transferred from the CPU to other computer system components through

A.   Bus line width

B.   Data Bus

C.   Processor Bus

D.   System Bus

E.   Instruction Bus

8.   The number of bits that the CPU can process at **ONE** time is called

A.   Processor bits

B.   System bits

C.   Word length

D.   Data bits

E.   Data length

9.   Which of the following output devices produces a softcopy output?

A.   LaserJet Printer

B.   LCD monitor

C.   Inkjet printer

D.     CPU monitor

E.     Dot-matrix printer

10.    CPU processing power is affected by

A.     Speed, Word length and Bus line width

B.     Speed, Internal memory, Bus line width

C.     Computer cycle time, speed, Word length and Bus line width

D.     Computer cycle time, Internal memory, Bus line width and speed

E.     Speed, Word length and Internal memory

11.    The components of desktop windows are

A.     Status bar, background and icons

B.     Start button, status bar, background and icons

C.     Start button, program menu and icons

D.     Start menu, program menu and background

E.     Status bar, background and font

12.    A multi-user system where time-slots are allocated to users is referred to as

A.     Time-based multi-user system

B.     Time-sharing system

C.     Real-time system

D.     Timing system

E.     User timing system

13.    The software that provides all necessary controls on the operation of a database is known as Database

A.     Manager

B.     Administrator

C.     Organizer

D.     Management system

E.     Controller

14.    A program flowchart is a diagram

A.     For depicting flow of data

B.     For depicting logical solution to a problem

C.     For depicting logical step-by-step activities to solve a problem

D.    Chart for writing a program

E.    Illustrating a pseudo code

15.    Microsoft PowerPoint is an example of a ........................ Package

A.    Graphical

B.    Spreadsheet

C.    Word processing

D.    Presentation

E.    Accounting

16.    In a System Development Project, a stakeholder is

A.    The staff working on the project

B.    The technical crew working on the project

C.    Individuals who are directly or indirectly affected by the project when it starts operation

D.    The management team

E.    The programmers in the organization

17.    Feasibility study analysis is typically done during which Systems Development Stage?

A.    Investigation

B.    Analysis

C.    Design

D.    Implementation

E.    Review

18.    CASE tool is often used to automate many of the tasks required in a system development effort.  The full meaning of CASE is Computer

A.    Automation for Software Entity

B.    Assisted Software Entity

C.    Aided Software Entity

D.    Assisted System Engineering

E.    Aided Software Engineering

19.    The simultaneous execution of **TWO** or more instructions by more than **ONE** processor is referred to as

A.    Multi-tasking

B.    Multi-programming

C.    Multi-processing

D.    Time-sharing

E.     Multi-batching

20.  Information processing technique that is being undertaken separately and independent of each section of an organization is referred to as

A.     Distributed processing
B.     Decentralized processing
C.     Batch processing
D.     Remote job processing
E.     Time-sharing

21.  A method that does not allow a website to be confronted with many requests by an attacker, thereby effectively clogging the system, slowing performance and even crashing the site is referred to as

A.     Denial of service
B.     Sniffering
C.     Spoofing
D.     Back door
E.     Scan

22.  The unauthorised use of an organisation's computer system and networks by a staff of the organization during work session is called

A.     Cyber theft
B.     Hacking
C.     Cracking
D.     Time and resource theft
E.     Spoofing

23.  A facility on the web that helps you find sites with the information and/or services you want is called

A.     Web browser
B.     Universal resource locator
C.     Surfing
D.     Search engine
E.     Hyperlink

24.  The primary protocol for transmitting information over the internet is

A. Hypertext Transfer Protocol (HTTP)
B. File Transfer Protocol (FTP)
C. Point-to-Point-Protocol (PPP)
D. Transport Control Protocol/Internet Protocol (TCP/IP)
E. Post Office Protocol (POP)

25. **TWO** broad categories of transmission media are

A. Infrared and microwave
B. Shielded and unshielded
C. Guided and wireless
D. Twisted and untwisted
E. Coaxial cable and fibre optics

26. Which of the following is **NOT** true of a call centre?

A. It is a virtual location where customers and other telephone calls are
    handled by an organization
B. Call centres are used for customer services
C. Call centres frequently employ an Automated Call Distributor (ACD)
D. Call centre frequently employs an ACD to validate callers
E. Call centre is a physical location where customers and other telephone
    calls are handled by all organisations

27. Which of the following is **NOT** true of Telecommuting?

A. It enhances daily journey to the work place
B. It eliminates daily journey to the workplace
C. It enables those who are physically challenged or who live in areas
    remote from the city office to communicate regularly to enhance productivity
D. Extensive use of telecommuting decreases need for office space
E. Some jobs are better suited for telecommuting

28. Which of the following items carry electronic signals between sender and receiver?

A. Modem

B.     Front-end processor
C.     Back-end processor
D.     Transmission media
E.     Communication protocol

29.     Analog signals are represented by

A.     Bit
B.     Asynchronous signals
C.     Continuous signals
D.     Synchronous signals
E.     Multiplexing

30.     Which of the following is **NOT** a way to gain access to the Internet?

A.     Internet Provider (IP)
B.     Usenet
C.     Point-to-Point Protocol (PPP)
D.     LAN server
E.     Online service

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

**ATTEMPT ALL QUESTIONS**

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

1.     In the Windows Vista, the ......................................Explorer allows access to each major component of the computer and performs basic maintenance functions

2.     ........................ are more powerful than the mainframe, makes use of parallel processing and are more expensive than mainframe computers

3.     A computer Interface called...............................enables the user to select pictures, icon, menus and are used to send instructions to the computer processor

4.     The representation of data in the usual normal language of the user is called
........................data representation

5. The device that reads bar-coded labels is called.......................................

6. Which type of operating system allows many users to work on one computer at the same time where each user has processing capability at his end?

7. What is the name of the access method where data can be retrieved without the need to pass other data in sequence?

8. A program solution plan that is expressed in a meta language, containing logical step-by-step actions to be taken to solve a particular problem is called ....................

9. What is the name of the process by which human-readable data is inputed into a computer?

10. The system software called ..................... is a set of computer programs that controls the hardware and acts as an interface with application programs.

11. What System Development phase ensures that the system operates and modifies the system so that it continues to meet changing requirements?

12. In a System Development project, data could be collected through an interview. An interview where the questions are written in advance is known as .................

13. The transmission medium that consists of many extremely thin strands of glass or plastic bound together in a jacket, and transmits data with light beam is called .......................................

14. A device that translates data from digital to analog and vice versa is known as a ...........................

15. A transmission mode that performs a simultaneous two-way independent transmission in both directions is called ................................

16. The period of time in which an information system is not operational is referred to as ............................

17. The point-and-click of ones' way to thousands of hyperlinked websites and resources for multimedia information, entertainment, etc is called ..........................

18. The communication standard used to transfer pages on the web is called ..........

19. The major set of connections for computers on the Internet is called .................................

20. The network architecture that gives equal power to all computers on the network and used primarily in small network is called ..........................

# INSIGHT

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

## QUESTION 1

a.     State **ONE** function of each of the items listed below as it relates to Ms windows

     i.      My Computer
     ii.     My document
     iii.    Menu bar
     iv.    Start button
     v.     Title bar
     vi.    Task bar                            (6 Marks)

b.     In relation to data representation, convert the decimal number 4903.9375 to a binary number. (3 Marks)

c.     Convert the binary number 100111.011 to a decimal number

($3^1/_2$ Marks)

**(Total 12 $^1/_2$ Marks)**

## QUESTION 2

a.     i.      Briefly explain the concept of Office Automation (2 Marks)

     ii.    List **FIVE** hardware equipment and **FOUR** application software that may be used in an ideal Office Automation environment. ($4^1/_2$ Marks)

     iii.    State **ONE** function of each item listed in (ii) above. ($4^1/_2$ Marks)

b.     List **THREE** health-related issues that may be encountered in the use of computer systems ($1^1/_2$ Marks)

**(Total 12 $^1/_2$ Marks)**

## QUESTION 3

a.     What is computer crime? ($1^1/_2$ Marks)

b. Distinguish between Computer virus and Computer worms (2 Marks)

c. List **FIVE** ways by which virus infection can occur in a user's computer system.
(5 Marks)

d. State **TWO** differences between the following processing techniques:
   i. Multi- tasking
   ii. Multiprocessing

(4 Marks)

**(Total 12 ¹/₂ Marks)**

## QUESTION 4

a. A Computer printer is an output device that produces hardcopy.

   **Required:**

   List **TWO** examples of each of the following

   i. Impact printers
   ii. Non-impact printers (4 Marks)

 **b.** i. 120 Gigabytes of Computer storage is equivalent to how many bits?

   $(2^1/_2$ Marks)

   ii. Express 6 Terabytes in bytes (2 Marks)

 c. List **FOUR** items that can be found in the internal memory of a computer during a working session.
(4 Marks)

## QUESTION 5

# INSIGHT

a.  Briefly explain **FIVE** contents of a feasibility study report.
    (5 Marks)

b.  Explain what is meant by the term "walkthrough" as used in the system design   process.
    (2 Marks)

c.  i.  State **ONE** difference between a program and other algorithms
                                                                    (2 Marks)

    ii.         State **THREE** properties of algorithms ($1^1/_2$ Marks)

d.  Draw the program flowchart symbols for the following:
    i.      Process box
    ii.     Terminal box
    iii.    Decision box
    iv.     Off-page connector                                       (2 Marks)

                                                      **(Total        12$^1/_2$ Marks)**

# QUESTION 6

a.  What is Forensic Computing?                            ($2^1/_2$ Marks)

b.  List **TWO** differences between Synchronous and  Asynchronous data communications                                (4 Marks)

c.  Define the following terms:
    i.      Peer-to-Peer Network
    ii.     Local Area Network
    iii.    Wide area Network

                                                                    (6 Marks)

                                                      **(Total 12 $^1/_2$ Marks)**

# INSIGHT

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

## EXAMINER'S REPORT

This consists of 30 questions which covered almost the entire syllabus. The performance was good.

# INSIGHT

**SOLUTION TO SHORT ANSWER QUESTIONS**

1.   Windows
2.   Super Machine/Super Computer
3.   Graphical User Interface (GUI)
4.   External
5.   Bar-Code Scanner/Reader
6.   Multi-user
7.   Direct Access Method
8.   Pseudocode/Flow Chart/Algorithm
9.   Data Entry
10.  Operating System
11.  System Maintenance and Review
12.  Structured Interview/Questionnaires
13.  Fibre Optics
14.  MODEM
15.  (Full) Duplex
16.  Downtime/Idle time
17.  Surfing
18.  Hypertext Transfer Protocol (HTTP)
19.  Internet backbone/Wide Area Network (WAN)
20.  Peer-to-peer

**EXAMINER'S REPORT**
This consists of 20 questions which covered almost the entire syllabus. The performance was good.

**SOLUTION 1**
(a)
    i.    **My computer**: It allows the opening of the contents of the hard disk and then do maintenance such as copy, move and delete individual files.

    ii.    **My document**: Also called documents Explorer, which is where all documents, photo, music and other files stored on the compute hard disk.

    iii.    **Menu Bar**: It is aligned across the top of the window, just below the title bar. A menu can be opened by clicking the menu's name and a command can be activated by clicking on it using a mouse.

    iv.    **Start Button**: It opens the start menu which is used to open all programs and documents.

v. **Title Bar**: It lists the name of the program and the title of the current document.

vi. **Taskbar**: It displays buttons of open applications and windows as well as different tools bar for different tasks.

(b) To convert 4903.9375 to a binary number, we convert the integral part first.

```
2 | 4903
2 | 2451  R1
2 | 1225  R1
2 |  612  R1
2 |  306  R0
2 |  153  R0
2 |   76  R1
2 |   38  R0
2 |   19  R0
2 |    9  R1
2 |    4  R1
2 |    2  R0
2 |    1  R0
```

Thus

4903 = 1001100100111

Next we convert the decimal fraction to binary

2 x 0.9375 = 1.8750
2 x 0.8750 = 1.7500
2 x 0.7500 = 1.500
2 x 0.500  = 1.000

Hence

0.9375 = 0.1111

Thus

$4903.9375 = 1001100100111.1111_{two}$

(c) Convert 100111.011 to a decimal number

Now

100111 = $1 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 0 \times 2^3 + 0 \times 2^4 + 1 \times 2^5$

= 1 + 2 + 4 + 0 + 0 + 32

= 39

Next

$$0.011_{two} = 0 \times 2^{-1} + 1 \times 2^{-2} + 1 \times 2^{-3}$$
$$= 0 + \frac{1}{4} + \frac{1}{8}$$
$$= 0 + 0.25 + 0.125$$
$$= 0.375_{ten}$$

Hence

$$100111.011 = 39.375_{ten}$$

## EXAMINER'S REPORT

This question tests the basic features of the Ms Widows and the arithmetic of the number systems particularly basis 10 and 2.

The question demands systems conversion of the number system from base 2 to 10 and verse versa.

Over 95% of the candidates answered this question and the performance was poor as less than 40% of the candidates scored less than 40% of the allocated marks.

The major pitfall was inability to explain clearly the basic features of the Ms Window. Also many candidates could not successfully do the conversion.

The candidates are advised to study the Study Text more.

## SOLUTION 2

(a)  i.    Office Automation is the use of computer-based information system to
Collect, process, store and transmit electronic messages, documents and other forms of office communications among individuals, workgroups and organizations.

  ii.    Office Hardware equipment
- Computer hardware    -    Preparation of documents
- Printer    -    For output of hardcopy
- Storage device    -    To store office documents
- Telephone    -    To send and receive messages
- Loudspeaker    -    Use in meetings
- Microphone    -    Used in meetings
- Fax Machine    -    To send documents in original form

- Scanner     -     Produce an image copy into the system
- Photocopier     -     To produce copies of documents

iii. Software items
- Word processing Software used in creating, editing etc of documents, reports etc, e.g. Ms Words.
- Spreadsheet package is used to perform numeric computations particularly in accounting and other related activities.
- Organiser used to remind management of schedules of appointments.
- Presentation software is used to prepare outline and graphic document for presentation e.g. Power Point
- Accounting Packages e.g. Sage, Peachtree, Quick Books
- Database Management application e.g. Oracle, Ms Access
- Graphical design application e.g. Corel draw
- Statistical package e.g. SPSS
- Mathematical package e.g. Mathematical, mathlab

(b) Health-related issues that may arise during use of computer systems include:

i. Fatigue/tiredness
ii. Damaged arms and neck pains
iii. Eye strains
iv. Long radiation exposure
v. Back pains/aches
vi. Waist damage/pain
vii. Headache
viii. Muscle and joint problem

**EXAMINER'S REPORT**
This question test candidate's knowledge on the concept of office Automation and the Health related issues associated with the use of the computer system.
Over 95% of the candidates attempted this question and the performance was good as over 50% of the candidates scored above 50% of the allocated marks.

**SOLUTION 3**

(a)   Computer crime refers to the criminal actions accomplished through the use of computer systems, especially with intent to defraud, destroy or make unauthorized use of computer system resources.

(b)   Computer virus, like computer worms is malicious software that attaches itself to another program and replicates itself within the program and the computer system in order to cause harm.

While the computer virus is activated unintentionally by the computer user, computer worms do not require the user's intervention in order to spread itself.

(c)   Virus infection can occur through
i.      Weak antivirus software
ii.     Downloading of software from internet
iii.    Use of pirated software
iv.     Use of storage media from unreliable sources
v.      Failure to use antivirus software
vi.     Opening an e-mail from unreliable sources
ix.     Making available your computer system to anybody

(d)   Differences between multitasking and multiprocessing

|      | **Multitasking** | **Multiprocessing** |
|------|------------------|---------------------|
| i.   | More than one application can be run at the same time on a single processor | More than one process can be run by more than one processors |
| ii.  | Time of running each application is at the discretion of the user | Time of running the processes is under the control of the operating system |

**EXAMINER'S REPORT**

This question tests the candidates' knowledge on Computer Crimes and particularly the effects of virus and worms.
Over 95% of the candidates attempted this question and the performance was good as over 60% of the candidates scored above 50% of the allocated marks.

# INSIGHT

**SOLUTION 4**

(a)  i.  Impact line printers are:
1.  Dot-matrix printers
2.  Daisy-wheel printer
3.  Barrel printers
4.  Chain printer
5.  Drum printer
6.  Bar printer or printer keyboard

ii.  Non-impact (page) printers are:
1.  Laser printer
2.  Ink-jet printer
3.  Thermal printer
4.  Deskjet printers
5.  Electrostatic printer
6.  Xerographic printer

(b)  i.  Assume that lkb = $10^3$B
Then, IMB = $(10^3).10^3 = 10^6$b
Therefore lGB = $(10^6).10^3 = 10^9$B

Hence,
120GB = $120 \times 10^9$B
∴ = $8 \times 120 \times 10^9$ bits
= $96 \times 10^{10}$ bits

ii.  1 Terabyte = $10^3$ GB
= $10^3 \times 10^9$B = $10^{12}$B
Hence, 6TB = $6 \times 10^{12}$B

(c)  Items that can be found in the memory of the computer during working session are:
1.  Programs being used for processing
2.  Data that is undergoing processing
3.  Intermediate results
4.  Information that is ready to be sent to an output device

**EXAMINER'S REPORT**

The question tests candidates' knowledge on the types of computer printers and the external representation of the computer characters.

About 40% of the candidates attempted this question and the performance was fair as less than 50% of the candidates scored below 50% of the allocated mark.

The major pitfall was the inability of the candidates to convert from one scale to the other.

# INSIGHT

Candidates are advised to pay more attention to numeric examples.

**SOLUTION 5**
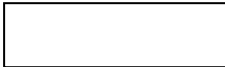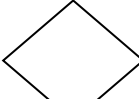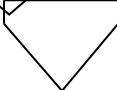
(a) Contents of a feasibility study report include:

i. **Executive summary**
A short (possibly one page) summary of the contents of the entire report.

ii. **Terms of Reference**
A re-statement of the terms of reference to facilitate an understanding of the report.

iii. **Current System Issues**
All the good and bad sides of the current system.

iv. **Evaluation of each option**
Details of how each option was assessed in terms of its strengths and weaknesses.

v. **Description of the options**
A thorough account of the various options showing why each was selected.

vi. **Feasibility**
Analysis of how each option met the selection criteria.

vii. **Conclusion**
A clear statement of what the team finally arrived at in terms of its choice.

x. **Recommendation**
This is to the appointing authority seeking permission to continue with the project.

xi. **Introduction**
This is a brief introduction of the feasibility study report.

xii. **The Budget**
The budget in respect of cost, time and resources allocation to the study. This considers the cost/benefits of the proposed system.

(b) Walkthrough as used in the system design process refers to user validation exercise which the systems analyst conducts to ascertain the user's acceptance of the work done so far.

(c) i. Differences between program and algorithm include:
   - A computer program is an algorithm written in a particular computer language.

- An algorithm is a step-by-step instruction to solve a particular task.
- An algorithm is expressed in either a natural language, pseudo code or as a flowchart.
- Program can be translated for computer execution. This is not possible for an algorithm.

ii. Properties of an algorithm include:
- It has a starting point and a stopping point.
- Algorithm always terminate after a finite number of steps
- An algorithm must produce one or more outputs or determine the existence of no solution
- Uniqueness: Results of each step are uniquely defined and only depend on the input and the result of the preceding steps.
- Precision: The steps are précising stated/defined.

(d) Program flowcharts symbols are:

i. Process box ⬜ (Rectangle)

ii. Terminal box ⬭ (Oval)

iii. Decision box ◇ (Diamond shape)

iv. Off-page connector ⬗ (Arrow)

**EXAMINER'S REPORT**

This question tests candidates' knowledge on the feasibility study report and the contents of the RAM during Data Processing.
Less than 50% of the candidates attempted this question and the performance was poor as less than 40% of the candidates scored below 40% of the allocated marks.
The major pitfall was inability to write reports.
Candidates are advised to use the ICAN Study Text more effectively.

**SOLUTION 6**

(a) Forensic computing is the application and analysis techniques together and preserve evidence from a particular computer device in a way that is suitable for presentation in a court of law.

(b)

| | Synchronous | Asynchronous |
|---|---|---|
| 1. | Sends data in the form of blocks or frame means of transmission. | Sends 1 bytes/character at a time. |
| 2. | It is a very fast means of transmission | It is a slow means of data transmission. |
| 3. | It is expensive | It is economical. |
| 4. | It uses constant rate of transmission | Transmission is random. |
| | | It uses a start-bit and an end-bit to indicate the state and end of a character transition |

(c) i. Peer-to-peer network is a computing environment where end user computers connect, communicate and collaborate directly with each other via the internet and other communications links.

   ii. Local area network (LAN) is a computing environment that connects computers terminals and other computerized devices within a limited physical area such as an office, building, manufacturing plants or other worksites.

   iii. Wide area network (WAN) is a data communications network like the local area network, but covering a large geographical area.

**EXAMINER'S REPORT**

This question tests candidates' knowledge on Forensic Computing and the difference between Synchronous and Asynchronous data transmission.
Less than 50% of the candidates attempted this question and the performance was very poor as less than 40% of the candidates scored below 40% of the allocated marks.
The major pitfall was the inability to define Forensic Computing and certain networks.
The candidates are advised to study harder using the ICAN Study Text.