



**THE INSTITUTE OF CHARTERED
ACCOUNTANTS OF NIGERIA**

PATHFINDER

**MAY 2017 DIET
FOUNDATION LEVEL EXAMINATIONS**

Question Papers

Suggested Solutions

Marking Guides

Plus

Examiner's Reports

FOREWARD

This issue of the **PATHFINDER** is published principally, in response to a growing demand for an aid to:

- (i) Candidates preparing to write future examinations of the Institute of Chartered Accountants of Nigeria (ICAN);
- (ii) Unsuccessful candidates in the identification of those areas in which they lost marks and need to improve their knowledge and presentation;
- (iii) Lecturers and students interested in acquisition of knowledge in the relevant subject contained herein; and
- (iv) The professional; in improving pre-examinations and screening processes, and thus the professional performance of candidates.

The answers provided in this publication do not exhaust all possible alternative approaches to solving these questions. Efforts had been made to use the methods, which will save much of the scarce examination time. Also, in order to facilitate teaching, questions may be edited so that some principles or their application may be more clearly demonstrated.

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.

NOTES

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

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THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

FOUNDATION LEVEL EXAMINATION – MAY 2017

FINANCIAL ACCOUNTING

Time Allowed: 3 hours

SECTION A: MULTIPLE - CHOICE QUESTIONS (20 MARKS)

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ALL QUESTIONS IN THIS SECTION

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

1. Which of the following justifies why bank reconciliation statement is prepared?
 - (i.) Detection of error in the organisation's cash book
 - (ii.) Reconciliation of differences arising from delay in clearance of cheques
 - (iii.) Discourage embezzlement of fund by staff
 - (iv.) Resolve problems highlighted by the trial balance
 - A. (i), (ii), (iii) and (iv)
 - B. (ii)
 - C. (i) and (ii)
 - D. (ii), (iii) and (iv)
 - E. (i), (ii) and (iii)
2. Relevant financial information, according to the *Conceptual Framework* is
 - A. Capable of making a difference in the decisions made by users
 - B. Incapable of making a difference in the decisions made by users
 - C. Capable of making a difference in the performance of the company
 - D. Incapable of making a difference in the performance of the company
 - E. Capable of multiple interpretations
3. Which of the following pair of accounts will have balances on opposite sides?
 - A. Sales account and capital account
 - B. Furniture account and cash account
 - C. Capital account and purchases account
 - D. Stationery account and salaries account
 - E. Rent expenses account and trade receivables account
4. The major difference between depreciation and other types of expenses is that it
 - A. Does not involve any cash outlay
 - B. Is subject to more precise measurement
 - C. Can be avoided if the asset is in a good condition as when purchased
 - D. Is not deductible if it will cause a net loss
 - E. Requires no provision

5. The double entry to record cash received in a subsequent year on debt which had been written off as bad in a previous period is
 - A. Debit trade receivables account, Credit cash account
 - B. Debit bad and doubtful debts expense account, Credit cash account
 - C. Debit cash account, Credit bad debt expense account
 - D. Debit trade receivables account, Credit bad debt expense account
 - E. Debit cash account, Credit profit or loss account
6. IAS 2 deals with
 - A. Statement of Financial Position
 - B. Statement of Comprehensive Income
 - C. Statement of Cash Flow
 - D. Inventories
 - E. Depreciation
7. The expected disposal value of the non-current asset at the end of its expected useful life is called
 - A. Back-up value
 - B. Replacement value
 - C. Carrying amount
 - D. Residual value
 - E. Sales value
8. The core objective of accounting is to
 - A. Keep record of transactions
 - B. Produce a trial balance
 - C. Maintain records of assets and liabilities
 - D. Provide financial information to users for decision making
 - E. Maintain register for non-current assets.
9. Which of the following valuation methods should be used when an entity is faced with liquidation?
 - A. Fair value
 - B. Historical cost
 - C. Current cost
 - D. Realisable value
 - E. Present value
10. On June 1, 2015, Nkiwe Enterprises received a rent of ₦240,000 for 12 months to May 31, 2016. The reporting date of Nkiwe is December 31. What are the entries in the statement of profit or loss for the year ended, and statement of financial position as at, December 31, 2015?

	Profit or loss	Statement of financial position
	₦	₦
A.	100,000 income	140,000 liability
B.	100,000 expenses	140,000 asset
C.	140,000 income	100,000 liability
D.	140,000 expenses	100,000 asset
E.	240,000 income	no entry

11. A Payable Ledger Control Account had a closing balance of ₦102,000. This included a contra to the sales ledger of ₦4,800, which had been entered on the wrong side of control account.

The correct balance on the control account should be

- A. ₦92,400 credit
 - B. ₦98,200 credit
 - C. ₦100,800 credit
 - D. ₦106,800 credit
 - E. ₦111,600 credit
12. Loan advanced by a partner to the partnership would be shown in
- A. Receivables account
 - B. Partner's capital account
 - C. Partner's current account
 - D. Non-current liability account
 - E. Goodwill account
13. The following are components of equity **EXCEPT**
- A. Ordinary share capital
 - B. Share premium
 - C. Revaluation reserves
 - D. Retained earnings
 - E. Loan notes
14. The following information is obtained from the books of a sole trader.
- | | | |
|-------|---|----------|
| (i) | Opening capital as at January 1, 2015 | ₦300,000 |
| (ii) | Closing capital as at December 31, 2015 | ₦65,000 |
| (iii) | Additional capital introduced during 2015 | ₦120,000 |
| (iv) | Cash withdrawn during 2015 | ₦320,000 |
- Calculate the profit or loss during the period.
- A. ₦285,000 loss
 - B. ₦35,000 loss
 - C. ₦35,000 profit
 - D. ₦225,000 profit
 - E. ₦522,500 profit
15. An accounts officer recorded ₦90,000, being the purchase price of a new machine, as repairs and maintenance costs. A draft profit of ₦450,000 for the period was calculated before the discovery of the error. The depreciation rate for machinery is 25% on cost with a full year's charge in the year of purchase. What is the correct profit?
- A. ₦360,000
 - B. ₦382,500
 - C. ₦427,500
 - D. ₦472,500
 - E. ₦517,500

16. Which of the following exists primarily for the purpose of making profit?
- A. Charities
 - B. Clubs
 - C. General hospitals
 - D. Government bodies
 - E. Partnerships
17. Where **TWO** or more partnerships combine to form a new partnership, the act is called
- A. Amalgamation
 - B. Appropriation
 - C. Dissolution
 - D. Realisation
 - E. Revaluation
18. Which of the following items involves movement in cash flows?
- A. Amortisation charges
 - B. Depreciation
 - C. Gain
 - D. Loss
 - E. Rent
19. Consider the following items
- (i.) Gain on disposal
 - (ii.) Loss on disposal
 - (iii.) Receipt on disposal
- Which of the above represents cash movement from the sale of an asset?
- A. (i)
 - B. (ii)
 - C. (iii)
 - D. (i) & (ii)
 - E. (ii) & (iii)
20. A process that compares **TWO** sets of records is
- A. Reconciliation
 - B. Posting
 - C. Casting
 - D. Balancing
 - E. Absorption

SECTION B:**(80 MARKS)**

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ANY FOUR OUT OF SIX QUESTIONS IN THIS SECTION

QUESTION 1

The IASB Conceptual Framework for Financial Reporting provides a conceptual underpinning of IFRS. The objective of general purpose financial reporting forms the foundation of the conceptual framework.

Required:

- a. Explain the objective of general purpose financial statements and the nature of the information in the statements. (6 Marks)
 - b. Define the following concepts and explain the significance of each on financial reporting.
 - i. Materiality (5 Marks)
 - ii. Consistency (5 Marks)
 - iii. Offsetting (4 Marks)
- (Total 20 Marks)**

QUESTION 2

- a. The following transactions are extracts from the records of Votle Limited in 2016 the year of commencement of its business operations.

2016		₦'000
1 January	Cost of land acquisition brought forward	7,500
1 January	Brought forward Building construction work in progress	9,675
10 January	Invoice price of imported machinery received	13,000
10 January	Agency fees for land acquisition paid	750
12 January	Discount on purchase of machinery	400
12 January	Freight and insurance of machinery	300
12 January	Import duties on machinery paid	630
15 January	Cost of additional construction materials used paid	3,550
21 January	Legal fees for land acquisition agreement paid	350
25 January	Clearing agent's fees for machinery paid	315
31 January	Initial ground rent for land paid	600
2 February	Annual ground rent for land paid	250
7 February	Cost of fairly used motor vehicle paid	3,750
14 February	Cost of haulage of machinery paid	252
14 February	Cost of major repair to bring the motor vehicle into a useable condition	1,550
22 February	Cost of construction of platform for machinery paid	1,050
25 February	Cost of labour used in construction of building paid	1,975
28 February	Architect's fees in respect of building construction paid	1,250
4 March	Cost of connection of power and water to machinery	1,450

2016		₦'000
6 March	Repair and maintenance of motor vehicle	250
10 March	Cost of testing the machinery	603
15 March	Cost of commissioning the building	950

Required:

Determine the value of the following non-current assets brought into use as at March 15, 2016.

- (i.) Land and building (4 Marks)
- (ii.) Plant and machinery (4 Marks)
- (iii.) Motor vehicle (4 Marks)

- b. State and explain **FOUR** elements of financial statements in IASB Conceptual Framework. (8 Marks)
- (Total 20 Marks)**

QUESTION 3

- a. The trial balance of Prudent Limited included the following balances as at October 1, 2015

	₦
Trade receivables	1,564,000
Allowances for doubtful receivables	78,200

During the year to September 30, 2016, Prudent Limited credit sales were ₦8,142,000, cash received from customers was ₦7,820,000 and bad debts written off were ₦46,000. Based on experience Prudent Limited decided to recognise additional allowance of 5% on its receivables as doubtful.

Required:

Prepare the ledgers for receivables, bad and doubtful debt expense and allowance for doubtful receivables accounts. (6 Marks)

- b. Shoema is a sole proprietor who has not kept a complete set of books for his business. He has now asked you to prepare his accounts. The following information is made available to you.

	31 December 2015	31 December 2014
	₦	₦
Plant and machinery	242,550	272,195
Inventories	116,424	132,864
Trade receivables	87,749	100,254
Trade payables	46,354	49,804
Rates paid in advance	-	2,695
Rent accrued	7,007	1,348
Salary accrued	6,468	8,085

Shoema pays all cash received into bank and makes all payments by cheque. A summary of his bank account for the year is as follows:

	₦		₦
Balance b/f	14,122	Trade payables	917,162
Cash sales	897,758	Salaries	143,751
Trade receivables	439,930	Rent	40,425
		Insurance	87,641
		Rates	13,475
		New machine	53,900
		Drawings	58,212
		Balance c/f	<u>37,244</u>
	<u>1,351,810</u>		<u>1,351,810</u>

Required:

Prepare Shoema statement of profit or loss for the year ended December 31, 2015 and statement of financial position as at December 31, 2015.

(14 Marks)

(Total 20 Marks)

QUESTION 4

- a. A number of factors will lead to the creation of goodwill in a partnership.

Required:

- i. Define goodwill and explain its recognition in partnership accounts. (3 Marks)
 - ii. State **THREE** examples of circumstances in which goodwill may be created in a partnership. (3 Marks)
- b. Ade, Olu and Kola are in partnership sharing profits in ratio 3:2:1 respectively. On March 31, 2016, their statement of financial position showed:

	₦'000		₦'000
Capital accounts:		Plant	1,361
Ade	1,511	Vehicle	907
Olu	826	Inventory	1,134
Kola	578	Receivables	1,758
Current accounts:		Cash	550
Ade	1,008		
Olu	551		
Kola	386		
Current liabilities	<u>850</u>		
	<u>5,710</u>		<u>5,710</u>

On April 1, 2016, Ade retired and the following terms were agreed according to their partnership Deed:

- (i) Goodwill was valued at ~~₦~~1,572,000 and was not to be retained in the books of the continuing partners. Olu and Kola agreed to continue sharing profits in ratio 2:1 respectively and to maintain their current accounts.
- (ii) Ade should take a car with carrying amount of ~~₦~~456,000 at a valuation of ~~₦~~324,000
- (iii) Ade should receive a cash of ~~₦~~405,000 and retained the balance in a loan account bearing interest at 12% per annum.

Required:

- i. Prepare the capital accounts, cash account and loan account in the books of the old partnership. (6 Marks)
- ii. Prepare the statement of financial position of the new partnership as at April 1, 2016 after giving effect to the retirement of Ade.

(8 Marks)

(Total 20 Marks)

QUESTION 5

The account of Shakol enterprises for the year ended September 30, 2016 has just been prepared. The profit for the year was ~~₦~~224,500 but the following errors were later discovered.

- (i) Sales of ~~₦~~3,200 was posted as ~~₦~~320 to a customer's account, the correct amount was included in the day book.
- (ii) Additional plant purchased during the year for ~~₦~~48,000 was posted to purchases account.
- (iii) The sum of ~~₦~~4,850 representing wages paid to technicians who installed the plant was debited to wages account.
- (iv) To obtain the total in the returns outwards book, a total of ~~₦~~6,887 was carried forward as ~~₦~~8,876.
- (v) The total of the sales account had been overcast by ~~₦~~8,190.
- (vi) Furniture which cost ~~₦~~36,000 was posted to repairs account.
- (vii) Goods valued at ~~₦~~4,470 were returned but the returns were not entered in the books.
- (viii) A sales invoice for ~~₦~~6,000 was completely omitted from the books.
- (ix) ~~₦~~2,500 overdraft in the cash book was omitted in the trial balance.
- (x) The amount of ~~₦~~3,200 paid to a supplier was correctly entered in the cash book but debited in the personal account as ~~₦~~2,300.
- (xi) The debit side of wages account was under-cast by ~~₦~~8,005.

Depreciation is provided on plant at 20% of cost and furniture at 25% of cost.

Required:

- a. Prepare Journal entries to correct the errors. (10 Marks)
 - b. Prepare the suspense account showing the amount by which the trial balance did not agree. (3 Marks)
 - c. Prepare a statement of the adjusted profit for the year ended September 30, 2016. (7 Marks)
- (Total 20 Marks)**

QUESTION 6

- a. The Accountant of Payless Limited on receiving the bank statement of the business for September 2016 noticed a difference between the bank account balance and the bank column of the company's cash book. On investigation, the accountant found the following:
 - (i) The bank statement had been debited in error to the tune of ₦500,000. The error had been discovered by the bank and would be reversed in the next working day;
 - (ii) Cheques amounting to ₦840,000 paid into the bank were uncleared and yet to be credited to the business bank account;
 - (iii) Some cheques amounting to ₦206,500 paid into the bank were dishonoured;
 - (iv) Standing order of ₦100,000 with the bank had been effected by the bank;
 - (v) Dividends for investments amounting to ₦45,000 had been received directly into the bank account;
 - (vi) Some of the business debtors had paid directly into Payless Limited's bank account amount of ₦2,485,000;
 - (vii) Cheques amounting to ₦520,000, issued to creditors were recorded in the cash book, but were yet to be presented to the bank;
 - (viii) Bank charges were ₦1,050;
 - (ix) Interests received from the bank were ₦4,255.

Balance on the bank column of the cash book was ₦3,797,268 and the bank statement balance was ₦5,203,973.

You are required to:

- i. Prepare the Adjusted Cash Book. (6 Marks)
- ii. Prepare Bank Reconciliation Statement. (4 Marks)

- b. Abode Limited has an insurance policy covering April 1 to March 31 of the following year but its accounting period ends on December 31 each year. The insurance is paid on April 1 each year and the record of payments for the two years, 2015 and 2016, were as follows:

2015	₦64,000
2016	₦84,000

Required:

Show the insurance account for 2016 and state the amount to be charged in the statement of profit or loss and the disclosure in the statement of financial position as at December 31, 2016. (2 Marks)

- c. Funke Limited's management, based on prudence principle evaluated its trade receivables accounts over a period of three years ending on December 31 each year. The following were the extracts from the records of the outcome of the evaluation.

	Trade Receivables	Bad Debts	Allowance for Doubtful Receivables Account
	₦	₦	%
2014	654,000	24,000	2
2015	745,000	18,000	2
2016	585,000	22,000	2

The value stated for trade receivables was net of the bad debts but before the allowance for bad debts. There was no allowance for bad debt before 2014.

Required:

Prepare the ledger accounts for Bad debts and allowance for doubtful receivables account (8 Marks)

(Total 20 Marks)

SUGGESTED SOLUTION

SECTION A Multiple-Choice Questions

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

WORKING NOTES

Question 10

	N
Total Rent received for 12 months	240,000
Total Rent earned for the period ($\frac{7}{12} \times \text{N}240,000$)	<u>(140,000)</u>
Rent receivable	<u><u>100,000</u></u>

Question 11

	N
Balance as per payable ledger control account	102,000
Set – off (contra entries) wrongly treated (N4,800 x 2)	<u>(9,600)</u>
Adjusted balance of payable ledger control account	<u><u>92,400</u></u>

Question 14

Closing Capital = Opening capital + additional capital + profit – drawings

Therefore, Profit = closing capital + drawings – (opening capital + additional capital).

	₦	₦
Closing capital as at December 31, 2015 (closing equity)		65,000
Cash withdrawn during 2015 (drawings)		<u>320,000</u>
		385,000
Opening Capital as at January 1, 2015 (Opening equity)	300,000	
Additional capital introduced during 2015	<u>120,000</u>	
		<u>420,000</u>
Net loss for the period		<u>(35,000)</u>

Question 15

	₦
Net profit reported	450,000
Add: Cost of new machinery	90,000
Less: Depreciation of machinery (25% of ₦90,000)	<u>(22,500)</u>
Corrected profit	<u><u>517,500</u></u>

EXAMINER'S REPORT

The twenty (20) multiple-choice questions cut across all sections of the syllabus. All candidates attempted the questions and performance was above average.

MARKING GUIDE

	MARKS
1 mark for each correct entry x 20	20

SECTION B

SOLUTION 1

- a) The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources for the entity.

General purpose financial statements provide information about the financial position of the entity, statement of profit or loss and other comprehensive income, statement of cash flow and statement of changes in equity, that is, information about the economic resources and the claims against them. Changes in financial position are due to financial performance and other events or transactions.

- b. (i) **Materiality:**
Information is material if its omission from, or misstatement in the financial statements could influence the economic decisions of users. There is no absolute measure of materiality that can be applied to all businesses. Whether an item is material or not depends on the magnitude or its nature or both in the context of specific circumstances of the business.

Items that are being considered as material need to be disclosed in the financial statements. Financial statements could become misleading or confusing if immaterial items are included as line items.

- (ii) **Consistency:**
There is usually more than one way or method by which an item may be treated in the accounts without necessarily violating accounting principles. The concept of consistency holds that when an entity selects a method, it should continue (unless conditions warrant a change) to use that method in subsequent periods so that a comparison of accounting figures over time is meaningful.

The concept ensures that the accounting treatment of like items is consistent, taking one accounting period with another.

- (iii) **Offsetting:**
IAS 1 requires that assets and liabilities, and income and expenses should not be offset against each other. Instead they should be reported separately. Not offsetting would help to compare the amount of assets to liabilities and the income to expenses.

Offsetting is only possible when it is permitted by a standard or it reflects the economic substance of the transaction.

EXAMINER'S REPORT

The question tests candidates' theoretical knowledge of IASB Conceptual Framework for Financial Reporting. Candidates are required to explain the objectives of general purpose financial statements and nature of the information in the statements. They are also expected to define and explain the significance of accounting concepts on financial reporting.

About 80% of the candidates attempted the question but performance was poor. Most candidates did not understand the requirements of the question and majority of them were defining financial statements instead of explaining the objectives and nature of information provided for the financial statements.

The commonest pitfall of the candidates was their inability to adopt key words used in the definition of concepts of materiality, consistency and offsetting as stated in the International Accounting Standards.

Candidates are advised to familiarise themselves with basic accounting and financial reporting concepts which are detailed in the ICAN Study Texts to enhance their performance in future examinations.

MARKING GUIDE

		MARKS	MARKS
a.	- Objective of general purpose financial statements	3	
	- Nature of general purpose financial statements	<u>3</u>	
			6
b. i.	Materiality		
	Definition	3	
	Significance	<u>2</u>	
			5
ii.	Consistency		
	Definition	3	
	Significance	<u>2</u>	
			5
iii.	Offsetting		
	Definition	2	
	Significance	<u>2</u>	
			<u>4</u>
			<u>20</u>

SOLUTION 2

a. Votle Limited – Cost of Non-Current Assets

i. Land and Building

Year 2016		₦'000
1 January	Acquisition cost of land brought forward	7,500
1 January	Building construction work in progress b/f	9,675
10 January	Agency fees	750
15 January	Additional construction materials	3,550
21 January	Legal fees for land agreement	350
31 January	Initial ground rent	600
25 February	Cost of labour for construction	1,975
28 February	Architect's fees	1,250
15 March	Commissioning cost	<u>950</u>
	Cost as at 15 March 2016	<u>26,600</u>

ii. Plant and Machinery

Year 2016		₦000
10 January	Invoice received (13,000 – 400)	12,600
12 January	Freight and insurance	300
12 January	Import duties	630
25 January	Clearing agent fees	315
14 February	Cost of haulage of machinery	252
22 February	Construction of platform	1,050
4 March	Connection of power and water	1,450
10 March	Testing Cost	<u>603</u>
	Cost as at 15 March 2016	<u>17,200</u>

iii. Motor Vehicle

Year 2016		₦000
7 February	Fairly used motor vehicle – cost	3,750
14 February	Major repairs enhancing the value of the vehicle	<u>1,550</u>
	Cost as at 15 March 2016	<u>5,300</u>

- b. Elements of financial statements are assets, liabilities, equity, income and expenses.
- i) **Asset**
An asset is a resource controlled by an entity, as a result of past events and from which future economic benefits are expected to flow to the entity.
 - ii) **Liability**
A liability is a present obligation of an entity arising from past events, the settlement of which is expected to result in an outflow of resources that embody economic benefits.
 - iii) **Equity**
Equity is the residual interest in an entity after the value of all liabilities has been deducted from the value of all assets. It is also called net assets.
 - iv) **Income**
Comprises of revenue and gain. Revenue is income arising in the ordinary course of business while gains arise as a result of disposal of non-current asset. Income may also include unrealised gain such as revaluation surplus.
 - v) **Expense**
Expense results in the outflow of assets. Expenses include those arising in the ordinary course of business such as cost of sales and operating expenses and losses such as those incurred on disposal of non – current assets.

EXAMINER'S REPORT

Candidates are required to determine value of non-current assets from information provided from the records of a company. They are also to state and explain elements of financial statements in IASB Conceptual Framework.

About 60% of the candidates attempted the question and performance was fair. Some candidates could not correctly identify and explain any four elements of the financial statements.

Commonest pitfall in answering the (a) part of the question was that the “N’000” indicated on top of the question was ignored by some candidates, resulting in understating the figures by multiple of one thousand naira.

Candidates are advised to carefully go through examination question papers in future to ensure that all salient aspects of the question are taken into consideration in proffering solution. They should also use ICAN Study Texts in updating their knowledge of IASB Conceptual Framework.

MARKING GUIDE

	MARKS	MARKS
a. i. Value of Land and Building – 8 entries @ ½ mark each	4	
Value of Plant & Machinery – 8 entries @ ½ mark each	4	
Value of Motor Vehicle – 2 entries @ 2 marks each	<u>4</u>	12
b. Elements of financial statements		
Stating any 4 points @ 1 mark each	4	
Explaining the 4 points @ 1 mark each	<u>4</u>	<u>8</u>
		<u>20</u>

SOLUTION 3

a)

Receivables account			
	₦		₦
Balance b/f	1,564,000	Bank	7,820,000
Sales	8,142,000	Bad debt	46,000
	<u>9,706,000</u>	Balance c/f	<u>1,840,000</u>
Balance b/f	1,840,000		<u>9,706,000</u>

Allowances for Doubtful Receivables

	₦		₦
Balance c/d	<u>92,000</u>	Balance b/d	78,200
	<u>92,000</u>	Expense	<u>13,800</u>
			<u>92,000</u>

Bad & Doubtful Debt Expense

	₦		₦
Receivables	46,000	Statement of profit or loss	59,800
Allowance	<u>13,800</u>		<u>59,800</u>
	<u>59,800</u>		

b. i.

Shoema

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

	₦	₦
Revenue		1,325,183
Cost of sales (w1)		<u>(930,152)</u>
Gross profit		395,031
Rent (w5)	46,084	
Rates (w6)	16,170	
Salary (w7)	142,134	
Insurance	87,641	
Depreciation (w8)	<u>83,545</u>	
		<u>(375,574)</u>
Profit for the period		<u>19,457</u>

ii.

Shoema

Statement of financial position as at December 31, 2015

	₦	₦
Non-current assets:		
Plant at cost (w8)	326,095	
Accumulated depreciation	<u>83,545</u>	
Carrying amount		242,550
Current assets:		
Inventory	116,424	
Trade receivables	87,749	
Cash at bank	<u>37,244</u>	
		<u>241,417</u>
		<u>483,967</u>
Capital and Liabilities:		
Capital Jan 1, 2015 (w.9)		462,893
Profit for the year		19,457
Drawings		<u>(58,212)</u>
Capital December 31, 2015		424,138
Current liabilities:		
Trade payables	46,354	
Accrued rent	7,007	
Accrued salary	<u>6,468</u>	
		<u>59,829</u>
		<u>483,967</u>

Workings

1.	Cost of sales:	
	Opening inventory	132,864
	Purchases (payables ledger)	913,712
	Closing inventory	<u>(116,424)</u>
		<u>930,152</u>

2. Trade Payables Control Account

	₦		₦
Cash	917,162	Bal b/f	49,804
Bal c/d	<u>46,354</u>	Purchases	<u>913,712</u>
	<u>963,516</u>		<u>963,516</u>

3. **Receivables Ledger Control Account**
- | | ₦ | | ₦ |
|--------------|----------------|---------|----------------|
| Bal b/f | 100,254 | Bal b/f | 49,804 |
| Credit sales | <u>427,425</u> | bal c/d | <u>87,749</u> |
| | <u>527,679</u> | | <u>527,679</u> |
4. **Revenue:**
- | | ₦ |
|--------------|------------------|
| Cash sales | 897,758 |
| Credit sales | <u>427,425</u> |
| Total | <u>1,325,183</u> |
5. **Rent Account**
- | | ₦ | | ₦ |
|---------|---------------|----------|---------------|
| Cash | 40,425 | Bal b/f | 1,348 |
| Bal c/d | <u>6,468</u> | Expenses | <u>46,084</u> |
| | <u>47,432</u> | | <u>47,432</u> |
6. **Rates Account**
- | | ₦ | | ₦ |
|---------|---------------|----------|---------------|
| Bal b/f | 2,695 | Expenses | <u>16,170</u> |
| Cash | <u>13,475</u> | | <u>16,170</u> |
| | <u>16,170</u> | | |
7. **Salary Account**
- | | ₦ | | ₦ |
|---------|----------------|----------|----------------|
| Cash | 143,751 | Bal b/f | 8,085 |
| Bal c/d | <u>6,468</u> | Expenses | <u>142,134</u> |
| | <u>150,219</u> | | <u>150,219</u> |
8. **Property, Plants & Machinery**
- | | ₦ |
|-----------------------------------|----------------|
| <u>Cost</u> | |
| Bal. January 1, 2015 | 272,195 |
| Addition during the year | <u>53,900</u> |
| Balance December 31, 2015 | <u>326,095</u> |
| <u>Depreciation</u> | |
| Balance January 1, 2015 | - |
| Charge for the year (bal figure) | <u>83,545</u> |
| | <u>83,545</u> |
| Carrying amount December 31, 2015 | <u>242,550</u> |

9. Opening capital January 1, 2015

	₦	₦
Assets:		
Plant & machinery		272,195
Inventory		132,864
Trade receivables		100,254
Rates paid in advance		2,695
Cash		<u>14,122</u>
		522,130
Liabilities		
Trade Payables	49,804	
Rent accrued	1,348	
Salary	<u>8,085</u>	
		<u>59,237</u>
		<u>462,893</u>

EXAMINER'S REPORT

The question tests candidates' knowledge of double entry principles from incomplete records and preparation of statements of profit or loss and statement of financial position therefrom.

About 80% of the candidates attempted the question but performance was poor. Most of the candidates displayed poor knowledge of double entry principles as they could not post entries from cash book into appropriate ledger accounts.

Candidates are advised to pay more attention to the principles of double entries by practising with incomplete records questions from ICAN Study Texts and past questions papers to improve their performance in future examinations.

MARKING GUIDE

		MARKS	MARKS
a.	- Receivables account	3	
	- Allowance for Doubtful debts account	1½	
	- Bad and Doubtful debt account	<u>1½</u>	
			6
b.	Statement of Profit or loss		
	- 56 entries @ ¼ per entry		<u>14</u>
			<u>20</u>

SOLUTION 4

a(i.) Goodwill is the amount by which the value of a business exceeds the value of its net assets. Goodwill is an intangible asset of the business which is not usually retained in the books of the existing partners.

(ii.) Goodwill is normally created when there are changes to the partnership, such as during the admission, retirement and amalgamation of partnership.

b. Ade, Olu and Kola in Partnership

Realisation Account			
	₦'000		₦'000
Motor vehicle	456	Ade's capital account-car	324
		Loss on realization	
		Capital – Ade	66
		- Olu	44
		- Kola	<u>22</u>
	<u>456</u>		<u>456</u>

Partners' Capital Accounts								
	Ade	Olu	Kola		Ade	Olu	Kola	
	₦'000	₦'000	₦'000		₦'000	₦'000	₦'000	
Realisation Account:				Balance b/d	1,511	826	578	
Loss on realisation	66	44	22	Current Account	1,008	-	-	
Car taken over	324	-	-	Goodwill Account	786	524	262	
Goodwill w/off	-	1,048	524					
Cash Account	405	-	-					
12% Loan Account	2,510	-	-					
Balance c/d	-	258	294					
	<u>3,305</u>	<u>1,350</u>	<u>840</u>		<u>3,305</u>	<u>1,350</u>	<u>840</u>	

Cash Account			
	₦'000		₦'000
Bal b/d	550	Ade-Capital	405
		Balance c/d	<u>145</u>
	<u>550</u>		<u>550</u>

12% Loan Account			
	₦'000		₦'000
Balance c/d	<u>795</u>	Capital account-Ade	<u>795</u>

Olu and Ade		
<u>Statement of financial position as at April 1, 2016</u>		
	₦'000	₦'000
Non – current assets		
Plant & equipment		1,361
Motor vehicle (907 – 456)		<u>451</u>
		1,812
Current assets:		
Inventory	1,134	
Receivables	1,758	
Cash	<u>145</u>	
		<u>3,037</u>
Total assets		<u><u>4,849</u></u>
Capital and liabilities:		
Capital		
- Olu	258	
- Kola	<u>294</u>	
		552
Current accounts		
- Olu	551	
- Kola	<u>386</u>	
		<u>937</u>
Equity		1,489
Non Current Liabilities:		
12% Loan – Ade		2,510
Current Liabilities		<u>850</u>
Total Equity & liabilities		<u><u>4,849</u></u>

EXAMINER'S REPORT

The question examines candidates' understanding of the preparation of partner's account relating to retirement including the definition and adjustment for goodwill created in a partnership.

About 60% of the candidates attempted the question and performance was below average, though, few candidates scored high marks.

The commonest pitfalls include:

- Posting entries to the wrong side of the ledger;
- Failing to state the figures in ₦'000 thereby understating figures by multiple of one thousand naira;
- Failing to attempt all parts of the question; and
- Wrong posting of adjustments for goodwill and realisation loss into partners' current accounts instead of partners' capital accounts.

Candidates are advised to learn the principles guiding adjustment for goodwill, realisation profits or losses when there are changes in partnership such as in admission, retirement and amalgamation of partnerships.

They should study their ICAN Study Text, which treats these topics explicitly and practice past question papers for better performance in future examinations.

MARKING GUIDE

	MARKS	MARKS
a. i. Goodwill		
- Definition of goodwill	1½	
- Recognition of goodwill	<u>1½</u>	3
ii. Examples of creation of goodwill (3 points @ 1 mark each)		3
b. Loss on realization of goodwill	½	
Partners' capital account (16 entries @ ¼)	4	
Cash book (3 entries @ ¼)	¾	
12% loan account (3 entries @ ¼)	<u>¾</u>	
		6
Statement of financial position (14 entries @ ½)		<u>8</u>
Total		<u>20</u>

SOLUTION 5

a.		<u>Shakol Enterprises</u>		
S/N	Description	Journal Entries		
		DR	CR	
		₦	₦	
i.	Trade receivables Suspense a/c Being correction of understated trade receivable	2,880		2,880
ii.	Plant & Machinery a/c Purchases a/c Being correction of plant wrongly posted into purchases a/c	48,000		48,000
iii.	Plant & Machinery a/c Wages a/c Being capitalisation of Plant wrongly expensed	4,850		4,850
iv.	Purchases returns a/c Suspense a/c Being correction of overstated purchases returns	1,989		1,989
v.	Sales a/c Suspense a/c Being correction of overstated sales	8,190		8,190
vi.	Furniture a/c Repairs a/c Being correction of overstated repairs	36,000		36,000
vii.	Returns inwards a/c Trade receivables Being correction of sales returns omitted	4,470		4,470
viii.	Trade receivables Sales Being correction of omitted credit sales	6,000		6,000
ix.	Suspense Bank Overdraft Recording bank overdraft omitted from the trial balance	2,500		2,500
x.	Supplier account Suspense Recording understatement in the amount paid to a supplier	900		900
xi.	Wages account	8,005		

S/N	Description	Journal Entries	DR ₦	CR ₦
	Suspense			8,005
	Recording wages undercast			

b)

Suspense Account			
	₦		₦
Bank overdraft	2,500	Receivables	2,880
Balance cleared	19,464	Returns	1,989
		Sales	8,190
		Trade Payables	900
		Wages	8,005
	<u>21,464</u>		<u>21,464</u>

c)

Statement of adjusted profit for the year ended September 30, 2016			
	₦		₦
Profit before correction of errors			224,500
Add: Revenue Omitted:			
Sales Omitted	6,000		
Purchases Overstated	<u>48,000</u>		
			54,000
Add: Expenses deducted in error:			
Repairs	36,000		
Wages	<u>4,850</u>		
			<u>40,850</u>
			319,350
Deduct: Additional expenses:			
Depreciation on Furniture (36000 x 25%)	9,000		
Depreciation on Plant (9,600 + 970)	10,570		
Return inwards	4,470		
Returns outwards	1,989		
Wages	<u>8,005</u>		
			<u>(34,034)</u>
			285,316
Deduct: Sales overcast			<u>(8,190)</u>
Adjusted Profit			<u><u>277,126</u></u>

EXAMINER'S REPORT

The question tests candidates' ability to correct errors with the use of journals and reflect the effect of the errors on the reported profit or loss.

Over 90% of the candidates attempted this question and performance was average.

Candidates' commonest pitfalls were their inability to:

- Prepare the adjustments required in the statement of profit or loss;
- Prepare journal entries rather than preparing ledgers;
- Determine items that ought to be credited and items that ought to be debited in the journal; and
- Identify items that should be posted into the suspense account from the journal.

A good understanding of the double entry principles would help candidates to perform well in questions testing correction of errors and other related adjustments.

MARKING GUIDE

	MARKS
Journal entries – 20 entries @ ½ mark each	10
Suspense account – 6 entries @ ½ mark each	3
Statement of adjusted profits – 14 entries @ ½ mark each	<u>7</u>
	<u>20</u>

SOLUTION 6

a.

i. Adjusted Cash Book			
	₦		₦
Bal. b/d	3,797,265	Dishonoured cheques	206,500
Dividends	45,000	Standing order	100,000
Receivables	2,485,000	Bank charges	1,050
Interest received	<u>4,255</u>	Bal. c/d	<u>6,023,973</u>
	<u>6,331,523</u>		<u>6,331,523</u>

ii. Bank Reconciliation Statement			
	₦		₦
Balance per adjusted cash book			6,023,973
Add: Unpresented Cheques			<u>520,000</u>
			6,543,973
Less: Uncredited cheques	840,000		
Bank error, debit	<u>500,000</u>		
			<u>1,340,000</u>
Balance per Bank Statement			<u>5,203,973</u>

b.

Insurance Account					
		₦			₦
01/01/16	Balance	16,000	31/12/16	Statement of	
	b/d				
01/04/16	Bank	84,000		profit or loss	79,000
			31/12/16	Balance c/d	<u>21,000</u>
		<u>100,000</u>			<u>100,000</u>
01/01/16	Balance	21,000			
	b/d				

Amount in the Statement of Profit or loss as Insurance expenses is ₦79,000

Amount in the Statement of Financial Position as Prepaid Insurance is ₦21,000 – (Current Assets)

c.

Allowance for Doubtful Receivables Account

	₦			₦
31/12/14	Balance c/f	<u>13,080</u>	31/12/14	Profit or loss
				<u>13,080</u>
31/12/15	Balance c/f	27,980	01/01/15	Balance b/f
		<u>27,980</u>	31/12/15	Profit or loss
				<u>14,900</u>
				<u>27,980</u>
31/12/16	Balance c/f	39,680	01/01/16	Balance b/f
		<u>39,680</u>	31/12/16	Profit or loss
				<u>11,700</u>
				<u>39,680</u>

Bad Debts Account

	₦			₦
31/12/14	Trade receivables	<u>24,000</u>	31/12/14	Profit or loss
				<u>24,000</u>
31/12/15	Trade receivables	<u>18,000</u>	31/12/15	Profit or loss
				<u>18,000</u>
31/12/16	Trade receivables	<u>22,000</u>	31/12/16	Profit or loss
				<u>22,000</u>

EXAMINER'S REPORT

The question tests preparation of bank reconciliation statement and ledger accounts for bad and doubtful receivables.

About 80% of the candidates attempted the question and performance was average. Candidates' understanding of Part (a) of the question was good but the other parts were poorly attempted.

Candidates lacked understanding and application of accounting principles like accruals concept and double entry principles which are required for answering the question.

Candidates are advised to review extensively and thoroughly the basic concepts and principles required in answering financial accounting questions.

MARKING GUIDE

	MARKS	MARKS
a. Adjusted cash flow Any 6 entries @ 1 mark each	6	
Bank Reconciliation Statement 4 entries @ 1 mark each	<u>4</u>	10
b. Insurance account 4 entries @ ½ mark)		2
c. Allowance for bad debts account - 10 entries @ ½ mark each - 6 entries @ ½ mark each	5 <u>3</u>	<u>8</u> <u>20</u>

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

FOUNDATION LEVEL EXAMINATION – MAY 2017

MANAGEMENT INFORMATION

Time Allowed: 3 hours

SECTION A: MULTIPLE-CHOICE QUESTIONS (20 MARKS)

INSTRUCTION: YOU ARE REQUIRED TO ANSWER 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 cost of Plant and Equipment procured three years ago is a good example of a
 - A. Controllable cost
 - B. Notional cost
 - C. Budgeted cost
 - D. Sunk cost
 - E. Relevant cost
2. Economic Order Quantity is a quantity of materials and components to be ordered which takes into account the optimum combination of all the following **EXCEPT**
 - A. Stockholding costs
 - B. Amount of costs tied up in inventory
 - C. Order delivery time
 - D. Cost of processing the order
 - E. Consumption rate
3. Which of the following is **NOT** used in process costing?
 - A. Equivalent units
 - B. Progress payments
 - C. Abnormal loss
 - D. Material introduced
 - E. Scraps
4. Which of the following costs vary with capacity utilization?
 - A. Straight line depreciation
 - B. Production manager's salary
 - C. Factory rent
 - D. Piecerate wages
 - E. Plant hire

5. In activity based costing (ABC), the structural determinants of the cost of an activity are called
 - A. Cost pools
 - B. Cost drivers
 - C. Prediction
 - D. Cost estimation
 - E. Cost activities

6. In which costing technique are variable costs charged to cost units and period costs written off against contribution?
 - A. Contract costing
 - B. Activity based costing
 - C. Process costing
 - D. Marginal costing
 - E. Batch costing

7. A situation in which there is mass production of identical units of products and costs are not necessarily assigned to individual units of output is known as
 - A. Job costing
 - B. Step costing
 - C. Joint costing
 - D. Process costing
 - E. Batch costing

8. What will be the Break-even point, in units, where Total fixed cost = ₦240,000, Selling price = ₦24 per unit and Variable cost = ₦18 per unit?
 - A. 20,000 units
 - B. 30,000 units
 - C. 40,000 units
 - D. 50,000 units
 - E. 60,000 units

9. Overhead is under-absorbed when
 - A. Budgeted cost exceeds actual costs
 - B. Budgeted cost equals actual costs
 - C. Budgeted cost is less than standard cost
 - D. Actual cost exceeds budgeted cost
 - E. Actual cost is more than the variance achieved

10. Which of the following cost pools to cost drivers relationship is incorrect?
 - A. Set-up to number of set ups
 - B. Material handling to number of material movement
 - C. Maintenance to number of maintenance
 - D. Depreciation of machine to number of machine hours
 - E. Material procurement to number of inspection

11. The margin of safety in value is expected to be
- A. Sales less profit at break-even point
 - B. Sales less cost at break-even point
 - C. Cost less cost at break-even point
 - D. Sales less sales at break-even point
 - E. Profit less profit at break-even point
12. Which of the following is **NOT** part of the component of working capital?
- A. Stock of raw material
 - B. Stock of finished goods
 - C. Debenture
 - D. Receivables
 - E. Payables
13. Which of the following devices is used for capturing image and video in digital form for transfer to the computer for processing?
- A. Optical Scanner
 - B. Optical Character Reader
 - C. Optical Mark Reader
 - D. Digital Camera
 - E. Magnetic Ink Character Reader
14. Which type of technology does Wireless Local Area Network (WLAN) use?
- A. High frequency radio signals or infrared light beams only
 - B. High frequency radio signals, infrared beams or laser beams
 - C. Infrared light beams or laser beams only
 - D. High frequency radio signals with switches or laser beams only
 - E. High frequency radio signals with switches only
15. Which type of feasibility study appraises the impact of a proposed solution within the organisational framework?
- A. Operational
 - B. Social
 - C. Economic
 - D. Technical
 - E. Cost-benefit
16. Which of the following is **NOT** a tool for Data Warehousing?
- A. Hypermedia tools
 - B. Analytical tools
 - C. Ad-hoc and standardized query tools
 - D. Graphical reporting tools
 - E. Graphical user interface tools

17. Replacement of a package operating in a Windows XP environment with windows 7 is an example of maintenance?
- A. Corrective
 - B. Adaptive
 - C. Preventive
 - D. Defective
 - E. Perfective
18. In computer security, measures to sense and alert of unauthorized operation are called.....measures
- A. Detective
 - B. Deterrent
 - C. Recovery
 - D. Preventive
 - E. Adaptive
19. The information system best suited for high volume transactions and predefined tasks is
- A. Online Processing System
 - B. Real Time Processing System
 - C. Transaction Processing System
 - D. Management Information System
 - E. Batch Processing System
20. Which of the following words **BEST** connotes the meaning of the word "System"?
- A. Conformity
 - B. Consistency
 - C. Connections
 - D. Competence
 - E. Limitation

SECTION B:**OPEN-ENDED QUESTIONS****(80 MARKS)**

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ANY FOUR OUT OF THE SIX QUESTIONS IN THIS SECTION

QUESTION 1

LADECK Nigeria Limited makes and sells two products A and B. The company is considering the introduction of an activity based costing approach to facilitate efficient cost allocation, improvement in cost accuracy and reduction.

The following information is provided in respect of production and sales for the next period.

	PRODUCT A	PRODUCT B	TOTAL
Production and sales (units)	40,000	20,000	60,000
Direct material cost/unit	₦ 25	₦ 20	₦ 1,400,000
Direct labour hours	3	4	200,000
Machine hours	2	5	180,000
Number of production runs	15	25	40
Number of component receipts	70	90	160
Number of production orders	30	20	50

The direct labour hour is paid at ~~₦~~8 per hour.

Budgeted production overhead is absorbed using direct labour hour rate and the budgeted overhead are expected to be as follows:

Cost pool	Amount ₦	Cost Driver
Machine	900,000	Machine hours
Set-up costs	140,000	Production runs
Carriage inwards	280,000	Company receipts
Packaging	<u>200,000</u>	Production orders
	<u>1,520,000</u>	

Required:

Calculate the full production costs for the two products using:

- Traditional absorption costing (absorbing production overhead on a direct labour hour basis). (6 Marks)
- Activity-based costing approach (14 Marks)

(Total 20 Marks)

QUESTION 2

MICRA Manufacturing Company makes a product named as VATA. The records of some of the manufacturing expenses are easily identified as fixed or directly varied with production. The cost accountant of the company is confronted with the problem of preparing a budget for the coming year and wishes to determine the fixed and variable elements of the mixed factory overhead.

The following monthly information in respect of output and mixed factory overhead are provided as follows:

MONTH	NUMBER OF UNITS(x)	MIXED FACTORY OVERHEAD(y)
JANUARY	150	80
FEBRUARY	200	100
MARCH	300	135
APRIL	250	125
MAY	300	130
JUNE	250	120
JULY	350	140
AUGUST	300	125
SEPTEMBER	250	115
OCTOBER	150	80

Required:

Calculate the fixed and variable elements of the above mixed factory overhead using:

- The high and low method (5 Marks)
- The linear regression analysis and determine the line of best fit.

(15 Marks)

(Total 20 Marks)

QUESTION 3

SEAGULL FABRICATORS LIMITED buys a component for ₦280 per unit, 6,000 units of which it uses monthly. Below is the cost of making the same component in-house:

	UNIT COST	TOTAL COST
	₦	₦
Direct Material	100	600,000
Direct Labour	100	600,000
Variable Overheads	<u>50</u>	<u>300,000</u>
Total	<u>250</u>	<u>1,500,000</u>

To be able to fabricate the component, the company needs to purchase a mould for ₦5,000,000 with an expected life span of five years. Also, an annual rent of ₦1,000,000 needs to be paid for the space needed for the fabrication. Power consumption is also expected to increase by ₦500,000 per year.

- a. You are required to advise the company whether to discontinue the outsourcing of the component or commence local fabrication. (8 Marks)
 - bi. State **THREE** qualitative factors to be taken into consideration before a decision is taken to outsource a component hitherto fabricated in-house. (6 Marks)
 - ii. List **THREE** quantitative factors usually considered in the case referred to in (bi) above (6 Marks)
- (Total 20 Marks)**

QUESTION 4

- a. Write brief notes on each of the following:
 - i. Just In Time Systems (2 Marks)
 - ii. Backflush Accounting (2 Marks)
 - iii. Lifecycle Costing (2 Marks)
 - iv. Cost Audit (2 Marks)
 - v. Value Engineering (2 Marks)
 - b.
 - i. State **FOUR** ways by which Information System/Information Technology Strategy can help an entity to achieve its business objectives. (4 Marks)
 - ii. State **THREE** advantages and **THREE** disadvantages of outsourcing Information Technology. (6 Marks)
- (Total 20 Marks)**

QUESTION 5

- a.
 - i. What is an operating system? (2 Marks)
 - ii. State **SIX** functions of operating systems. (6 Marks)
 - b. List and explain briefly **TWO** broad areas of application software. (6 Marks)
 - c. State **THREE** advantages and **THREE** disadvantages of using tailored software to an organisation. (6 Marks)
- (Total 20 Marks)**

QUESTION 6

- a. List and explain briefly **FOUR** principal techniques for gathering facts about an information system. (8 Marks)
- b. The development of information system using Systems Development Life Cycle is in stages; one of which is the feasibility study.

You are required to:

- i. Define feasibility study. (2 Marks)
 - ii. List **FIVE** functions of a Steering Committee. (6 Marks)
 - iii. State **FOUR** uses of feasibility study report. (4 Marks)
- (Total 20 Marks)**

MANAGEMENT INFORMATION

FORMULA SHEET

LINEAR REGRESSION AND CORRELATION

The linear regression equation of Y on X is given by:

$$Y = a + bX \text{ or } Y - \bar{Y} = b[X - \bar{X}],$$

Where

$$b = \frac{\text{Covariance } (XY)}{\text{Variance } (X)} = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

and

$$a = \bar{Y} - b\bar{X}$$

or solve

$$\begin{aligned}\sum Y &= na + b \sum X \\ \sum XY &= a \sum X + b \sum X^2\end{aligned}$$

SUGGESTED SOLUTIONS

SECTION A

MULTIPLE-CHOICE QUESTIONS

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

EXAMINER'S REPORT – MCQ

There are twenty Multiple-Choice Questions covering the entire syllabus.

All the questions were attempted by all the candidates and performance was good as more than half of them scored above 50% of the marks obtainable.

Candidates who didn't do well manifested some inadequate coverage of the entire syllabus.

An improved performance in future will be assured through:

- i. Total coverage of the syllabus;
- ii. Use of past question papers for preparation; and
- iii. Use of ICAN Study Text.

SECTION B

SOLUTION 1

LADECK NIGERIA LIMITED TRADITIONAL ABSORPTION COSTING

a.

	Notes	A ₦	B ₦	Total ₦
Direct material		1,000,000	400,000	1,400,000
Direct labour	i	960,000	640,000	1,600,000
Overhead cost	ii	<u>912,000</u>	<u>608,000</u>	<u>1,520,000</u>
		<u>2,872,000</u>	<u>1,648,000</u>	<u>4,520,000</u>

Workings –

Product A

$$i. \quad \text{₦}8 \times 3 \times 40,000 \text{ units} = \text{₦}960,000$$

Product B

$$\text{₦}8 \times 4 \times 20,000 \text{ units} = 640,000$$

$$ii. \quad \frac{\text{Budgeted total overhead}}{\text{Total direct labour hours}} = \frac{\text{₦}1,520,000}{200,000} = \text{₦}7.6/\text{hr}$$

b. Production Costs using ABC Approach

	Notes	A ₦	B ₦	Total ₦
Direct material		1,000,000	400,000	1,400,000
Direct labour		960,000	640,000	1,600,000
Machine hours	i	400,000	500,000	900,000
Set – up costs	ii	52,500	87,500	140,000
Carriage inwards	iii	122,500	157,500	280,000
Packaging	iv	<u>120,000</u>	<u>80,000</u>	<u>200,000</u>
		<u>2,655,000</u>	<u>1,865,000</u>	<u>4,520,000</u>

Workings –

i. Machine	=	$\frac{\text{₦}900,000}{180,000 \text{ Mhrs}}$	=	₦5/Mhrs
ii. Set – up Costs	=	$\frac{\text{₦}140,000}{40}$	=	₦3,500/set-up
iii. Carriage inward	=	$\frac{\text{₦}280,000}{160}$	=	₦1,750/receipt
iv. Packaging	=	$\frac{\text{₦}200,000}{50}$	=	₦4,000/order

PRODUCTS A

			₦
Machine	=	(₦5 × 2 × 40,000)	= 400,000
Set-up costs	=	(₦3,500 × 15)	= 52,500
Carriage inwards	=	(₦1,750 × 70)	= 122,500
Packaging	=	(₦4,000 × 30)	= 120,000

PRODUCTS B

			₦
Machine	=	(₦5 × 2 × 20,000)	= 500,000
Set-up costs	=	(₦3,500 × 25)	= 87,500
Carriage inwards	=	(₦1,750 × 90)	= 157,500
Packaging	=	(₦4,000 × 20)	= 80,000

EXAMINER'S REPORT

The question tests candidates' ability to compute overhead absorption rates using traditional costing and the activity-based costing approaches.

Performance was average. Sixty-five percent of the candidates attempted the question and half of them scored 50% and above.

Candidates who did not do well have some common pitfalls which include:

- Inability to compute overhead absorption rates either through the traditional absorption costing or the activity-based costing approaches; and
- Poor presentation of answers.

For improved performance in future, candidates are advised to:

- i. Prepare adequately for their examinations; and
- ii. Take full advantage of the availability of ICAN Study Text.

MARKING GUIDE

	MARKS	MARKS
a. Traditional Absorption Costing		
Direct materials A	$\frac{1}{2}$	
Direct materials B	$\frac{1}{2}$	
Direct labour A	$\frac{1}{2}$	
Direct Labour B	$\frac{1}{2}$	
Overhead A	$\frac{1}{2}$	
Overhead B	<u>$\frac{1}{2}$</u>	
		3
Workings A	1	
Workings B	1	
Determination of Basis for Absorption	<u>1</u>	
		3
b. ABC Approach		
Direct materials A	$\frac{1}{2}$	
Direct materials B	$\frac{1}{2}$	
Direct labour A	$\frac{1}{2}$	
Direct Labour B	$\frac{1}{2}$	
Machine hours A	$\frac{1}{2}$	
Machine hours B	$\frac{1}{2}$	
Set-up costs A	$\frac{1}{2}$	
Set-up costs B	$\frac{1}{2}$	
Carriage Inwards A	$\frac{1}{2}$	
Carriage Inwards B	$\frac{1}{2}$	
Packaging A	$\frac{1}{2}$	
Packaging B	<u>$\frac{1}{2}$</u>	
		6
Workings (Calculation of Overheads)		
Machine hours	1	
Set-up costs	1	
Carriage Inwards	1	
Packaging	1	
Product A	2	
Product B	<u>2</u>	
		<u>8</u>
		<u>20</u>

SOLUTION 2

a. Using High and Low Methods

	Output Units ₦	Factory Mixed Overhead ₦
HIGH	350	140
LOW	<u>150</u>	<u>80</u>
DIFFERENCE	200	60
Variable rate	$\frac{60}{200}$	= ₦0.3/unit

Total Fixed Cost

	High ₦	or	Low ₦
Mixed Factory Cost (total)	140		80
Less: Total variable cost ₦(350 × 0.3)	<u>105</u>	(150 × ₦0.3)	<u>45</u>
Fixed cost	<u><u>35</u></u>		<u><u>35</u></u>

b. Using regression analysis

Month	X	Y	X ²	XY
January	150	80	22,500	12,000
February	200	100	40,000	20,000
March	300	135	90,000	40,500
April	250	125	62,500	31,250
May	300	130	90,000	39,000
June	250	120	62,500	30,000
July	350	140	122,500	49,000
August	300	125	90,000	37,500
September	250	115	62,500	28,750
October	<u>150</u>	<u>80</u>	<u>22,500</u>	<u>12,000</u>
Total	<u>2,500</u>	<u>1,150</u>	<u>665,000</u>	<u>300,000</u>

Formula for line of best fit

$$\begin{aligned}b &= \frac{n\sum xy - \sum x \sum y}{n\sum x^2 - (\sum x)^2} \\&= \frac{10(300,000) - (2,500 \times 1,150)}{10(665,000) - (2,500)^2} \\&= \frac{3,000,000 - 2,875,000}{6,650,000 - 6,250,000} \\&= \frac{125,000}{400,000} \\&= 0.3125 \\b &= \text{N}0.3125 \\&= \text{N}0.31\end{aligned}$$

$$\begin{aligned}a &= \frac{\sum y}{n} - \frac{b(\sum x)}{n} \\a &= \frac{1,500}{10} - \frac{0.3125(2,500)}{10} \\a &= 115 - 781.25 \\a &= \text{N}36.875 \\&= \text{N}36.88\end{aligned}$$

Line of best fit is

$$\begin{aligned}y &= a + bx \\y &= \text{N}36.875 + \text{N}0.3125(x) \\&= 36.88 + 0.31x\end{aligned}$$

EXAMINER'S REPORT

This question tests candidates' ability to separate costs into their fixed and variable components using the high and low as well as the linear regression analysis methods to determine the line of best fit.

The question was attempted by 90% of the candidates. Performance was good. 70% of the candidates scored 50% and above.

The shortcomings exhibited by the candidates who did not do well centered around:

- i. Poor arithmetical evaluation of the equation presented; and
- ii. Inability to recall the relevant formulae involved in solving the problem.

For improved performance in future examinations, it is recommended that candidates should:

- i. Cover the entire syllabus;
- ii. Pay attention to details;
- iii. Improve on presentation; and
- iv. Conform to the requirements of the questions asked.

MARKING GUIDE

	MARKS	MARKS
a. High and Low methods (heading)	$\frac{1}{2}$	
High – Units	$\frac{1}{2}$	
High – Mixed overheads	$\frac{1}{2}$	
Low – Units	$\frac{1}{2}$	
Low – Mixed overheads	$\frac{1}{2}$	
Difference – Units	$\frac{1}{2}$	
Difference – Mixed overheads	$\frac{1}{2}$	
Calculation of Variable Rate	$\frac{1}{2}$	
		4
Working (Separation of Fixed from Total Costs)		
Total Variable Cost	$\frac{1}{2}$	
Fixed Costs	$\frac{1}{2}$	
		1
b. Linear Regression Analysis		
Determination of x^2 (9 months @ $\frac{1}{2}$)	$4\frac{1}{2}$	
Determination of xy (9 months @ $\frac{1}{2}$)	$4\frac{1}{2}$	
Summation x	$\frac{1}{2}$	
Summation y	$\frac{1}{2}$	
Summation x^2	$\frac{1}{2}$	
Summation xy	$\frac{1}{2}$	
		11
Workings		
Formula for b	1	
Solution for b	1	
Formula for a	1	
Solution for a	1	
		<u>4</u>
		<u>20</u>

SOLUTION 3

SEAGULL FABRICATORS LIMITED COMPARATIVE STATEMENT (MONTHLY)

a.

	Make N	Buy N
Outright Purchase (280 x 6,000)		1,680,000
Materials (100 x 6,000)	600,000	
Direct Labour (100 x 6,000)	600,000	
Variable Overheads (50 x 6,000)	300,000	
Depreciation on Mould (5,000,000 / 5 / 12)	83,333	
Annual Rent (1,000,000 / 12)	83,333	
Extra Power Consumption	<u>41,667</u>	<u>0</u>
Total	<u>1,708,333</u>	<u>1,608,000</u>
Cost per unit	284.72	280

Based on the figures above, the company is advised to continue purchasing the component rather than in-house fabrication. It is cheaper to outsource.

bi. Qualitative factors to consider when deciding whether to manufacture locally or outsource include:

- The quality of the product
- The reliability of the supplier
- Effect on the labour force i.e. redundancy
- Utilization of the redundant facilities or opportunity cost of production
- Environmental considerations if the company decides to manufacture in-house
- Possibility of leaking trade secret
- Additional expenditure involved in producing in-house

ii. Quantitative factors to be considered in the case referred to in (bi) above include:

- Relevant cost and revenue
- Opportunity cost/revenue lost
- Environmental cost
- Purchase cost per unit

EXAMINER'S REPORT

This question tests candidates' understanding of the intricacies involved in make or buy decision.

75% of the candidates attempted the question and performance was good as 70% of the candidates who attempted the question scored 50% and above.

The common pitfalls exhibited by candidates who did not do well include:

- a. Inability to differentiate between quantitative and qualitative factors in decision making;
- b. Inability to know when a fixed cost becomes a relevant cost; and
- c. Poor presentation of answers.

In future, candidates are advised to:

- i. Practise with worked examples shown in Pathfinders and ICAN Study Text.
- ii. Cover the syllabus adequately in order to enhance their chances of doing well.

MARKING GUIDE

	MARKS	MARKS
a.		
Comparative Statement		
Outright Purchase	1	
Materials, Labour and Variable Overhead	2	
Depreciation of Mould	1	
Annual Rent	1	
Extra Power Consumption	1	
Total for MAKE	1	
Advice	1	
		8
b.		
Qualitative Factors (any 3 points @ 2 marks each)		6
c.		
Quantitative Factors (any 3 points @ 2 marks each)		<u>6</u>
		<u>20</u>

SOLUTION 4

- a. i. **JUST-IN-TIME SYSTEMS (JIT)**
This is the production of the required items in the required quality and quantity and at the time they are required. In particular, JIT seeks to achieve the following goals:
- Elimination of non-value adding activities
 - Zero inventories
 - Zero defects
 - Batch sizes of one
 - Zero breakdown
 - A 100% on-time delivery services
 - Continuous improvement
- ii. **BACKFLUSH ACCOUNTING**
A simplified accounting procedure accounting costs between cost of sales and inventories.
- Back flush costing aims to eliminate detailed accounting transactions. Rather than track the movement of materials through the production process, a back flush costing system focuses first on the output of the organisation and then works backwards when allocating cost between costs of goods sold and inventories, with no separate accounting for work-in-progress.
- iii. **LIFE CYCLE COSTING**
Life Cycle Costing estimates and accumulates costs over a product's entire life cycle in order to determine whether the profit earned during the manufacturing phase will cover the cost incurred during the pre and post manufacturing stages. Identifying the costs incurred during different stages of a product's life cycle provides an insight into how to manage the total costs incurred throughout its life cycle. In particular, life cycle costing helps management to understand the cost consequences of developing and making a product. It identifies areas in which cost reduction efforts are likely to be more effective.
- iv. **COST AUDIT**
This represents the verification of cost accounts and checks on the adherence to cost accounting plan. Cost audit ascertains the accuracy of cost accounting records to ensure that they are in conformity with cost accounting principles, plans, procedures and objectives.
- v. **VALUE ENGINEERING**
Value engineering (also known as Value Analysis) is a systematic inter-disciplinary examination of factors affecting the cost of a product or service in order to devise means of achieving the specified purpose at the required standard of quality at the target cost.

It aims to achieve the assigned target cost by:

1. Identifying product designs that reduce cost without sacrificing functionality and
2. Eliminating unnecessary functions that increase the product costs and for which customers are not prepared to pay extra.

b. i. Ways by which IS/IT strategy can help in achieving business objectives include:

- Improvement in IS/IT systems can improve operational efficiency and reduce operating costs per unit of output.
- Using IS/IT systems can improve the quality of service provision e.g. provision of improved shopping services for customers through on-line shopping.
- Using IS/IT, a company might be able to improve its marketing and sales strategies.
- IS/IT systems can be used to support innovations such as design of new products and services.
- Planning – it helps to establish appropriate resources, time scales and forecast alternative outcomes.
- Controlling – it ensures that processes are implemented as planned.
- Recording transactions – such as sales, purchases, errors, returns, customer complaints and quality control operations, deposits and cash movements.
- Performance Management – it compares actual versus planned (budgeted) activity to identify variances and take corrective actions as necessary.
- Decision making – information systems are used to help managers make all kinds of decisions such as volume (e.g. purchases and production) price, whether to make a particular component or buy from a supplier, whether to switch suppliers, when to replace assets and how to organize affairs to manage a tax change.

ii. **Advantages of outsourcing**

- Lower Costs – It is often cheaper to pay an external organisation to perform an IT service (such as payroll) than to employ in-house staff with in-house computer system.
- Specialist expertise – the IT service organization (outsource organization) is more likely to have a greater number of specialist and experienced IT staff, that the computer user might have difficulty in recruiting as full-time employees.
- Outsourcing takes away management problems and enables the organization to concentrate on its core business activities.
- For systems design and development, an external IT organization might be able to deliver a new system more quickly and more efficiently than an in-house IT department.

iii. Disadvantages of Outsourcing

- When IT work is outsourced, there is a risk of losing control over IT processing and systems development.
- There might be hidden costs that are not apparent until after the contract with the outsource firm has been signed. The customer may expect to pay a fixed fee, but find that it is paying more for additional services, at a high cost per hour or man-day.
- An outsourcing agreement might be a long-term contract lasting several years. This may lead to problems if the working relationship between the client organisation and the external IT organisation deteriorates.
- The external service provider might become financially unstable and go out of business.
- There might be risks to security of data files held on the premises of an external IT company. IT security is more difficult to manage and control.
- There could be practical difficulties when an outsourced service agreement comes to an end, and a company wants to bring the IT work back in-house, or want to change to a different external service provider. The existing service provider might be unhelpful because its services are no longer required and its contract is being terminated.

EXAMINER'S REPORT

- a. This question tests candidates' appreciation of new developments in Cost Accounting namely:

- Just-In-Time System;
- Backflush Accounting;
- Lifecycle Costing;
- Cost Audit; and
- Value Engineering

70% of the candidates attempted this question but their performance was very poor. Less than 10% of the candidates who attempted the question scored 50% and above.

The general and recurring weaknesses displayed by candidates who did not do well include:

- i. Poor knowledge of the issues involved in current developments in Cost Accounting;
- ii. Just-In-Time System was interpreted to mean Real Time System and Automated Teller Machine in some cases; and
- iii. Poor communication skills.

For candidates to perform better in future, it is recommended that they should:

- i. Read wider; and
- ii. Understand the differences in Costing and IT terminologies.

b. The question tests candidates' knowledge of:

- i. Impact of IT on business processing; and
- ii. Advantages and disadvantages of outsourcing IT services.

80% of the candidates attempted the question and performance was good as half of the candidates who attempted the question scored 50% and above.

The common shortcomings displayed by candidates who performed poorly include:

- i. Inadequate understanding of the concept of OUTSOURCING;
- ii. Poor understanding of the requirements of the question;
- iii. Poor handwriting and inadequate preparation.

Performance could be better in future if candidates:

- i. Read instructions carefully before attempting to answer examination questions;
- ii. Ensure good coverage of syllabus and improve their handwriting.

MARKING GUIDE

	MARKS	MARKS
a. Brief Notes on Cost Accounting Terms		
Just – In Time System	2	
Backflush Accounting	2	
Life-cycle Costing	2	
Cost Audit	2	
Value Engineering	<u>2</u>	
		10
b. i. Any 4 points @ 1 mark each	4	
ii. Any 3 Advantages stated @ 1 mark each	3	
Any 3 Disadvantages stated @ 1 mark each	<u>3</u>	
		<u>10</u>
		<u>20</u>

SOLUTION 5

- a.
 - i. An operating system is a suite (set) of programs for managing the operations of a computer. It functions as an interface between the user, application programs and the computer hardware.
 - ii. Functions of operating system include:
 - Interpretation of various commands given to the computer;
 - Ensuring automatic continuous processing of jobs/tasks;
 - Provision of efficient security of programs and files;
 - Controlling the input and output peripherals through spooling in order to achieve best utilization;
 - Keeping all records and activities of the computer;
 - Communicating with user/operator through the terminal or console;
 - Analysis of computer usage by the users e.g. job name, time ended, time taken for processing, etc;
 - Control of the database management system;
 - Control of data transmission between terminals and the computer;
 - Provision of error correcting routines;
 - Dynamic allocation of main and backing storage;
 - Handling start, stop and interrupt of jobs;
 - Handling opening and closing of files, etc.
- b. The two broad classes/groups of application software are:
 - i. General/Off-the shelf application packages (or software packages).
 - ii. Specific/Bespoke/tailored/customized application packages.

General/Off-the-shelf software packages are software that can be purchased from a vendor and installed on the computer for use. They are ready-made and generalized programs for solving specific business problems and can be used by several users. Examples include: payroll, stocks control, financial analysis, word processing, spreadsheets, etc.

Specific/Bespoke software are programs that are written for a specific purpose or written by commissioned people to meet the user's specific processing requirement. It is used by larger organizations to fulfil their special purpose needs. Such programs are not ready-made but developed using the human and material resources available within the organization, or by consultants appointed by the organisation.

- c. Advantages of tailor-made software include:
- i. They are written to fit the organization's information needs precisely.
 - ii. The system can be integrated with other applications within the organization.
 - iii. The system can be modified to fit changing needs of the user over time
 - iv. The software might give a company competitive advantage in the marketplace.
 - v. There is the knowledge of users' environments
 - vi. Portable on users' computers.
 - vii. Specific security needs of the organization are addressed.

Disadvantages include:

- i. User's staff may lack technical competence to write the software effectively.
- ii. The development of the system may take longer time, thereby, delaying the implementation of the system.
- iii. Tailor-made software is costly to develop.
- iv. There is a greater probability of bugs (errors) because it might not have been tested properly.
- v. The organization has to bear all the expensive costs for development and support.

EXAMINER'S REPORT

This question tests candidates' understanding of:

- i. Operating Systems; and
- ii. Application Packages Software.

98% of the entire candidates attempted this question and performance was good as about 60% of them scored 50% and above.

The commonest shortcomings exhibited by the candidates who performed poorly include:

- a. Lack of in-depth understanding of IT terminologies;
- b. Inadequate knowledge of merits and demerits of tailored software; and
- c. Poor communication skills

Candidates who will do well in future must:

- Familiarise themselves with major and current terminologies in IT;
- Consult ICAN's Study Text; and practise with past question papers and ICAN Pathfinders.

MARKING GUIDE

	MARKS	MARKS
a. i. Definition of OS @ 2 marks	2	
ii. Functions of OS @ 1 mark each for any 6 points	<u>6</u>	8
b. Listing of 2 Application Packages @ 1 mark each	2	
Explaining 2 Application Packages @ 2 marks each	<u>4</u>	6
c. Stating 3 Advantages @ 1 mark each	3	
Stating 3 Disadvantages @ 1 mark each	<u>3</u>	<u>6</u>
		<u>12</u>

SOLUTION 6

- a. The principal techniques for gathering facts about an existing information system are:
- Oral Interview
 - Questionnaire
 - Observation
 - Records inspection and examination

Oral Interview: This is the most important and widely used technique for gathering data. It enables one to clarify responses and probe for feedback from users individually. Interview involves the interviewer that asks questions and the respondent that provides answers that may be recorded or from which facts may be extracted. Two types of interview are identified: structured interview where the interviewer follows fixed rules that specify what questions are to be asked, what responses are expected and what sequence to be followed. Data collected from structured type are easily analyzed. Unstructured interview involves the interviewer providing information that will assist the respondent in directing the interview session and ask relevant questions.

Questionnaire: This is used to obtain information from a large number of people in a uniform manner on specific issues. It consists of a set of questions written down by the questioner to be answered in writing by the respondent. There are two types of questionnaire: Free format, where questions are posed without providing answers and expect the respondent to provide answers. The second type is the fixed format which provides a list of responses together with the questions and expects the respondent to pick from the responses. Positive and negative responses as well as neutral responses are included.

Observation: This involves the analyst watching the system in operation and inspection of current reports and files. It is used to learn exactly how a system functions or how an operation is performed. It can be a cheap means of acquiring knowledge of a system and has the advantage of showing what actually happens.

Record Inspection and Examination: This method has to do with inspection and examination of records and documents such as company's organizational charts, memos, meeting minutes, history of projects, business operations, weaknesses and strengths.

- b.
 - i. Feasibility study is an assessment of the practicality of a proposed plan or method. It is the measure and the study of how beneficial the development of the system would be to the organisation.
 - ii. Functions of steering committee include:
 - Approve proposed new development such as the development of a new IT system;
 - Decide how to allocate scarce IT resources between competing IT projects;
 - Approve the IT spending budget, for submission of the board of directors;
 - Approve individual new spending projects such as a major purchase of new computer equipment or the design and development of a new IS/IT project;
 - Monitor the development of IS/IT projects and determine whether the system is delivered on time, on budget and to its design specifications;
 - Appoint the feasibility study team and review their report;
 - Negotiate with suppliers on expensive hardware and software;
 - Develop cost benefit analysis of the project;
 - Make recommendations to board or management; and
 - Rank projects in order of priority and assigning resources
 - iii. Uses of feasibility study reports include:
 - To seek approval to develop a new system.
 - Preliminary fact finding.
 - To assess the technical feasibility of the new system.
 - To determine the economic viability of the proposed system.
 - To determine if the new system will operationally fit into the business structure.
 - Serve as reference documents for development team.
 - To prevent loss through the development of a system that is not useful.
 - Early identification of constraint to effective implementation.
 - To serve as a basis for measuring the performance of the proposed system.

- To provide basic information for effective decisions concerning the proposed system.

EXAMINER'S REPORT

The question tests candidates' ability to:

- Gather useful facts necessary to develop a system; and
- Develop an information system using Systems Development Life Cycle with respect to feasibility study.

60% of the candidates attempted this question but performance was below average. 35% of those who attempted the question scored 50% and above.

Common pitfalls characterised by candidates who performed below average include:

- Wrong interpretation of the question;
- Inability to differentiate between functions of the Steering Committee and those of the Facts-Finding Committee; and
- Exhibition of inadequate preparation for the examination.

For improved performance by candidates in future, it is instructive that they should:

- Improve on their preparation;
- Use past questions papers as part of their preparation for the examination;
- Show interest in developments in IT; and
- Exhibit more confidence in understanding the challenges associated with the course.

MARKING GUIDE

	MARKS	MARKS
a.		
Listing 4 Techniques @ 1 mark each	4	
Explaining 4 Techniques @ 1 mark each	<u>4</u>	
		8
b.		
i. Definition @ 2 marks	2	
ii. Stating 6 Functions @ 1 mark each	6	
iii. Stating 4 Uses @ 1 mark each	<u>4</u>	
		<u>12</u>
		<u>20</u>

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

FOUNDATION LEVEL EXAMINATION – MAY 2017

QUANTITATIVE TECHNIQUES IN BUSINESS

Time Allowed: 3 hours

SECTION A: MULTIPLE-CHOICE QUESTIONS (20 MARKS)

INSTRUCTION: YOU ARE REQUIRED TO ANSWER 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. How much will ₦22,500 amount to at 8% interest over 15 years compounded annually?
 - A. ₦71,337.81
 - B. ₦71,373.81
 - C. ₦71,378.81
 - D. ₦71,387.81
 - E. ₦71,733.81
2. A company produces 16,000 units of a product. The total cost of producing these units is ₦60,000. If the fixed cost is ₦12,000, the variable cost per unit of the output is
 - A. ₦7.00
 - B. ₦6.00
 - C. ₦5.00
 - D. ₦4.00
 - E. ₦3.00
3. Which of the following is **NOT TRUE** about simultaneous equations?
 - A. The number of variables must be equal to the number of equations.
 - B. Where two lines intersect, the values of the variables at that point must satisfy the equations.
 - C. The simultaneous equations must be satisfied by values of the variables as well as their reciprocals.
 - D. Their solution involves finding the values of the variables which are true to all the simultaneous equations.
 - E. The result of adding the equations or subtracting one equation from the other will be satisfied by the values of the variables.

4. A man earns ₦150,000 per annum. He is allowed a tax free pay of ₦40,000. If he pays 25 kobo in the Naira as tax on his taxable income, how much has he left?
- A. ₦102,500
 B. ₦112,500
 C. ₦122,500
 D. ₦132,500
 E. ₦142,500
5. If $y = x^2 - 6x + 2$, then the point at which the slope is zero is
- A. (-3,7)
 B. (3, 7)
 C. (-3,-7)
 D. (3, -7)
 E. (3, -11)
6. If the sales function of a company is given as $3x^2 + 2x - 25$, what is the marginal revenue when $x = 20$?
- A. ₦3,325
 B. ₦3,385
 C. ₦3,405
 D. ₦3,645
 E. ₦3,655
7. Which of the following is **NOT TRUE** about a histogram?
- A. A vertical rectangle is drawn to represent each class of the frequency distribution
 B. A histogram is a graph of a grouped frequency distribution
 C. The frequency of a class is represented by the height of its rectangle.
 D. Histogram and bar charts look similar but they are constructed very differently.
 E. The frequency of a class is represented by the area of the bar corresponding to the class.
8. If the monthly salary of the staff of ABC Plc. is distributed as follows:

Monthly salary (₦'000)	Number of staff
6 and under 12	2
12 and under 18	13
18 and under 24	16
24 and under 30	10
30 and under 36	2
36 and under 42	1

then the median salary is

- A. ~~N~~20,256
- B. ~~N~~20,265
- C. ~~N~~20,526
- D. ~~N~~20,625
- E. ~~N~~20,652

9. The mean is the most commonly used statistics for further statistical calculations because it
- A. Tends to lie at the centre of a set of data
 - B. Is easy to calculate
 - C. Takes all observations in the data into consideration
 - D. Is the most popular
 - E. Is not affected by extreme values in the data
10. The variance of $3+x$, 6 , 4 , x and $7-x$ is 4 and the mean is 5 , find the Standard Deviation
- A. $\sqrt{2}$
 - B. $\sqrt{3}$
 - C. 2
 - D. 3
 - E. 16
11. If the age distribution of the artisans in a tobacco company is tabulated as follows:

Artisan's age (years)	Number of Artisans
20 and under 25	3
25 and under 30	14
30 and under 35	18
35 and under 40	11
40 and under 45	3
45 and under 50	1

then the first quartile age is

- A. 28.38 years
- B. 28.39 years
- C. 28.93 years
- D. 29.38 years
- E. 29.93 years

12. The age distribution of the administrative staff in a tyre manufacturing company is distributed as follows:

Age of administrative staff (years)	Number of administrative staff
28 and under 34	2
34 and under 40	15
40 and under 46	19
46 and under 52	10
52 and under 58	3
58 and under 64	1

If the first quartile age is 38.2 years, then the quartile deviation of the age distribution is

- A. 3.45 years
 - B. 4.35 years
 - C. 4.53 years
 - D. 5.34 years
 - E. 5.43 years
13. A six-sided die is thrown into the air, the probability that either a **FOUR** or a **SIX** will fall upper most is
- A. $\frac{1}{2}$
 - B. $\frac{1}{3}$
 - C. $\frac{1}{4}$
 - D. $\frac{1}{5}$
 - E. $\frac{1}{6}$
14. The **TWO** components of a Time Series which are usually estimable are
- A. Trend and Cyclic variation
 - B. Seasonal variation and Trend
 - C. Random movements and Trend
 - D. Seasonal variation and Random movements
 - E. Cyclic variation and Seasonal variation

15. A large batch of components of TV sets is stocked by a company. The batch comprises components that are manufactured by processes A, B and C. There are twice as many components from process A as from each of processes B and C in a batch. Components from A contain 8% defectives, and those from B and C contain 11% and 14% defectives respectively.

The probability that a defective item is from process B is

- A. 0.228
 - B. 0.238
 - C. 0.248
 - D. 0.258
 - E. 0.268
16. Which of the following is **NOT TRUE** about Normal Distribution?
- A. Normal distribution is a frequency distribution.
 - B. Both tails of the distribution approach but never meet the horizontal axis
 - C. It is a probability distribution of a continuous variable that fits many naturally occurring distributions.
 - D. The exact shape of the normal curve depends on the mean of the distribution.
 - E. The area under the normal curve represents the probability and totals 1 or 100%
17. If r is the correlation coefficient calculated for a bivariate data, then which one of the following is correct?
- A. $r = \pm 1$
 - B. $-1 < r \leq 1$
 - C. $-1 < r < 1$
 - D. $-1 \leq r < 1$
 - E. $-1 \leq r \leq 1$
18. A ten-year record of cocoa production in a certain farm is tabulated as follows:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Production (tonnes)	42	52	41	48	64	67	77	66	73	89

Based on a 4-year moving total, the centred moving average for year 2007 is

- A. 79.5
- B. 69.5
- C. 59.5
- D. 49.5
- E. 39.5

19.

Source	Destination				
	A	B	C	D	Supply
X	<u>16</u>	<u>13</u>	<u>22</u>	<u>17</u>	<u>75</u>
Y	<u>14</u>	<u>13</u>	<u>e₁₉</u>	<u>15</u>	<u>60</u>
Z	<u>19</u>	<u>20</u>	<u>23</u>	<u>f₂₀</u>	<u>55</u>
Demand	<u>47</u>	<u>50</u>	<u>48</u>	<u>45</u>	

The tabulated information above shows the demands and supplies of a transportation problem together with the unit costs of transporting. Use the North-West method to find (e + f)

- A. 83
- B. 75
- C. 66
- D. 60
- E. 55

20. In Inventory Control, the Economic Order Quantity (EOQ) of an item is given as 500 units, ordering cost as ₦500 per order and the demand for the item in six months is 2,500 units. What is the holding cost of a unit of the item per annum?

- A. ₦10
- B. ₦20
- C. ₦30
- D. ₦40
- E. ₦50

SECTION B:**OPEN – ENDED QUESTIONS****(80 MARKS)**

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ANY FOUR OUT OF SIX QUESTIONS IN THIS SECTION

QUESTION 1

- a. A manufacturing company has purchased a machine generating earnings (N'000) at time t of $E = 500 - 0.125t^2$, where t is in years. The repair and maintenance cost at time t is $4t^2$.

You are required to:

- Determine when the machine should be replaced, assuming it has a zero salvage value. (4 Marks)
 - Determine the total net earnings, including the cost of repairs and maintenance within the period of 11 years (6 Marks)
- b. The table below shows the weekly wage distribution of artisans in a certain factory:

Weekly wage (N'00)	Number of artisans
38 – 47	16
48 – 57	24
58 – 67	41
68 – 77	53
78 – 87	76
88 – 97	118
98 – 107	224
108 – 117	83
118 – 127	15
128 – 137	4

- Draw a histogram to represent the wage distribution using the scales: On x-axis, let 1cm represent N100; on y-axis, let 1cm represent 10 artisans (4marks)
 - Deduce the modal weekly wage from the histogram. (2½ marks)
 - Use the appropriate formula to calculate the modal weekly wage (3½ marks)
- (Total 20 Marks)**

QUESTION 2

- a. i. A six-sided and fair die is thrown into the air. What is the probability
- Of **NOT** getting **SIX**?
 - That either a **THREE** or a **FOUR** or a **FIVE** will fall upper most?
 - Of obtaining an even number? (5marks)
- ii. A block-making factory produces **TWO** types of blocks: 6-inch and 9-inch. **ONE** quarter of its output on a particular day are 6-inch blocks while the remaining three-quarters are 9-inch blocks. If samples of 3 are taken at random, what is the probability of obtaining
- One 6-inch block?
 - Two 6-inch blocks?
 - One or two 6-inch blocks? (5marks)

- b. i. The monthly expenditure (N'000) of a household on some items are given as follows:

Item	Expenditure
Food	50
Transport	25
Utilities	35
Miscellaneous	10

Determine the angle which will represent each item on a pie chart.
(6marks)

- ii. The activities needed to complete a project with their durations (in weeks) are given below:

Activity	Preceding activity	Duration (weeks)
A	-	4
B	-	8
C	A	6
D	B	12
E	B	11
F	C, D	9

You are required to draw the activity-on-arrow network diagram for the project and determine the duration of the project.

(4marks)
(Total 20 Marks)

QUESTION 3

- a. A lawyer plans to save a certain amount of money ~~Nx~~ per annum for 5 years on the first day of the year. If the interest rate is 8%, for him to receive ~~N~~696,910.50, determine x. (10marks)
- b. The table below gives the scores of seven candidates in Quantitative Techniques in Business (QTB) and Financial Accounting (FA) of ICAN Professional Examination:

QTB Marks (y)	50	72	36	64	52	56	80
FAMarks (x)	38	51	19	53	39	38	66

You are required to:

- Obtain the regression equation if the mark in QTB, is regressed on FA (6 Marks)
 - Obtain the estimate of mark in QTB, if the mark in FA is 60 (2 Marks)
 - Obtain the estimate of mark in FA, if the mark in QTB is 75. (2 Marks)
- (Total 20 Marks)**

QUESTION 4

- a. A fleet of lorries A, B and C are loaded with blocks meant for a building site. A carries $\frac{2}{5}$ of all the needed blocks, B carries $\frac{3}{4}$ of what lorry A carries and lorry C carries the rest. Lorries A, B and C contain 13%, 15% and 11% damaged blocks respectively.

By drawing a suitable tree diagram, calculate

- The proportion of damaged blocks in the fleet. (8 marks)
- The probability of randomly taking a damaged block from lorry B. (2 marks)

- b. i. Given the following initial basic tableau of a transportation problem:

- (note that the tiny numbers are the unit costs)

	Destination			
Source	A	B	C	Supply
G	27 ₂	8 ₄	₆	35
H	₃	17 ₆	38 ₁₀	55
Demand	27	25	38	90

- Identify the non-basic variables and compute their corresponding relative cost coefficients. (4marks)
- ii. A bag contains 39,800 white disks and 200 black disks from which 1,000 disks are taken at random. Calculate the probability that the sample contains 4 black disks. (6marks)
- (Total 20 Marks)**

QUESTION 5

- a. Given the following inequalities:

$$3x + 2y \leq 6,000$$

$$5x + 6y \leq 15,000$$

$$y \leq 2,250$$

$$x \geq 0$$

$$y \geq 0,$$

- i. Graph them on the same graph sheet using the following scales: on x and y-axes, let 1cm represent 250 units. (6½ marks)
- ii. - Shade the area in which these inequalities hold
 - Determine the coordinates of the corner points of the above shaded area. (3½ marks)
- b. Two Chartered Accountants: X and Y, were requested to rank ten banks A, B, C, D, E, F, G, H, I, J according to their performances during a financial year. X ranked the banks as follows E, B, G, A, C, D, H, F, J, I, while Y rankings were E, C, A, B, G, H, J, D, F, I. Calculate the Spearman's rank correlation coefficient between X and Y and interpret your result.

(10marks)
(Total 20 Marks)

QUESTION 6

- a. i. The laptops that are purchased by a company have 742 diodes with a life span of five months. These diodes fail on a regular basis according to the following probability distribution:

Life (months)	1	2	3	4	5
Probability of failure	0.10	0.30	0.35	0.20	0.05

If the cost of replacing a diode is ₦100, calculate the monthly cost of replacing the diodes as they fail. (4 marks)

- ii. Tadet, a student in the Accountancy Department of a Polytechnic, has a 45% chance of receiving ₦5,000 from her sister, 33% chance of receiving ₦8,000 from her brother, 16% chance of receiving ₦11,000 from her aunt and 6% chance of receiving ₦15,000 from her uncle.

Determine if Tadet will be able to buy a gown worth ₦8,000 from the money she is expecting from her relatives.

(6marks)

- b. The table below shows the marks(%) scored in QTB by some candidates who wrote the ICAN Professional examination in May 2016 diet:

Marks %	Number of Candidates
20-29	7
30-39	17
40-49	13
50-59	9
60-69	4

If the mean mark is 41.7%, calculate the mode and Pearson's coefficient of skewness. (10marks)

(Total 20 Marks)

Formulae

PROBABILITY

$A \cup B = A \text{ or } B$

$A \cap B = A \text{ and } B \text{ (overlap).}$

$P(B | A) = \text{probability of } B, \text{ given } A$

Rules of Addition

If A and B are mutually exclusive: $P(A \cup B) = P(A) + P(B)$

If A and B are not mutually exclusive: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

Rules of Multiplication

If A and B are independent: $P(A \cap B) = P(A) * P(B)$

If A and B are not independent: $P(A \cap B) = P(A) * P(B | A)$

$E(X) = \sum (\text{probability} * \text{payoff})$

Quadratic Equations

If $aX^2 + bX + c = 0$ is the general quadratic equation, the two solutions (roots) are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

DESCRIPTIVE STATISTICS

Arithmetic Mean

$$\bar{x} = \frac{\sum x}{n} \bar{x} = \frac{\sum fx}{\sum f} \text{(frequency distribution)}$$

Standard Deviation

$$SD = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} \quad SD = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2} \text{ - (frequency distribution)}$$

INDEX NUMBERS

Price relative = $100 * P_1 / P_0$

Quantity relative = $100 * Q_1 / Q_0$

Price: $\frac{\sum w * \left(\frac{P_1}{P_0}\right)}{\sum w} \times 100$

Quantity: $\frac{\sum w * \left(\frac{Q_1}{Q_0}\right)}{\sum w} \times 100$

TIME SERIES:

Additive Model

Series = Trend + Seasonal + Random

Multiplicative Model

Series = Trend * Seasonal * Random

LINEAR REGRESSION AND CORRELATION

The linear regression equation of Y on X is given by:

$$Y = a + bX \text{ or } Y - \bar{Y} = b[X - \bar{X}],$$

Where

$$b = \frac{\text{Covariance } (XY)}{\text{Variance } (X)} = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

and

$$a = \bar{Y} - b\bar{X}$$

or solve

$$\begin{aligned}\sum Y &= na + b \sum X \\ \sum XY &= a \sum X + b \sum X^2\end{aligned}$$

Coefficient of Correlation

$$r = \frac{\text{Covariance } (XY)}{\sqrt{\text{Var}(X) \cdot \text{Var}(Y)}} = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{\left\{n \sum X^2 - (\sum X)^2\right\} \left\{n \sum Y^2 - (\sum Y)^2\right\}}}$$

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

FINANCIAL MATHEMATICS

Compound Interest (Values and Sums)

Future Value S, of a sum of X, invested for n periods, compounded at r% interest

$$S = X(1 + r)^n$$

Annuity

Present value of an annuity of ₦1 per annum receivable or payable for n years, commencing in one year, discounted at r% per annum

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

Perpetuity

Present value of ₦1 per annum, payable or receivable in perpetuity, commencing in one year, discounted at r% per annum.

$$PV = \frac{1}{r}$$

Annuity Table

Present value of an annuity of 1 i.e. $\frac{1 - (1 + r)^n}{r}$

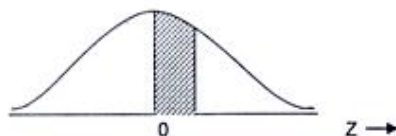
Where r = discount rate

n = number of periods

<i>Discount rate (r)</i>											
<i>Period</i>											
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

NORMAL DISTRIBUTION

This table gives the area under the normal curve between the mean and a point Z standard deviations above the mean. The corresponding area for deviations below the mean can be found by symmetry.



$Z = \frac{(x - \mu)}{\sigma}$	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.0000	.0040	.0080	.0120	.0159	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4485	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4762	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4865	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4983	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.49865	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990
3.1	.49903	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	.49931	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	.49952	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	.49966	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	.49977									

SUGGESTED SOLUTIONS

SECTION A

MULTIPLE-CHOICE QUESTIONS

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

WORKINGS

1. Amount compounded = $P(1 + r)^n$
P = Principal
r = rate
n = number of years
 $A = \text{N}22,500 (1 + 0.08)^{15}$
 $= \text{N}22,500 (1.08)^{15}$
 $= \text{N}71,373.81$

2. Assuming a straight-line Equation

$$Y = a + bx, \text{ where}$$

Y = Total Cost,

a = Fixed Cost,

b = Variable Cost Per Unit, and

x = Volume or Output

Substituting gives

$$\text{N}60,000 = \text{N}12,000 + b(16,000)$$

$$\text{N}60,000 - \text{N}12,000 = 16,000b$$

$$\text{N}48,000 = 16,000b$$

$$b = \frac{\text{N}48,000}{16,000}$$

$$b = \text{N}3$$

4. Total Earnings ~~N~~150,000

Less Tax Free ~~N~~40,000

\therefore Taxable income ~~N~~110,000

$$\text{Tax} = 25/100 (\text{N}110,000) = \text{N}27,500$$

$$\therefore \text{What he has left} = \text{N}[(110 - 27,500) + 40,000]$$

$$= \text{N}(82,500 + 40,000)$$

$$= \text{N}122,500.00$$

5. $dy/dx = 0$ at the turning point (t.p.)

$$y = x^2 - 6x + 2 \dots\dots (i)$$

$$dy/dx = 2x - 6 = 0$$

$$\text{i.e } 2x = 6$$

$$x = 3 \text{ at the t.p.}$$

Putting $x = 3$ in equation (i), gives

$$y = 3^2 - 6(3) + 2$$

$$y = 9 - 18 + 2$$

$$y = -7$$

Coordinate = (3, -7) is the point where the slope is zero

6. Sales Function = $3x^2 + 2x - 25$

$$TR = SP \times P$$

$$TR = (3x^2 + 2x - 25)x$$

$$= 3x^3 + 2x^2 - 25x$$

$$MR = \frac{dTR}{dx} = \frac{d}{dx} (3x^3 + 2x^2 - 25x)$$

$$= 9x^2 + 4x - 25$$

$$\begin{aligned}
 MR(20) &= \cancel{N}[9(20)^2 + 4(20) - 25] \\
 &= 3,600 + 80 - 25 \\
 &= \cancel{N}3,655
 \end{aligned}$$

8. $\text{Median} = L_m + \left[\frac{\frac{n}{2} - F}{f_m} \right] C$

Where:

n = total frequency

F = the cumulative frequency before class median

f_m = the frequency of the class median

C = the class width

L_m = the lower boundary of the class median

Monthly Salaries (N'000)	No. of staff	Cf
6 and under 12	2	2
12 and under 18	13	15
18 and under 24	16	31
24 and under 30	10	41
30 and under 36	2	43
36 and under 42	1	44

*

* Median class

Since 50% of 44 = 22, then the median class is 18 and under 24

$$\begin{aligned}
 \therefore \text{Median Salary} &= 18 + \left[\frac{\frac{44}{2} - 15}{16} \right] * 6 \\
 &= 18 + 2.625
 \end{aligned}$$

Therefore, the Median Salary = 20.625

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

11. Position of the first or lower Quartile(Q_1) = $\frac{n}{4} = \frac{50}{4} = 12.5^{\text{th}}$,
Then, the 1st or lower quartile class is 25 and under 30

Artisan's Age (years)	No. of Artisans	Cf
20 and under 25	3	3
25 and under 30	14	17
30 and under 35	18	35
35 and under 40	11	46
40 and under 45	3	49
45 and under 50	1	50

* Lower quartile class

$$\begin{aligned}
 Q_1 &= L_{Q_1} + \left[\frac{\frac{n}{4} - F}{f_{Q_1}} \right] C \\
 &= 25 + \left[\frac{12.5 - 3}{14} \right] 5 \\
 &= 25 + 3.3929 \\
 &= 28.39 \text{ years}
 \end{aligned}$$

12. Quartile Deviation (Q.D) = $\frac{Q_3 - Q_1}{2}$

Position of the 3th or upper Quartile(Q_3) = $\frac{3n}{4} = \frac{3 \times 50}{4} = 37.5^{\text{th}}$,

Then, the 3rd or upper quartile class is "46 and under 52"

$$\therefore Q_3 = L_{Q_3} + \left[\frac{\frac{3n}{4} - \sum fb_{Q_3}}{f_{Q_3}} \right] C$$

Age of Administrative Staff (years)	No. of Administrative Staff	Cf
28 and under 34	2	2
34 and under 40	15	17
40 and under 46	19	36
46 and under 52	10	46
52 and under 58	3	49
58 and under 64	1	50

* Mean upper quartile class

$$\begin{aligned}
&= 46 + \left[\frac{37.5 - 36}{10} \right] 6 \\
&= 46 + 0.9 \\
&= 46.9
\end{aligned}$$

$$\begin{aligned}
\therefore Q.D &= \left[\frac{46.9 - 38.2}{2} \right] \\
&= 4.35 \text{ years}
\end{aligned}$$

$$\begin{aligned}
13. \quad P(4) &= \frac{1}{6} \\
P(6) &= \frac{1}{6} \\
\therefore P(4 \cup 6) &= P(4) + P(6) - 2P(4 \cap 6) \\
&= \frac{1}{6} + \frac{1}{6} \\
&= \frac{1}{3}
\end{aligned}$$

18.

Year	Production	4-Year Moving Trend	4-Year Moving Average
2003	42		
2004	52		
2005	41	183	48.50
2006	48	205	53.125
2007	64	220	59.50
2008	67	256	66.25
2009	77	274	69.625
2010	66	283	73.5
2011	73	305	
2012	89		

The Centered Moving Average for Year 2007 is 59.5tonnes

19.

Source	Destination				
	A	B	C	D	Supply
X	16 47	13 28	22	17	75 280
Y	14	13 22	e 38 19	15	60 380
Z	19	20	23 10	f45 20	55 450
Demand	47 0	50 220	48 10 0	45 0	190

$$\therefore e + f = 38 + 45 = 83$$

20.

$$EOQ = \sqrt{\frac{2DC_o}{C_h}}$$

where

D = Annual Demand

C_o = Ordinary Cost

C_h = Holding Cost

EOQ = 500 units

C_o = ~~N~~500

Annual Demand = 2500 x 2 = 5000

$$\therefore 500 = \sqrt{\frac{2DC_o}{C_h}}$$

$$500^2 = \frac{2DC_o}{C_h}$$

$$250,000 C_h = \frac{2 \times 5,000 \times 500}{C_h}$$

$$250,000 C_h = 5,000,000$$

$$C_h = \frac{5,000,000}{250,000}$$

$$\therefore \text{Holding Cost } C_h = \text{N}20 \text{ per unit}$$

EXAMINER'S REPORT

The questions test the candidates' in-depth knowledge of topics in the whole syllabus.

About 30% of the candidates scored an average mark of 10 out of 20.

SECTION B

SOLUTION 1

a.

- (i) Machine should be replaced when $E = R$ i.e when earnings got is wholly used for repairing and maintaining the machine giving no gain

$$\text{then } 500 - 0.125t^2 = 4t^2$$

$$500 = 4t^2 + 0.125t^2$$

$$500 = 4.125t^2$$

$$t^2 = \frac{500}{4.125}$$

$$= 121.21$$

$$t = \sqrt{121.21} = 11.0095$$

\therefore The machine should be replaced after 11 years.

- (ii) The total net earnings (i.e the gain) $= \int_0^{11} (E - R)dt$

$$= \int_0^{11} (500 - 0.125t^2 - 4t^2)dt$$

$$= \int_0^{11} (500 - 4.125t^2)dt$$

$$= 500t - \frac{4.125t^3}{3} \Big|_0^{11}$$

$$= 500t - 1.375t^3 \Big|_0^{11}$$

$$= [500(11) - 1.375(11^3)] - 0$$

$$= 5,500 - 1,830.125$$

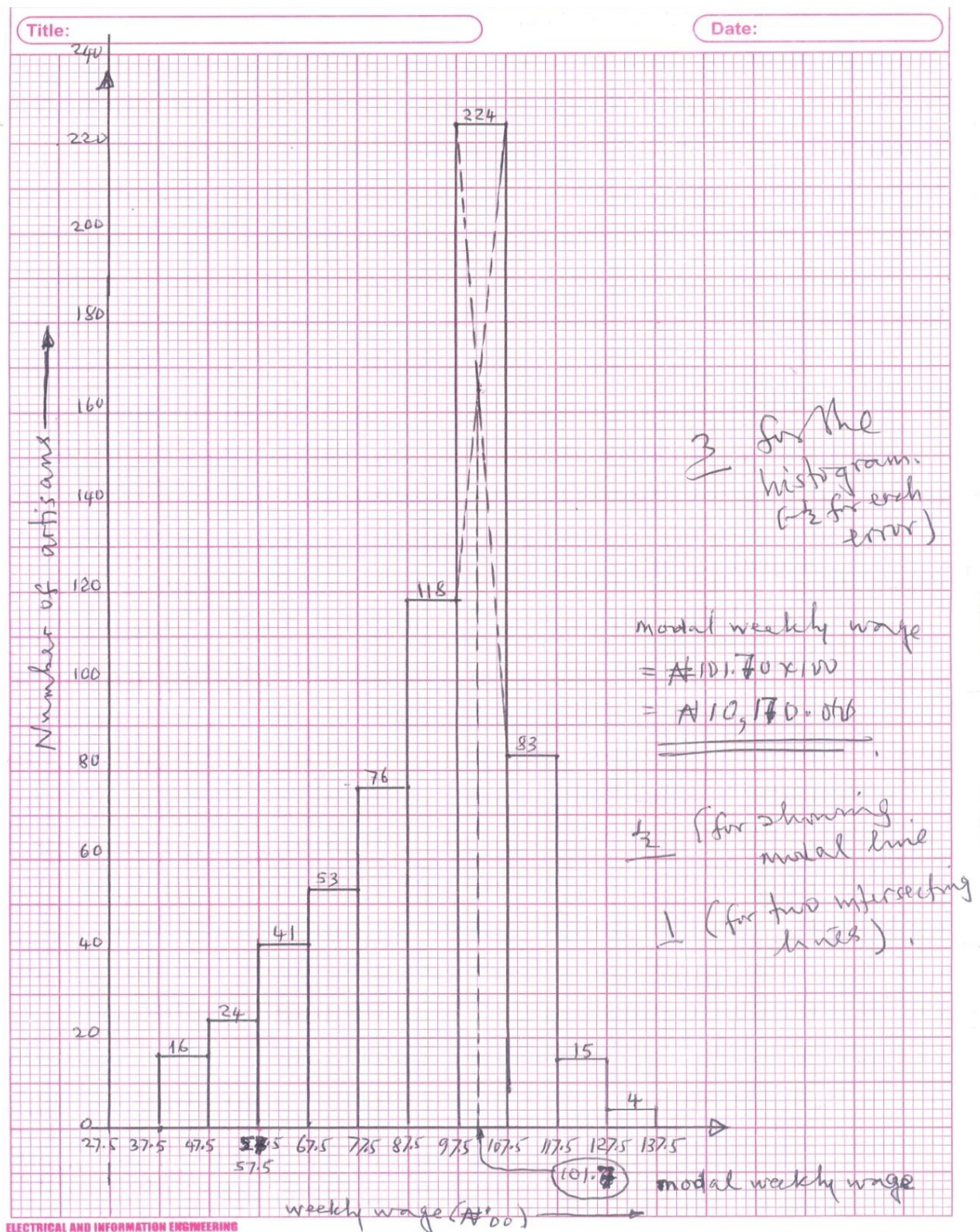
$$= 3,669.875$$

\therefore Net earnings = ~~N~~3,669,875

b.

Weekly wage (₦ '000)	Number of artisans	Class boundaries
38 – 47	16	37.5 – 47.5
48 – 57	24	47.5 – 57.5
58 – 67	41	57.5 – 67.5
68 – 77	53	67.5 – 77.5
78 – 87	76	77.5 – 87.5
88 – 97	118	87.5 – 97.5
98 – 107	224	97.5 – 107.5
108 – 117	83	107.5 – 117.5
118 – 127	15	117.5 – 127.5
128 – 137	4	127.5 – 137.5

- ii. - The histogram is drawn as shown.



- From the histogram, the modal wage = ₦10,170.00

iii. By calculation, the mode is given by

$$\text{Mode} = \ell + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) C = L_{m0},$$

Where

$\ell = 97.5$ = lower limit of the modal class boundaries

$f_0 = 118$ = frequency of the class immediately before modal class

$f_1 = 224$ = frequency of the modal class

$f_2 = 83$ = frequency of the class immediately after the modal class

$$\begin{aligned} \therefore \text{Modal wage} &= \text{N} \left(97.5 + \left(\frac{224 - 118}{2(224) - 118 - 83} \right) \times 10 \right) \times 100 \\ &= \text{N} \left(97.5 + \frac{1060}{247} \right) \times 100 \\ &= \text{N}(97.5 + 4.29) \times 100 \\ &= \text{N}101.7 \times 100 \\ &= \text{N}10,170 \end{aligned}$$

EXAMINER'S REPORT

The question tests candidates' ability to apply Integration to a business problem and their ability to represent a business information by a histogram.

About 47% of the candidates attempted the question and performance was generally fair.

Candidates' commonest pitfalls included inability to recognise that integration should be used in Part (a) of the question. Also, most of them could not draw correct histogram.

Candidates are advised to use the ICAN Study Text and other relevant texts before examination.

MARKING GUIDE

	MARKS	MARKS
a. i. For equating E and R (i.e. $E = R$)	$\frac{1}{2}$	
For equating E and R expressions (i.e. $500 - 0.125t^2 = 4t^2$)	$\frac{1}{2}$	
For simplification to get $500 = 4.125t^2$	1	
For further simplification to get $t^2 = 121.21$	1	
For correct value of t	$\frac{1}{2}$	
For correct comment	$\frac{1}{2}$	
		4
ii. For correct expression for the total net earnings of $\int_0^{11} (E - R)dt$	$\frac{1}{2}$	
For substituting E and R		
in the definite integral $\int_0^{11} (500 - 0.125t^2 - 4t^2)dt$	$\frac{1}{2}$	
For simplification before integrating	1	
For correct integration	1	
For correct substitution of the Upper limit of 11 and the Lower limit of 0	1	
For correct answer of 3669.875	1	
For correct Net earnings of ₦3,669,875	1	
		6
b. i. For at least two correct class boundaries	1	
For correct histogram ($-\frac{1}{2}$ for each wrong bar)	3	
		4
ii. For the two correct intersecting lines	1	
For showing the two lines intersecting to indicate the modal point	$\frac{1}{2}$	
For correct modal weekly wage of ₦10,170.00 from the histogram	1	
		2½
iii. For correct formula of the mode	$\frac{1}{2}$	
For correct values of $L_{m_o} = 97.5$, $f_0 = 118$, $f_1 = 224$, $f_2 = 83$	1	
For correct substitution into the mode formula as given above	$\frac{1}{2}$	
For correct simplification	$\frac{1}{2}$	
For correct answer of 101.79	$\frac{1}{2}$	
For the final answer after multiplying by 100 to get N10,179.00	$\frac{1}{2}$	
		3½
		<u>20</u>

SOLUTION 2

a. i.

$$- P(6) = \frac{1}{6}$$

$$\therefore P\left(\bar{6}\right) = \text{probability of not getting a six} = 1 - \frac{1}{6} = \frac{5}{6}$$

- These three events are mutually exclusive

\therefore The required probability is obtained as follows:

$$P(3) = \frac{1}{6}; P(4) = \frac{1}{6}, P(5) = \frac{1}{6}$$

$$\therefore P(3 \text{ or } 4 \text{ or } 5) = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$$

- There are six possible equally likely ways it can fall. Of these six possible outcomes, three would result in an **odd number** and three would result in an **even number**

$$\therefore \text{probability of obtaining an even number} = \frac{3}{6} = \frac{1}{2}$$

$$\text{ii.} \quad - P(1) = {}^3C_1 \left(\frac{1}{4}\right) \left(\frac{3}{4}\right)^2 = \frac{3 \times 2 \times 1}{1 \times 2 \times 1} \left(\frac{3}{4}\right)^2 \left(\frac{1}{4}\right) = \frac{3 \times 3 \times 3}{4 \times 4 \times 4} = \frac{27}{64}$$

$$- P(2) = {}^3C_2 \left(\frac{1}{4}\right)^2 \left(\frac{3}{4}\right) = \frac{3 \times 3}{4 \times 4 \times 4} = \frac{9}{64}$$

$$- P(\text{one or two 6-inch blocks}) = \frac{27}{64} + \frac{9}{64} = \frac{36}{64} = \frac{9}{16}$$

b. (i) The total angle is 360°

$$50 + 25 + 35 + 10 = 120$$

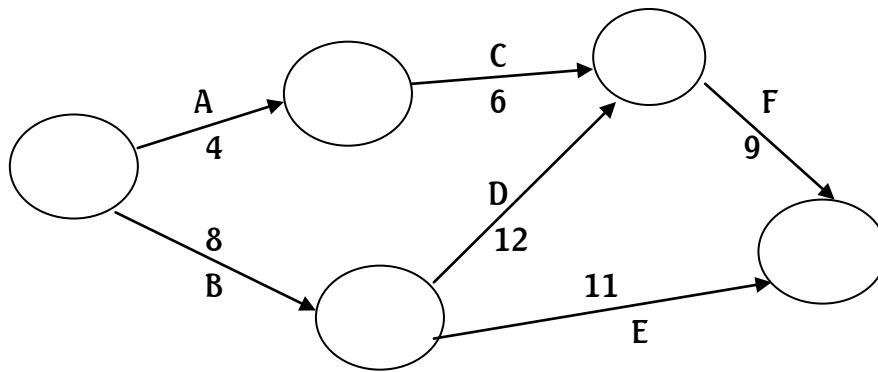
$$\therefore \text{Food} = \frac{50}{120} \times 360 = 150^\circ$$

$$\text{Transport} = \frac{25}{120} \times 360 = 75^\circ$$

$$\text{Utility} = \frac{35}{120} \times 360 = 105^\circ$$

$$\text{Miscellaneous} = \frac{10}{120} \times 360 = 30^\circ$$

(ii) The activity-on-arrow network diagram is as shown below



Paths	Duration
A, C, F	$4+6+9 = 19$
B, D, F	$8+12+9 = 29$
B, E	$8+11 = 19$

The duration of the project is 29 weeks

EXAMINER'S REPORT

The question tests the application of probability theory to a business problem, candidates' knowledge in calculating angles for Pie Chart from given data and drawing of network diagram for a given project.

About 90% of the candidates attempted the question. About 45% scored 10 marks or more out of the 20 marks allocated to the question.

Most of the candidates did well in the calculation of the angles of the Pie chart but as usual, their performances in the questions on probability and network diagram were very poor.

Most of them could not draw the required network diagram and showed poor understanding of probability theory.

Candidates are advised to prepare well for future examinations by using the ICAN Study Text and other relevant texts.

MARKING GUIDE

		MARKS	MARKS
a. i.	- For correct probability of $P(6) = \frac{1}{6}$	$\frac{1}{2}$	
	For correct subtraction of $1 - \frac{1}{6}$	$\frac{1}{2}$	
	For correct answer of $\frac{5}{6}$	$\frac{1}{2}$	
	- For $P(3) = \frac{1}{6}$	$\frac{1}{2}$	
	For $P(4) = \frac{1}{6}$	$\frac{1}{2}$	
	For $P(5) = \frac{1}{6}$	$\frac{1}{2}$	
	For the addition of the three probability values	$\frac{1}{2}$	
	For correct answer of $\frac{1}{2}$	$\frac{1}{2}$	
	- For $P(\text{Even number}) = \frac{3}{6}$	$\frac{1}{2}$	
	For correct answer	<u>$\frac{1}{2}$</u>	
			5
ii.	- For correct $P(1) = P(\text{one } 6'' \text{ block})$ i.e. ${}^3C_1 (\frac{1}{4}) (\frac{3}{4})^2$	1	
	For simplification of $P(1)$	$\frac{1}{2}$	
	For correct answer	$\frac{1}{2}$	
	- For correct $P(2) = P(\text{two } 6'' \text{ blocks})$ i.e. ${}^3C_2 (\frac{1}{4})^2 (\frac{3}{4})$	1	
	For simplification of $P(2)$	$\frac{1}{2}$	
	For correct answer	$\frac{1}{2}$	
	- For addition of $P(1)$ and $P(2)$ answers	$\frac{1}{2}$	
	For the correct final answers	<u>$\frac{1}{2}$</u>	
			5
b. i.	For total angle of 360°	1	
	For multiplying by 360°	1	
	For correct angular representation for food i.e. 150°	1	
	For correct angular representation for transport i.e. 75°	1	
	For correct angular representation for utility i.e. 105°	1	
	For correct angular representation for miscellaneous i.e. 30°	<u>1</u>	
	[-1 for no unit (i.e. degree notation) in the angles (once only)]		
			6
ii.	For correct network diagram showing all the arrows and circles		
	(- $\frac{1}{2}$ each error)	2	
	For all the 3 correct paths (- $\frac{1}{2}$ each error)	1	
	For correct answer of 29 weeks	<u>1</u>	
			<u>4</u>
			<u>20</u>

SOLUTION 3

- a. This is an Annuity due situation i.e payments are made in advance i.e at the beginning of each payment period. The relevant formula is

$$S_n = \frac{x[(1+r)^n - 1]}{r}(1+r)$$

where S_n = final cash to be received at the end of the period,

x = Annual investment,

r = period interest rate, and

n = number of periods.

$$\text{i.e. } r.S_n = x[(1+r)^n - 1](1+r)$$

$$x = \frac{r.S_n}{[(1+r)^n - 1](1+r)}$$

Substituting gives

$$x = \frac{0.08(696,910.50)}{[(1+0.08)^5 - 1](1+0.08)}$$

$$= \frac{55,752.84}{(1.4693 - 1)(1.08)}$$

$$= \frac{55,752.84}{0.4693(1.08)}$$

$$= \frac{55,752.84}{0.506844}$$

$$\therefore x = 110,000$$

Therefore, the money saved by the lawyer = ~~N~~110,000

b. (i)

x	y	x^2	xy
38	50	1444	1900
51	72	2601	3672
19	36	361	684
53	64	2809	3392
39	52	1521	2028
38	56	1444	2128
66	80	4356	5280
304	410	14,536	19,084

$$y = a + bx$$

$$\begin{aligned}\hat{b} &= \frac{n(\sum xy) - (\sum x)(\sum y)}{n\sum x^2 - (\sum x)^2} \\ &= \frac{7(19,084) - (304)(410)}{7(14,536) - (304)^2} = \frac{8,948}{9,336} = 0.96\end{aligned}$$

ALITER (Alternative Solution)

x	y	$(x - \bar{x})$	$(y - \bar{y})$	$(x - \bar{x})(y - \bar{y})$	$(x - \bar{x})^2$
38	50	-5.4	-8.6	46.44	29.16
51	72	7.6	13.4	101.84	57.76
19	36	-24.4	-22.6	551.44	595.36
53	64	9.6	45.4	51.84	92.16
39	52	-4.4	-6.6	29.04	19.36
38	56	-5.4	-2.6	14.04	29.16
66	80	22.6	21.4	483.64	510.75
304	410	-	-	1278.28	1333.72

$$\hat{x} = \frac{304}{7} = 43.4$$

$$\hat{y} = \frac{410}{7} = 58.6$$

$$\hat{b} = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2} = \frac{1278.28}{1333.72} = 0.96$$

Therefore, for the two ALITERS, we have

$$\begin{aligned}\hat{a} &= \bar{y} - \hat{b}\bar{x} \\ &= \frac{410}{7} - 0.96 \left(\frac{304}{7} \right) \\ &= 58.6 - 0.96 (43.3) \\ &= 16.94\end{aligned}$$

The regression equation is $y = 16.94 + 0.96x$

$$\begin{aligned}\text{ii. } y &= 16.94 + 0.96 (60) \\ &= 74.5\end{aligned}$$

$$\begin{aligned}\text{iii. } \hat{x} &= \frac{75 - 16.94}{0.96} \quad \text{when } y = 75 \\ &= \frac{58.06}{0.96} \\ &= 60.5\end{aligned}$$

EXAMINER'S REPORT

This question tests candidates' understanding of annuity and their ability to obtain the regression line for a given data and use it to predict future values.

About 50% of the candidates did not attempt part (a) of this question while almost 96% of them attempted part (b).

About 30% of the candidates scored 8 or more out of 20 marks allocated. Most of the candidates showed clearer understanding of part (b) whereas, many of them could not recollect the appropriate formula for annuity.

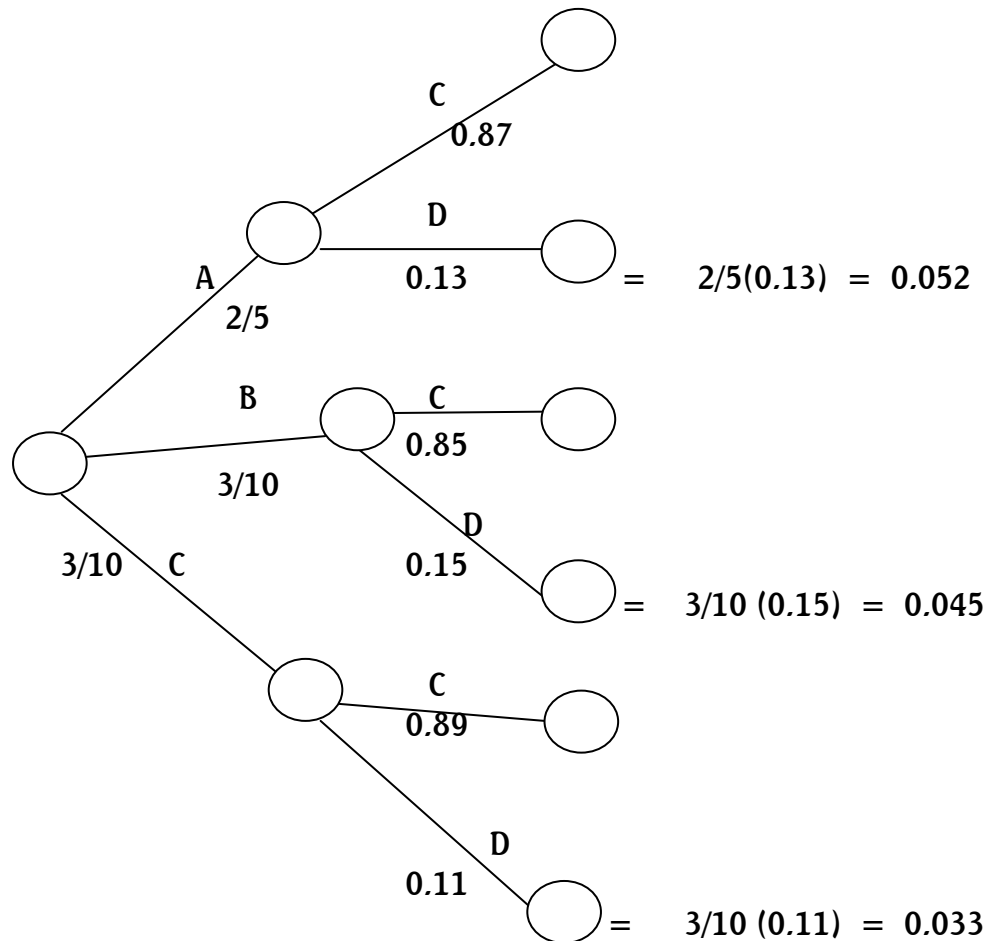
Candidates are advised to use the ICAN QTB Study Text and other relevant texts when preparing for future examinations.

MARKING GUIDE

		MARKS	MARKS
a. i.	For correct formula of annuity due situation	1	
	For simplifying the formula	1	
	For making x the subject of formula	1	
	For correct substitution into the formula	1	
	For simplification to get 55,752.84 in the numerator	1	
	For simplification to get $(1.4693 - 1)$ and 1.08 in the denominator	1	
	For further simplification to get 0.4693 in the denominator	1	
	For further simplification to get 0.506844 in the denominator	1	
	For correct answer of 110,000	<u>2</u>	
			10
b. i.	For correct $\sum x$ of 304	$\frac{1}{2}$	
	For correct $\sum y$ of 410	$\frac{1}{2}$	
	For any one correct value in the x^2 column	$\frac{1}{2}$	
	For correct $\sum x^2$ of 14536	$\frac{1}{2}$	
	For any one correct value in the xy column	$\frac{1}{2}$	
	For correct $\sum xy$ of 19084	$\frac{1}{2}$	
	For correct substitution into formula for \hat{b}	$\frac{1}{2}$	
	For simplification	$\frac{1}{2}$	
	For correct value of \hat{b} to be 0.96	$\frac{1}{2}$	
ALITER (Alternative Solution)			
	For correct $\sum x$ of 304	$\frac{1}{2}$	
	For correct $\sum y$ of 410	$\frac{1}{2}$	
	For any one correct value in the $(x - \bar{x})(y - \bar{y})$ column	$\frac{1}{2}$	
	For correct $\sum (x - \bar{x})(y - \bar{y})$ of 1278.28	$\frac{1}{2}$	
	For any one correct value in the $(x - \bar{x})^2$ column	$\frac{1}{2}$	
	For correct $\sum (x - \bar{x})^2$ of 1333.72	$\frac{1}{2}$	
	For correct substitution into formula for \hat{b}	1	
	For correct value of \hat{b} to be 0.96	$\frac{1}{2}$	
	For correct substitution into formula for \hat{a}	$\frac{1}{2}$	
	For correct value of 16.94	$\frac{1}{2}$	
	For correct regression equation of $y = 16.94 + 0.96x$	<u>$\frac{1}{2}$</u>	6
ii.	For correct substitution of $x = 60$ into the regression equation	1	
	For correct answer of $y = 74.5$	<u>1</u>	2
iii.	For correct substitution of $y = 75$ into the regression equation	1	
	For correct answer of $x = 60.5$	<u>1</u>	<u>2</u>
			<u>20</u>

SOLUTION 4

(a) Probability Tree



(i) From the above tree diagram, proportion of damaged blocks

$$= 0.052 + 0.045 + 0.033 = 0.13.$$

(ii). Probability of randomly taking a damaged block from Lorry B = $\frac{0.045}{0.13} = 0.346$

b) i.

- From the given initial basic tableau, the non-basic variables are x_{13} and x_{21} .
- Their relative cost coefficients are computed as follows:

For x_{13} :

For x_{13} relative cost coefficient

A	B	C
2	-1 4	x_{13} 6
3	+1 6	-1 10

Diagram showing the calculation of the relative cost coefficient for x_{13} . The tableau is a 2x3 grid. Row 1: A=2, B=-1, C= x_{13} . Row 2: A=3, B=+1, C=-1. Arrows indicate the path from the non-basic variable x_{13} in column C to the basic variables in column B. From x_{13} (row 1, col C), an arrow points left to -1 (row 1, col B), and another arrow points down to +1 (row 2, col B). From +1 (row 2, col B), an arrow points left to 3 (row 2, col A).

$$C_{13} = 6(+1) + 4(-1) + 6(+1) + 10(-1) = 6 - 4 + 6 - 10 = -2$$

For x_{21} :

For x_{21} relative cost coefficient

A	B	C
-1 2	+1 4	6
x_{21} +1 3	-1 6	10

Diagram showing the calculation of the relative cost coefficient for x_{21} . The tableau is a 2x3 grid. Row 1: A=-1, B=+1, C=6. Row 2: A= x_{21} , B=-1, C=10. Arrows indicate the path from the non-basic variable x_{21} in column A to the basic variables in column B. From x_{21} (row 2, col A), an arrow points right to -1 (row 2, col B), and another arrow points up to +1 (row 1, col B). From +1 (row 1, col B), an arrow points right to 4 (row 1, col C).

$$C_{21} = 3(+1) + 2(-1) + 4(+1) + 6(-1) = 3 - 2 + 4 - 6 = 1$$

$$\begin{aligned}
 \text{b. (ii)} \quad n &= 1,000, p \\
 &= \frac{200}{40,000} = 0.005 \\
 np &= \lambda \\
 &= 1,000 \times 0.005 = 5 \\
 \text{Now, } P(x) &= \frac{e^{-\lambda} \lambda^x}{x!} \\
 &= \frac{e^{-5} 5^4}{4!} = 0.1775
 \end{aligned}$$

EXAMINER'S REPORT

Part (a) of the question tests candidates' ability to draw a probability tree diagram while part (b) is on transportation problem and probability theory.

About 35% of the candidates attempted the question out of which 10% scored 10 or more out of 20 marks.

Candidates demonstrated very poor understanding of the probability tree diagram. Their performance in the other part of the question was also poor.

Almost all the candidates could not draw the correct probability tree diagram. Most of them could not identify the non-basic variables in the transportation problem.

Candidates are advised to cover all aspects of the syllabus when preparing for future examinations.

MARKING GUIDE

	MARKS	MARKS
a. i. For expressing $P(B)$ as $\frac{2}{5} \times \frac{3}{4}$	$\frac{1}{2}$	
For correct $P(B)$ to be $\frac{3}{10}$	$\frac{1}{2}$	
For correct expressing $P(C)$ as $1 - (\frac{2}{5} \times \frac{3}{10})$	$\frac{1}{2}$	
For correct $P(C)$ to be $\frac{3}{10}$	$\frac{1}{2}$	
For correct $P(D/A)$ of 0.13	$\frac{1}{2}$	
For correct $P(D/B)$ of 0.15	$\frac{1}{2}$	
For correct $P(D/C)$ of 0.11	$\frac{1}{2}$	
For correct $P(D \cap A)$ of 0.052	1	
For correct $P(D \cap B)$ of 0.045	1	
For correct $P(D \cap C)$ of 0.033	1	
For summing of $P(D \cap A)$, $P(D \cap B)$ and $P(D \cap C)$ values	1	
For correct answer of 0.13	$\frac{1}{2}$	8
ii. For correct substitution into $P(B/D)$ to obtain $\frac{0.045}{0.13}$	1	
For correct answer of 0.346	<u>1</u>	2

		MARKS	MARKS
b. i.	For correct identification of the non-basic variables as x_{21} and x_{13} ($\frac{1}{2}$ mark each)	1	
	For correct expression for the relative cost coefficient due to x_{13}	$\frac{1}{2}$	
	For correct value of the relative coefficient due to x_{13}	1	
	For correct expression for the relative cost coefficient due to x_{21}	$\frac{1}{2}$	
	For correct value of the relative coefficient due to x_{21}	<u>1</u>	4
ii.	For correct value of P to be 0.005	1	
	For substituting n and P values into $\lambda = np$	1	
	For correct value of λ obtained as 5	1	
	For correct formula for Poisson distribution i.e. $P(x) = \frac{\lambda^x e^{-\lambda}}{x!}$	1	
	For correct substitution into the Poisson distribution formula	1	
	For correct answer of 0.1775	<u>1</u>	<u>$\frac{6}{20}$</u>

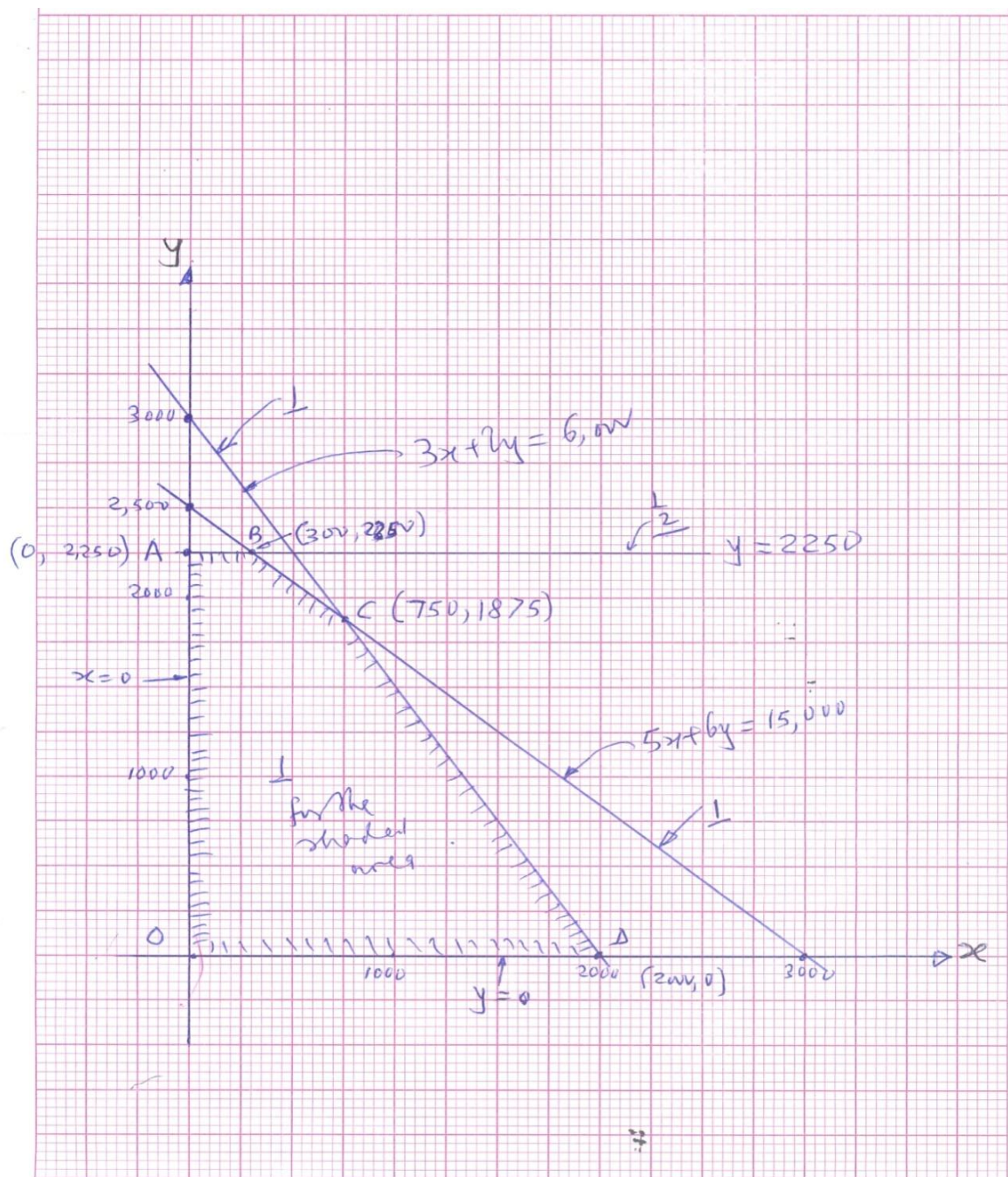
SOLUTION 5

a) i. To graph the inequalities, we proceed as follows:

For $3x + 2y = 6,000$, the following points define the line; $(0,3000)$ and $(2000,0)$

For $5x + 6y = 15,000$, the following points define the line $(0,2500)$ and $(3000,0)$

The graphs are drawn together with $y=2250$, $x=0$ and $y=0$



ELECTRICAL AND INFORMATION ENGINEERING

ii. The area in which all the above inequalities hold is as shaded ABCDO

From the graph, the corner points are read as

A(0,2250), B(300,2250), C(750,1875), D(2000,0) and O (0,0)

b.

Rank	Rank of x (R_x)	Rank of y (R_y)	$d = R_x - R_y$	d^2
A	4	3	1	1
B	2	4	-2	4
C	5	2	3	9
D	6	8	-2	4
E	1	1	0	0
F	8	9	-1	1
G	3	5	-2	4
H	7	6	1	1
I	10	10	0	0
J	9	7	2	4
$\sum d^2 =$				<u>28</u>

ALITER 1 (Alternative Solution)

Rank	Rank of x (R_x)	Rank of y (R_y)	$d = R_x - R_y$	d^2
A	7	8	-1	1
B	9	7	2	4
C	6	9	-3	9
D	5	3	2	4
E	10	10	0	0
F	3	2	1	1
G	8	6	2	4
H	4	5	-1	1
I	1	1	0	0
J	2	4	-2	4
$\sum d^2 =$				<u>28</u>

ALITER 2 (Alternative Solution)

Character x	Character y	R_x	R_y	$d = R_x - R_y$	d^2
E	E	1	1	0	0
B	C	2	4	-2	4
G	A	3	5	-2	4
A	B	4	3	1	1
C	G	5	2	3	9
D	H	6	8	-2	4
H	J	7	6	1	1
F	D	8	9	-1	1
J	F	9	7	2	4
I	I	10	10	0	0
$\sum d^2 =$					<u>28</u>

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

$$R = 1 - \frac{6(28)}{10(10^2 - 1)}$$

$$R = 1 - \frac{168}{990}$$

$$R = 1 - 0.1697$$

$$R = 0.8303$$

$$R = 0.83$$

This is a strong positive correlation which means that the two accountants reasonably agree in their ranking of the banks.

EXAMINER'S REPORT

Part (a) tests candidates' understanding of graphical solution of a linear programming problem while part (b) tests their knowledge in the calculation of rank correlation coefficient.

About 65% of the candidates attempted this question and 50% of them scored 6 or more marks out of the 20 marks.

Generally, the candidates' demonstrated very poor understanding of drawing inequalities for a set of given information. In part (b), candidates could not rank the banks correctly. In addition, they could not draw straight lines correctly and they demonstrated poor knowledge of ranking.

Candidates should create more time to study hard for the examinations by consulting the ICAN QTB Study Text and other relevant textbooks.

MARKING GUIDE

	MARKS	MARKS
a. i.		
For correct point (0, 3000) from line $3x + 2y = 6000$	$\frac{1}{2}$	
For correct point (2000, 0) from line $3x + 2y = 6000$	$\frac{1}{2}$	
For correct point (0, 2600) from line $5x + 6y = 15000$	$\frac{1}{2}$	
Correct point (3000, 0) from line $5x + 6y = 15000$	$\frac{1}{2}$	
For line $y = 2250$	$\frac{1}{2}$	
For line $x = 0$ and $y = 0$	$\frac{1}{2}$	
For drawing line $3x + 2y = 6000$	1	
For drawing line $5x + 6y = 15000$	1	
For drawing line $y = 2250$	$\frac{1}{2}$	
For drawing line $x = 0$	$\frac{1}{2}$	
For drawing line $y = 0$	$\frac{1}{2}$	
		6½
ii.		
For shading the required area	1	
For correct corner point A (0, 2250)	$\frac{1}{2}$	
For correct corner point B (300, 2250)	$\frac{1}{2}$	
For correct corner point C (750, 875)	$\frac{1}{2}$	
For correct corner point D (2000, 0)	$\frac{1}{2}$	
For correct corner point O (0, 0)	$\frac{1}{2}$	
		3½
b.		
For correct Rank of x column ($-\frac{1}{2}$ each error)	2	
For correct Rank of y column ($-\frac{1}{2}$ each error)	2	
For correct $d = R_x - R_y$ column	$\frac{1}{2}$	
For correct d^2 column ($-\frac{1}{2}$ each error)	1½	
For correct $\sum d^2$ to be 28	1	
		7
For correct substitution into Spearman's rank formula	1	
For correct simplification to be $1 - 0.1697$	$\frac{1}{2}$	
For correct answer to be 0.83	$\frac{1}{2}$	
For correct interpretation of result	1	
		<u>3</u>
		<u>20</u>
ALITER 1 – FOR THE TABLE (Alternative Solution)		
b.		
For correct Rank of x column ($-\frac{1}{2}$ each error)	2	
For correct Rank of y column ($-\frac{1}{2}$ each error)	2	
For correct $d = R_x - R_y$ column	$\frac{1}{2}$	
For correct d^2 column ($-\frac{1}{2}$ each error)	1½	
For correct $\sum d^2$ to be 28	1	
		7
For correct substitution into Spearman's rank formula	1	
For correct simplification to be $1 - 0.1697$	$\frac{1}{2}$	
For correct answer to be 0.83	$\frac{1}{2}$	
For correct interpretation of result	1	
		<u>3</u>
		<u>10</u>

ALITER 2 – FOR THE TABLE

b.	For correct Rank of x column ($-\frac{1}{2}$ each error)	2	
	For correct Rank of y column ($-\frac{1}{2}$ each error)	2	
	For correct $d = R_x - R_y$ column	$\frac{1}{2}$	
	For correct d^2 column ($-\frac{1}{2}$ each error)	$1\frac{1}{2}$	
	For correct $\sum d^2$ to be 28	<u>1</u>	7
	For correct substitution into Spearman's rank formula	1	
	For correct simplification to be $1 - 0.1697$	$\frac{1}{2}$	
	For correct answer to be 0.83	$\frac{1}{2}$	
	For correct interpretation of result	<u>1</u>	
			<u>3</u>
			<u>10</u>

SOLUTION 6

a) i.

Month (x_i)	Probability of failure (P_i)	($P_i x_i$)
1	0.10	0.10
2	0.30	0.60
3	0.35	1.05
4	0.20	0.80
5	0.05	0.25
	$\Sigma p_i = 1.00$	$\Sigma p_i x_i = 2.80$

$$\text{Average life span} = \frac{\Sigma p_i x_i}{\Sigma p_i} = \frac{2.80}{1.0} = 2.80 \text{ months}$$

Average number of monthly replacements

$$= \frac{742}{2.8} = 265$$

∴ The individual cost of replacement

$$= \text{N}265 \times 100$$

$$= \text{N}26,500$$

ii.

Amount in ₦ (x)	Probability(p)	Expected amount (px) ₦
5000	0.45	2250
8000	0.33	2640
11000	0.16	1760
15000	0.06	<u>900</u>
		<u>7550</u>

She will not be able to buy the dress because the expected amount of ₦7,550 is less than the cost of the dress of ₦8,000

b)

Marks (%)	x	x^2	f	fx	fx^2
20-29	24.5	600.25	7	171.5	4,201.75
30-39	34.5	1,190.25	17	586.5	20,234.25
40-49	44.5	1,980.25	13	578.5	25,743.25
50-59	54.5	2,970.25	9	490.5	26,732.25
60-69	64.5	4,160.25	4	258.0	16,641.00
			50	2,085.0	93,552.50

- Modal class is 30 – 39

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

$$\therefore \text{mode} = 29.5 + \frac{10}{14} \times 10 = 36.64$$

- Standard deviation = $\sqrt{\frac{\sum fx^2}{\sum fx} - (\sum fx)^2}$

$$= \sqrt{\frac{93,552.50}{50} - (2,085)^2} = \sqrt{132.16} = 11.5$$

ALITER (Alternative Solution) (for calculating only the standard deviation)

Marks (%)	x	f	fx	$x - \bar{x}$	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
20-29	24.5	7	171.5	-17.2	295.84	2,070.88
30-39	34.5	17	586.5	-7.2	51.84	881.28
40-49	44.5	13	578.5	2.8	7.84	101.92
50-59	54.5	9	490.5	12.8	163.84	1,474.56
60-69	64.5	4	258.0	22.8	519.84	2,079.36
		$\sum f = 50$	$\sum fx = 2,085$			$\sum f(x - \bar{x})^2 = 6,608$

$$\bar{x} = \frac{\Sigma fx}{\Sigma f} = \frac{2,085}{50} = 41.7$$

$$\begin{aligned}\therefore \text{S.D.} &= \sqrt{\frac{\Sigma f(x - \bar{x})^2}{\Sigma f}} = \sqrt{\frac{6,608}{50}} \\ &= \sqrt{132.16} = 11.496 \approx 11.5\end{aligned}$$

$$\begin{aligned}\text{Pearson's coefficient of skewness} &= \frac{\text{Mean} - \text{Mode}}{\text{Standard Deviation}} \\ &= \frac{41.7 - 36.64}{11.5} \approx 0.44\end{aligned}$$

EXAMINER'S REPORT

The question tests candidates' understanding of application of Replacement theory, mathematical expectation and calculation of Pearson's coefficient of skewness.

Candidates demonstrated poor understanding of the requirements of the question, even in the calculations of Mode and Standard deviation.

About 30% of the candidates who attempted this question scored 10 or more marks and above out of 20 marks.

Candidates are advised to prepare very well for the examination. They should attend approved tuition houses and use ICAN QTB Study Text as a guide with other relevant texts.

MARKING GUIDE

		MARKS	MARKS
a.	i.		
	For correct $P_i x_i$ column (-1/2 each error)	1 1/2	
	For obtaining the correct $\Sigma P_i x_i$ to be 2.80	1	
	For obtaining the correct Average Life Span to be 2.80 months	1/2	
	For obtaining the correct average number of monthly replacements as 265	1/2	
	For obtaining the correct individual cost of replacement as ₦26,500	1/2	
			4
	ii.		
	For correct Probability (P) column	1/2	
	For correct expected amount (Px) (-1 each error)	4	
	For obtaining the correct sum of all the expected amounts (ΣPx) as 7,550	1/2	
	For stating the correct reason	1	
			6

	MARKS	MARKS
b. For correct mid-point (x) column (any one correct)	$\frac{1}{2}$	
For correct fx column ($-\frac{1}{2}$ each error)	1	
For correct $\sum fx$ column to be 2085	$\frac{1}{2}$	
For correct fx^2 column ($-\frac{1}{2}$ each error)	1	
For obtaining the correct $\sum fx^2$ to be 93,552.50	1	
For correct Mode formula	$\frac{1}{2}$	
For indicating the correct modal class as 30 – 39	$\frac{1}{2}$	
For correct substitution in the mode formula	$\frac{1}{2}$	
For obtaining the correct answer as 36.64	1	
For correct substitution into the standard deviation formula	$\frac{1}{2}$	
For correct standard deviation as 11.5	1	
For correct Pearson's coefficient of skewness formula	$\frac{1}{2}$	
For correct substitution into the formula given above	$\frac{1}{2}$	
For obtaining the correct answer as 0.44	1	
		<u>10</u>
		<u>20</u>

ALITER (Alternative Solution) FOR THE STANDARD DEVIATION

b. For correct mid-point (x) column (for at least one correct)	$\frac{1}{2}$	
For correct $(x - \bar{x})$ column (for at least one correct)	$\frac{1}{2}$	
For correct $(x - \bar{x})^2$ column (for at least one correct)	$\frac{1}{2}$	
For correct $f(x - \bar{x})^2$ column ($-\frac{1}{2}$ each error)	2	
For obtaining the correct $\sum f(x - \bar{x})^2$ column as 6,608	1	
For correct substitution into standard deviation formula	$\frac{1}{2}$	
For obtaining correct standard deviation as 11.5	$\frac{1}{2}$	
		5½

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

FOUNDATION LEVEL EXAMINATION – MAY 2017

BUSINESS AND FINANCE

Time Allowed: 3 hours

SECTION A: MULTIPLE - CHOICE QUESTIONS (20 MARKS)

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ALL QUESTIONS IN THIS SECTION

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

1. Which of the following organisational structures is **MOST** appropriate for a business in its early stage of life?
 - A. Functional structure
 - B. Matrix structure
 - C. Divisional structure
 - D. Entrepreneurial structure
 - E. Virtual structure
2. Which of the following is **TRUE** of informal groups?
 - A. Members work together through established procedures and systems
 - B. Decisions are commonly taken by the group leader
 - C. Membership depends on social interactions between members
 - D. The workgroup's objectives are set by management
 - E. Members are appointed by management
3. An organisation that brings other corporations together is called
 - A. Matrix organisation
 - B. Modular organisation
 - C. Hollow organisation
 - D. Boundaryless organisation
 - E. Complex organisation
4. The communication pattern in which everyone communicates with everyone else is the
 - A. Circle
 - B. Wheel
 - C. The Y
 - D. Chain
 - E. All-channel

5. Which of the following describes how the national income of a country increases or falls from one year to the next?
- A. Economic learning curve
 - B. Economic recession
 - C. Economic development
 - D. Economic trends
 - E. Economic cycle
6. Decentralised decision-making is advantageous because
- A. Managers at the head office are able to apply a corporate view of the entire business
 - B. It gives senior managers greater control over business activities thereby allowing them to coordinate activities more effectively
 - C. It is possible to use specialised management support teams for the whole organization
 - D. It helps to develop junior managers with initiative and talents and prepare them for higher positions
 - E. It is cheaper since fewer managers are needed
7. Which of the following organisations handles registration of businesses and companies in Nigeria?
- A. Nigeria Enterprise Promotion Board
 - B. Corporate Affairs Commission
 - C. Customs and Excise
 - D. NAFDAC
 - E. Ministry of Industry
8. The administration function of an organisation is
- A. Pollution control and waste disposal
 - B. Direct selling by sales executives
 - C. Ensuring compliance with regulations
 - D. Obtaining new funds from the financial markets
 - E. Delivering products to customers
9. A business partnership is an entity in which two or more individuals share the ownership of the business. The document which specifies the obligations and rights of each partner is called
- A. A partnership deed
 - B. A contract
 - C. An article of association
 - D. A memorandum of association
 - E. A tort

10. Which of the following is **NOT** a usual source of short-term finance?
- A. Short-term bank loans
 - B. Commercial paper
 - C. Trade payables
 - D. Bank overdraft
 - E. Lease finance
11. Which of the following is a strategic alliance?
- A. Joint venture
 - B. People alliance
 - C. Geographic specific
 - D. Investment
 - E. Sale
12. Which of the following is **NOT** regarded as a non-financial consideration in investment decisions?
- A. Payback
 - B. Reliability
 - C. Efficiency
 - D. Speed of service
 - E. Customer satisfaction
13. Which of the following is a theorist associated with the Classical Theories of Management?
- A. Peter Drucker
 - B. William Ouchi
 - C. Henri Fayol
 - D. Douglas McGregor
 - E. Rosabeth M. Kanter
14. You recently won ₦50 million from the popular NTA show “Who wants to be a billionaire?” A financial expert counselled that you invest the money in a bank at 6% interest rate per annum. How much will you have at the end of ten years?
- A. ₦88,550,000
 - B. ₦89,550,000
 - C. ₦90,550,000
 - D. ₦91,550,000
 - E. ₦92,550,000
15. Operations Research (OR) is associated with approach.
- A. Human relations
 - B. Classical
 - C. Bureaucratic
 - D. Management science
 - E. Scientific management

16. Which of the following is **NOT** a main source of long-term capital?
- A. Venture capital
 - B. Equity finance
 - C. Debt factoring
 - D. Lease finance
 - E. Debt finance
17. Which of the following options best describes a case where it may be extremely difficult to measure qualitative performance in quantitative terms?
- A. 'High quality'
 - B. 'Being the 'best''
 - C. 'Brand recognition'
 - D. 'Better than competitors'
 - E. 'Meeting customer needs'
18. Which of the following is a measure of success in meeting customer needs?
- A. Quality measures
 - B. Time lost in production
 - C. Number of make or buy decisions
 - D. Number of new products developed
 - E. Measures of repeat business obtained
19. Which of the following is **NOT** a fundamental principle required to be strictly adhered to by professional accountants?
- A. Professional incompetence
 - B. Professional behavior
 - C. Confidentiality
 - D. Objectivity
 - E. Integrity
20. Which of the following actions will **NOT** be in the best interest of the public?
- A. Preventing the public from being misled by an action of an organisation
 - B. Detecting and concealing any serious misdemeanor
 - C. Exposing the misuse of public funds
 - D. Exposing corruption in government
 - E. Protecting health and public safety

SECTION B**OPEN-ENDED QUESTION****(80 MARKS)**

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ANY FOUR OUT OF SIX QUESTIONS IN THIS SECTION

QUESTION 1

- a. In order to survive and achieve a competitive advantage, companies may need to enter into collaboration with stakeholders.

Required:

Using Strategic Alliances and Joint Ventures, explain how collaboration can be used in business to achieve competitive advantage. (10 Marks)

- b. Explain briefly 'Restricting Competition' (5 Marks)
- c. Explain briefly the concept of Cartel. (5 Marks)
- (Total 20 Marks)**

QUESTION 2

- a. Communication is important for organisational efficiency, but the effectiveness of a communication system depends on the effectiveness of each of its elements. With the aid of a diagram illustrate the basic elements of a communication system. (6 Marks)
- b. Structures in organisations could be tall or flat.
- i. Explain briefly what tall and flat organisational structures are. (2 Marks)
- ii. Describe briefly **THREE** disadvantages each of flat and tall organisational structures. (12 Marks)
- (Total 20 Marks)**

QUESTION 3

- a. High level of unemployment are unwelcome in any economy. Attempts have been made at one time or the other to classify unemployment to facilitate lasting solution.

State and explain briefly five categories of unemployment.

(10 Marks)

- b. Explain briefly the implications of a fall in the value of a nation's currency. (4 Marks)

c. Define briefly the following business terms:

- i. Fiscal policy;
- ii. Monetary policy;
- iii. Monopoly;
- iv. Down sizing;
- v. De-layering; and
- vi. Outsourcing;

(6 Marks)
(Total 20 Marks)

QUESTION 4

Scholars have come up with different approaches to management. One of them is Douglas McGregor who propounded the Theory X and theory Y approaches to managing people.

- a. Explain McGregor's theory X and theory Y. (16 Marks)
- b. List **FOUR** conditions in which theory Y are applicable. (4 Marks)

(Total 20 Marks)

QUESTION 5

The following projections relate to XYZ Automobiles Nigeria Limited.

Month	Sales	Purchases	Wages	Overheads
	₦	₦	₦	₦
November 2016	400,000	204,000	76,000	38,000
December 2016	420,000	200,000	76,000	42,000
January 2017	460,000	196,000	80,000	46,000
February 2017	500,000	200,000	84,000	48,000
March 2017	600,000	216,000	90,000	50,000

Additional information:

- (i) Cash balance on January 1, 2017 is expected to be ₦80,000.
- (ii) A plant will be installed in November 2016 at a cost of ₦1,000,000 and the monthly installment of ₦50,000 is payable from January 2017.
- (iii) A sum of ₦30,000 will be paid as dividends in the month of March 2017.
- (iv) Company income tax of ₦45,000 will be due for payment in March 2017.
- (v) Advance payment of ₦800,000 in respect of a sale of a truck will be received in March 2017.

- (vi) In line with the company's policy, 50% of sales are on cash basis. 50% of credit sales are collected in the month immediately following the month of sales while the balance is paid a month after the payment of the first installment.
- (vii) All purchases are on credit and the creditors are paid fully two months after the month of purchase.
- (viii) Wages and overheads are paid as and when due.

Required:

Prepare a cash budget for each of the **THREE** months ending March 31, 2017.

(20 Marks)

QUESTION 6

Baseline Limited plans to buy a machine costing ₦500 million which will last for four years and then be sold for ₦5 million. Additional working capital in the sum of ₦5million will be required as soon as the project starts. Net cashflow before tax are expected to be as follows:

	Period 1	Period 2	Period 3	Period 4
Net Cashflow (₦-millions)	244	286	374	156

Baseline Limited has a targeted Return on Capital Employed of 20%. Depreciation is charged on a straight-line basis over the life of an asset.

Required:

- a. What is the Accounting Rate of Return (ARR) of this machine? (10 Marks)
 - b. State FIVE advantages and disadvantages each of Internal Rate of Return (IRR) as a method used in appraising capital investments. (10 Marks)
- (Total 20 Marks)**

SUGGESTED SOLUTIONS

SECTION A: MULTIPLE-CHOICE QUESTIONS**(20 Marks)**

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

Workings

14. $FV = PV (1 + r)^n$

Where

FV	=	Future value
PV	=	Present value
r	=	Interest rate
n	=	Number of years

$$\begin{aligned} FV &= \text{N}50,000,000 \times (1 + 0.06)^{10} \\ &= \text{N}50,000,000 \times 1.791 \\ &= \underline{\text{N}89,550,000} \end{aligned}$$

EXAMINER'S REPORT

The questions in this section adequately cover the entire syllabus. 55% of the candidates scored above average.

SECTION B

SOLUTION 1

(a) Strategic Alliance

A strategic alliance is an arrangement in which a number of separate companies share their resources and activities to pursue a jointly agreed strategy. By collaborating, all the companies in the alliance are able to offer a better product or service to their customers. Examples of strategic alliances are in the airline industry where groups of airlines might form alliances in order to offer travelers a better selection of routes and facilities than any single airline could offer on its own.

A strategic alliance is an agreement between two or more players to share resources or knowledge, that will be beneficial to all parties involved. It is a way to supplement internal assets, capabilities and activities, with access to needed resources or processes from outside players such as suppliers, customers, competitors, companies in different industries, brand owners, and government regulatory agencies. This form of cooperation lies between [mergers and acquisitions](#) and organic growth. Strategic alliances occur when two or more organizations join together to pursue mutual benefits.

A strategic alliance can be also referred to as [strategic partnership](#). It is an agreement between two or more parties to pursue a set of objectives needed while remaining as independent organizations. Typically, two companies form a strategic alliance when each possesses one or more business [assets](#) or have expertise that will help the other by enhancing their businesses. Strategic alliances can develop in [outsourcing](#) relationships where the parties desire to achieve long-term [win-win](#) benefits and [innovation](#) based on mutually desired outcomes.

Types of Strategic Alliance

Types of Strategic Alliance include:

- Horizontal Strategic Alliance
- Vertical Strategic Alliance
- Intersectional Alliance
- Equity Alliance and
- Non-Equity Strategic Alliances.

Joint Ventures

Joint Ventures occur when two or more companies decide to form a new company. A joint venture is a formal venture by two or more separate entities to develop a business or an activity jointly. Many joint ventures are established in the form of a separate company, which is jointly owned by

the joint venture partners, no single partner being able to dominate and dictate the way the company is run. The joint venture allows the business risk and financing to be shared by the joint venture partners. This new company, being a separate legal entity, invest equity and resources in general, like technical know-how. The new firm can be for a finite time, a certain project, or for a lasting long-term business. Control, revenue and risks are shared according to the capital contribution of the joint venture partners.

Joint ventures are frequently used where:

- There is considerable risk
- Large amount of capital is needed; and
- A mix of skills is essential.

(b) Restriction of competition is a jurisdictional rather than substantive requirement. This occurs whenever a purchaser loses an element of the freedom over what to do with goods or services. Competition can be restricted in two major ways

- i. **Horizontal Competition Restriction:** This is made between competing businesses to manipulate competition amongst all competitors in the industry.
- ii. **Vertical Competition Restriction:** This is an agreement between a seller and a buyer whereby a retailer can buy products from one manufacturer but is restricted from buying from a competing manufacturer. Vertical competition restriction agreements are made between companies operating on different production or distribution levels, e.g. an agreement between an importer and a distributor. The restriction may be in form of a manufacturer setting restrictions that relate to prices, customers or marketing areas for distributors.

Examples of both types of agreements are

- Price fixing
- Market allocations
- Boycotts
- Tying agreements
- Monopolies

(c) A cartel is a group of formally independent producers whose goal is to increase their collective profits by means of [price fixing](#), limiting supply, or other [restrictive practices](#). Cartels typically control selling prices, but some are organized to control the prices of purchased inputs. [Antitrust laws](#) forbid cartels. However, they continue to exist nationally and internationally, openly and secretly, formally and informally.

A cartel can also be described as an arrangement between rival firms in an industry to operate the same policies on pricing. By operating a price cartel, the firms are able to charge higher prices than if they competed with each other, and as a result make higher profits. Provided that the cartel includes all the firms in the industry (or at least all the major firms), they are able to exercise supplier power.

Cartel agreements are [economically](#) unstable in that there is an [incentive](#) for members to cheat by selling below the agreed price or selling more than the production quota set by the cartel. This has caused many cartels that attempt to set product [prices](#) to be unsuccessful in the [long term](#). The [Organization of the Petroleum Exporting Countries](#) (OPEC) is a major example of cartels.

EXAMINER'S REPORT

The question tests competitive advantage, competitive forces and markets with particular emphasis on strategic alliances and joint ventures. Candidates were required to state how different types of collaboration can be used to achieve competitive advantage.

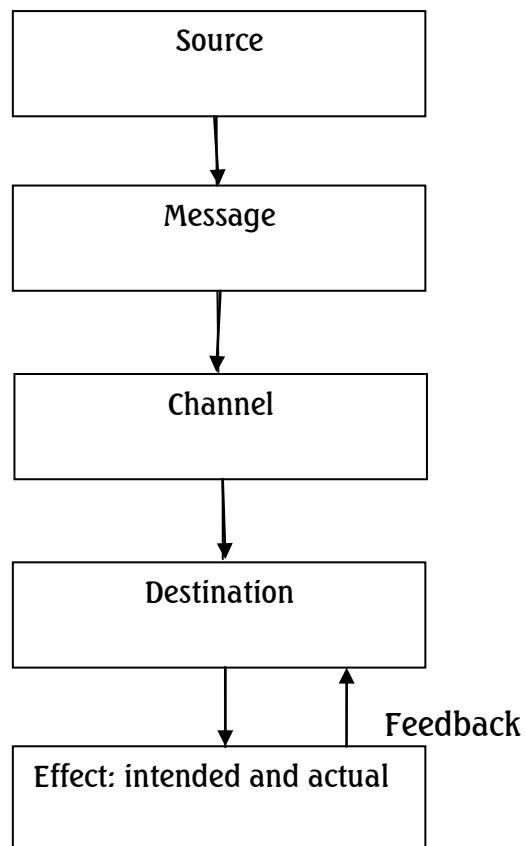
Part A of the question was not properly worded. Parts B & C are straightforward, but candidates performed poorly in these parts for reason of inadequate preparation. Students' performance in this question is below average. Future examination questions should clearly state the expectations of the examiners in order to minimize poor performance.

MARKING GUIDE

SOLUTION 1		MARKS
(a)	Using strategic alliances to explain how collaboration can be used to gain competitive advantage	5
	Using Joint Ventures to explain how collaboration can be used to gain competitive advantage	5
(b)	Brief explanation of restricting competition	5
(c)	Brief explanation of concept of cartels	<u>5</u>
Total		20

SOLUTION 2

(a) Diagram of the basic elements in a communication system



Explanation:

- **Source** - The sender is the source of the message.
- **Message** - The sender encodes the message using the right words and illustrative tools and sends it through the medium known as the channel.
- **Channel** - The channel can be electronic or print.
- **Destination** - The receiver at the destination decodes the message received as understood.
- **Effect** - The interpretation of the message may be as intended by the sender.
- **Feedback** - The sender of the message confirms that the recipient understood the message through the feedback process.

(b) i. The structure of business organizations, refers to the levels of management in the organization's hierarchy and the corresponding distance between front-line or entry-level employees and top management. It may be tall or flat. A tall organization is one in which the scalar chain is long, and there is a large number of levels in the management hierarchy. A flat organization is one in which the scalar chain is short and there is only a smaller number of management levels. The difference between tall and flat organizational structures is the layers of management. In a flat organizational structure, there may be just one top manager who is an owner or CEO of the company, overseeing a handful of other employees, all with equal levels of authority. In a tall organizational structure, by contrast, there are multiple layers of authority between the CEO and low-level employees. For example, an entry-level employee may report to a supervisor, who reports to a manager, who reports to a director, who reports to a vice president, who, reports to the CEO who finally reports to the Board.

ii. The Disadvantages of flat organizational structures:

1. **Management can easily lose control under flat organisational structure:** This structure is ideal for start-ups and small businesses where the number of employees is small. The system can pose a problem to the whole organization when the ratio of employees to manager is not appropriate
2. **Work-relationship under this structure can be stiffed:** When managers have too many people to manage every day, they may find it difficult to connect with their employees on a personal level, which is crucial in maintaining trust and in stepping up the baseline of employees' responsibility and accountability for the work and the organization as a whole.
3. **Inadequate Supervision:** There might be inadequate supervision and control. This is because in a flat organization, the span of control might be wide .
4. **It may be difficult to retain employees:** Excellent employees who are looking for improvement in their status, aside from an increase in their salary, may find it hard to find job satisfaction in this kind of organizational structure. They may end up seeking employment where they believe their efforts will be rewarded with promotion.
5. **This structure may hinder growth:** Management may decide against new opportunities in an effort to maintain the current structure, which as a result, may limit the long-term growth of the organization.

6. **Staff may be less motivated:** A flat organization structure may lessen the problems caused by unhealthy competition among employees. However, it makes it difficult for hardworking employees to move up the ladder as there is very little room for advancement. This could easily erode motivation, giving staff no reason to exert themselves on the job.
 7. **The structure can result to role confusion:** An employee in a flat organization may be expecting to fulfil a defined role, but find out later that he or she needs to do many pieces of other jobs. This makes it hard for workers to focus on their tasks and become a specialist.
1. **Overreliance on a small number of key individuals:**
The business might rely too much on a small number of key individuals in the management structure.
 2. **Shortage of good managers:**
If there are not enough managers there is a risk that the activities of the business will not be properly planned, co-ordinated and controlled

The disadvantages of tall organisational structures:

1. Ineffective, slow or even non-existent information from the top to bottom may lead to poor communication.
2. There may be 'us-and-them' attitude amongst junior managers and other employees because of the gap between them and senior management.
3. Bureaucratic process in tall organizational structures causes slow decision-making because decisions are considered at every different levels before implementation.
4. It is difficult to employ and empower employees as well as delegate decision making to them.
5. Middle level managers may not add value to the organization, thereby causing cost inefficiency.
6. Human resource inefficiency may arise because many employees manage a task that a few could easily manage.

EXAMINER'S REPORT

The question tests effective communication system, types of organisational structures and their disadvantage. About 50% of those who attempted the question scored above average marks.

Candidates are advised to study harder.

MARKING GUIDE

SOLUTION 2

	MARKS
(a) A properly drawn diagram containing six elements of effective communication	
6 elements x $\frac{1}{2}$ mark	3
Brief explanation on the six elements in the diagram	
6 x $\frac{1}{2}$ mark	3
(b) i. Stating what flat organisational structure is	1
Stating what tall organisational structure is	1
ii. Any three disadvantages of flat organisational structure	
3 points x 2 marks	6
Any three disadvantages of tall organisational structure	
3 points x 2 marks	6
Total	<u>20</u>

SOLUTION 3

Categories of unemployment

i. **Transitional unemployment**

This happens when an employee has left one job in order to start at another. There is transitional unemployment if there is a gap of time between leaving one job and starting the next.

ii. **Frictional unemployment**

This is a short-term unemployment that occurs when workers leave their jobs or when individuals are dismissed from their work to find better ones. It is usually a voluntary exit, but can also occur from a layoff or termination with cost. The time, effort and expense it takes the worker to find a new job is called friction.

Structural unemployment

This is unemployment that arises because of a significant change in the structure of the economy, and in particular decline and collapse of industries that used to be major employers. There might be a demand for labour in other industries and other parts of the country, but the unemployed people available for work are of the wrong type, and have the wrong skills, or are in other parts of the country and do not want to move homes.

iii. **Technological unemployment**

This occurs when technological changes, making some types of skills no longer needed, so that large numbers are made redundant. The new technology replaces manual labour. This can happen when manufacturing processes are automated. Technological unemployment can add to structural unemployment.

iv. **Regional unemployment**

This is unemployment in a particular region of the country. Levels of unemployment can vary from one region to another, especially when there is no mobility of labour and individuals are reluctant to move to other regions to find work.

v. **Seasonal unemployment**

This is unemployment, often within a particular industry, that arises because the demand by firms for labour is higher at some times of the year than at the other. For example, the demand for agricultural labour might be very seasonal, and there might be high levels of unemployment in the industry in the low-season periods.

vi. **Cyclical unemployment**

When the national economy is growing, demand for labour increases and unemployment should fall. When the economy goes into recession, the demand for labor will fall and rate of unemployment increases.

Governments try to deal with cyclical unemployment by managing the economy and trying to achieve real economic growth.

(b) Implications of a fall in the value of a nation's currency

- i. A fall in the value of a nation's currency will make the currency to become cheaper relative to other currencies.
- ii. Exports to other countries become relatively cheaper and buyers buy more of them.
- iii. Imports from other countries become relatively more expensive. Domestic buyers will therefore buy fewer imported goods (and might switch to buying more domestically-produced goods).
- iv. If exports go up and imports fall, the balance of payments position will improve.
- v. A very substantial change in foreign currency exchange rates will be needed to rectify the disequilibrium in international payments.

(c)

1. Fiscal- Policy

Fiscal policy is a deliberate government policy to use taxation, government spending and government borrowing to achieve some desired macro-economic objectives such as full employment, equitable distribution of income, balance of payments as well as trade and economic growth and development. Fiscal Policy can either be Expansionary Fiscal Policy or Contractionary Fiscal Policy.

2. Monetary Policy

Monetary policy is the use of supply of money in the economy to achieve some desired macro-economic objectives, which includes full employment, equitable distribution of income; balance of payments and trade as well as economic growth and development. The government seeks to encourage long-term economic growth by keeping the rate of inflation within limits. The rate of inflation is managed through control over interest rates.

3. Monopoly:

Monopoly occurs where one producer or a group of producers, acting in concert, controls the supply of goods or services, and where the entry of new producers is prevented or highly restricted.

Monopoly exists if there are no substitutes for the product and the supplier is able to prevent other firms from supplying the good in question.

Monopolist firms, in their attempt to maximize profits, keep the price high and restrict the output. They show little or no responsiveness to the needs of their customers. Most governments therefore try to control monopolies by (1) imposing price controls, (2) taking over their ownership (called 'nationalization'), or (3) by breaking them up into two or more competing firms. Sometimes governments facilitate the creation of monopolies for reasons of national security, to realize economies of scale and cut waste.

4. Downsizing

This is an Intentional reduction in the size of a workforce at all staffing levels, to survive a downturn, improve efficiencies, or become a more attractive candidate for acquisition or merger. It does not (necessarily) mean that the business organization is selling fewer goods or services. It means that its business activities are conducted by a smaller number of people. Technological change facilitates downsizing, because tasks that were performed by humans can now be performed by machine.

5. De-layering

'De-layering' means removing one or more levels of management in the organization structure. It could mean removing all layers of middle management entirely, leaving just senior managers and front-line managers and supervisors. De-layering is used to reduce the size of a business hierarchy, especially in terms of a reduction in management. It creates a flatter (less layered) organizational structure. De-layering is made possible by high-quality communications, provided that senior management can delegate sufficient authority to junior managers, and expect junior managers to meet their responsibilities. When an organization goes through de-layering, middle managers are made redundant, and there is consequently some downsizing.

6. Outsourcing

Outsourcing is a practice used by different companies to reduce costs by transferring portions of work to outside suppliers rather than completing it internally.

Outsourcing means arranging for other business organizations to perform some administrative or management tasks, instead of having to employ individuals to do the task internally, as part of the organization's own activities.

Outsourcing is an effective cost-saving strategy when used properly.

EXAMINER'S REPORT

The question tests external environment of business. The question specifically tests unemployment, national economic policies, competition and some strategies organisations adopt to improve performance and remain competitive.

90% of the candidates attempted the question and 60% of them scored above average. Candidates should

- (i) Endeavour to cover the entire syllabus
- (ii) Familiarise themselves with the key concepts in management and finance.

MARKING GUIDE

SOLUTION 3

MARKS

(a) Any five categories of unemployment 5 categories x 2 marks	10
(b) Any four implications of a fall in the value of a nation's exchange rate 4 points x 1 mark	4
(c) Brief explanation of each of the six business terms 6 business terms x 1 mark	<u>6</u>
Total	<u>20</u>

SOLUTION 4

(a) **McGregor: Theory X and Theory Y**

Douglas McGregor (in *The Human Side of Enterprise*, 1960) suggested that there are two different approaches to managing people. Each approach is based on a different view on whether or not individuals can be motivated at work. McGregor called the two management approaches Theory X and Theory Y.

Theory X

The Theory X approach to management is an authoritarian style. The manager instructs his staff and tells them what to do. The Theory X approach is based on the following assumptions about people at work:

- i. An average person dislikes work and will do all that is possible to avoid it.
- ii. Individuals must therefore be forced to work towards the organisation's objectives, with the threat of punishment for not working properly.
- iii. An average person prefers to be directed, wants to avoid responsibility, has no ambition and wants security more than anything else.

Theory Y

The Theory Y approach to management is a participative management style, in which the manager encourages his staff to participate in decision-making. The Theory Y approach is based on the following assumptions about people at work:

- i. Putting effort into work is as natural as play.
- ii. Individuals will apply self-direction and self-control to work towards the objectives of the organisation, without the need for constant supervision or the threat of punishments.
- iii. The strength of an individual's commitment to the organisation's objectives is related to the rewards associated with achieving those objectives.
- iv. Individuals usually seek and accept responsibility.
- v. At work, the intellectual potential of an average person is only partly utilised. Individuals have much more potential than could be utilised.

- (b) The conditions in which theory Y is applicable include when:
- i. It is possible to get employees' commitment to achieving organizational goals and objectives.
 - ii. Subordinates are emotionally mature and are positively motivated to work.
 - iii. The nature of the work allows subordinates to have some flexibility or choice in how to get it done.
 - iv. Managers communicate effectively with subordinates and explain problems fully to them thereby encouraging them to exert self-direction and self-control.
 - v. Managers do not need to exercise authority.

EXAMINER'S REPORT

The question tests different approaches to management with emphasis on Theory X and Theory Y. 80% of the candidates attempted the question, 50% of those who attempted the question scored above 50% of the marks obtainable. Some of the pitfalls include inability to state the conditions in which Theory Y can be applied and difficulty in differentiating between the two theories.

For improved performance in future, candidates should:

- (i) Ensure total coverage of the syllabus
- (ii) Use the pathfinder and ICAN Study Text

MARKING GUIDE

SOLUTION 4		MARKS	MARKS
(a)	Explanation of Theory X. 4 points x 2 marks	8	
	Explanation of Theory Y. 4 points x 2 marks	8	
(b)	Any four conditions where Theory Y can be applied 4 conditions x 1 mark	4	
Total		<u>20</u>	

SOLUTION 5

XYZ Automobiles Nigeria Ltd Cash Budget for three months ending 31st March, 2017

	January ₦000	February ₦000	March ₦000	Total ₦000
<u>Receipts:</u>				
Sales collections (working)	435	470	540	1,442
Sales of truck	-	-	<u>800</u>	<u>800</u>
Total receipts (K)	<u>435</u>	<u>470</u>	<u>1,340</u>	<u>1,242</u>
<u>Payments</u>				
Purchases	204	200	196	600
Overheads	46	48	50	144
Wages	80	84	90	254
Plant	50	50	50	150
Tax	-	-	45	45
Dividends			<u>30</u>	<u>30</u>
Total payments (T)	<u>380</u>	<u>382</u>	<u>461</u>	<u>1,223</u>
Net cash flow (K-T)	55	88	879	1,022
Opening cash	80	135	223	80
Closing cash	135	213	1,102	1,102

NB: The total column is not a requirement of the question, but has been inserted for tutorials.

Cash collection from sales

	<u>Collections (₦'000)</u>		
Month sold	January	February	March
November	100	-	-
December	105	105	-
January	230	115	115
February	-	250	125
March	-	-	300
Total	435	470	540

EXAMINER'S REPORT

The question tests candidates' ability to prepare cash budgets. About 90% of the candidates attempted the question and about 60% scored above average marks.

Most of the candidates that failed this question did not understand budgeting principles and format. Also, they could not distinguish between receipts, payments and timing of cashflows particularly sales proceeds.

For future examinations, candidates are advised to

- (i) Use the pathfinder and ICAN Study Text
- (ii) Ensure adequate coverage of the syllabus.

MARKING GUIDE

	MARKS
Heading (including name of the company, the budget title and the period covered)	1
Each item in the cash budget carries $\frac{1}{2}$ mark	
30 ticks x $\frac{1}{2}$ mark	15
Workings to support cash collection from sales	
12 ticks x $\frac{1}{3}$ mark	4
Total	<u>20</u>

SOLUTION 6

Baseline Ltd

Calculation of the ARR of a machine

ARR = Average Annual Profit/Average Investment

Average Investment = $\frac{\text{Investment in year}_0 + \text{Investment in year}_n}{2} + \text{working capital}$

	₦million
TOTAL CASH FLOW BEFORE depreciation = ₦m(244+286+374+156) =	1060
Less : Total depreciation = ₦m(500-5)	(495)
Total cash flow after depreciation	565
Average annual profit = ₦m (1060-495) / 4=	141.25
Average investment= ₦m(500 + 5)/2 + 5 =	257.5
ARR = (141.25/257.5) x 100	= 54.85% approx. 55%

The target ARR is 20% and the expected ARR is 56% which is significantly higher, so the machine should be purchased.

Advantages the IRR method

The main advantages of the IRR method of investment appraisal are:

- i. It is based on cash flows, not accounting profits.
- ii. It recognizes the time value of money.
- iii. Information provided by IRR is better understood by managers than the one provided by NPV method.
- iv. For accept/reject decisions on individual projects, the IRR method will reach the same decision as the NPV method.
- v. It gives a relative measure of the value of a proposed investment in the form of a percentage which can be compared with the company's cost of capital.
- vi. It considers the cash flow over the whole of the project's life

Disadvantages of IRR method

- i. It is a relative measure (% on investment) not absolute measure in Naira
- ii. Because it is a relative measure, it ignores the absolute size of the investment
- iii. Where the cash flow patterns are non-conventional, there may be several IRRs or no IRR.
- iv. If the investments are mutually exclusive, and only one of them can be undertaken, the correct choice is that which depends on the size of each of the investments.
- v. IRR method of appraisal can lead to an incorrect decision if it is used to make a choice between mutually exclusive projects
- vi. Unlike the NPV method, the IRR method does not indicate by how much an investment project should add to the value of the company.

EXAMINER'S REPORT

The question tests candidates' knowledge of investment appraisal methods.

About 50% of those that attempted the question failed because of their inability to incorporate the concept of working capital in their solution. Candidates should acquaint themselves with this very important topic in preparing for future examinations.

MARKING GUIDE

	MARKS	MARKS
(a) Heading (including name of the company and the title of the investment appraisal method)	1	
Formulae:		
- ARR	$\frac{1}{2}$	
- Average investment	$\frac{1}{2}$	
Total cash flow before depreciation	2	
Total depreciation	1	
Total cash flow after depreciation	1	
Average Annual Profit	1	
Average investment	1	
ARR	1	
Decision taken and the reason	<u>1</u>	<u>10</u>
(b) Any five points on the advantages of IRR 5 points x 1 mark	5	
Any five points on the disadvantages of IRR 5 points x 1 mark	<u>5</u>	<u>10</u>
Total		<u>20</u>

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

FOUNDATION LEVEL EXAMINATION – MAY 2017

BUSINESS LAW

Time Allowed: 3 hours

SECTION A: MULTIPLE-CHOICE QUESTIONS (20 MARKS)

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ALL QUESTIONS IN THIS SECTION

1. Which of the following is **NOT** a source of Nigerian Law?
 - A. Treaty
 - B. Common Law
 - C. Statutes of General Application
 - D. Statutes of Limited Application
 - E. Nigerian Statutes
2. Which of the following is **NOT** a court of coordinate jurisdiction with the others?
 - A. High Court of a State
 - B. Federal High Court
 - C. Customary Court of Appeal
 - D. Sharia Court of Appeal
 - E. House of Lords
3. Which of the following is a **PURPOSE** of civil proceedings?
 - A. Punishment
 - B. Imprisonment
 - C. Reprimand
 - D. Compensation of the aggrieved party
 - E. Peer review
4. Which of the following is **NOT** an element of a partnership?
 - A. Association of at least two persons
 - B. A trade or vocation
 - C. Making of profit
 - D. Sharing of profit
 - E. Tenancy in Common
5. The Secretary of a Public Company may have any of the following qualifications **EXCEPT** being a
 - A. Chartered Accountant
 - B. Chartered Secretary and Administrator
 - C. Legal Practitioner
 - D. Body corporate or firm consisting of the professionals listed above
 - E. Chartered Insurer

6. Under the Companies and Allied Matters Act, the tests for insolvency do **NOT** include
- A. Inability of a company to pay a debt exceeding ₦2,000 three weeks after demand
 - B. The existence of court process issued in respect of a judgment debt
 - C. A court ruling that the company is unable to pay its debts
 - D. The existence of company's liability in excess of its assets
 - E. Outstanding debts owed the company in excess of one billion naira
7. Which of the following is **NOT** a function of ethical code?
- A. Administration by a professional body
 - B. Moral persuasion against wrongdoing
 - C. Regulation of professional conduct
 - D. Ensuring high standard of conduct
 - E. Protection of vulnerable consumers against the excesses of service providers
8. Fraudulent intents include the following **EXCEPT** an intent to
- A. Permanently deprive the owner of the thing
 - B. Use the thing as a pledge or security
 - C. Part with a thing on a condition as to its return that the person taking it may be unable to perform
 - D. Deal with the thing in such manner that it cannot be returned in substantially the same condition as it was when it was taken
 - E. Use it for a limited time
9. Which of the following is **NOT** a purpose of the Money Laundering (Prohibition) Act?
- A. Limiting the amount of cash withdrawal from bank account
 - B. Regulating public cash procurement
 - C. Regulation of over-the-counter exchange transaction
 - D. Provision of proper means of identifying bank customers
 - E. Enabling the National Drug Law Enforcement Agency to place surveillance on bank account
10. A statement in an e-mail message could be authenticated by
- A. Comparing the e-mail message with other self-authenticating e-mail messages
 - B. The testimony of a related witness
 - C. Some common features of the accepted e-mail message
 - D. The oral evidence of a computer operator
 - E. Franking processes

11. Which of the following is **NOT** an exception to the rule on privity of contract?
- A. Third party right of action under the Motor Vehicles (Third Party Insurance Act
 - B. Trustee's right of action
 - C. Agency with power of attorney
 - D. Restrictive Covenant
 - E. Trade customs
12. In the law of agency, ratification is equal to
- A. Ex post facto authority
 - B. Posterior authority
 - C. Antecedent authority
 - D. Exterior authority
 - E. Conveyed authority
13. For an action to be grounded in negligence, there must be
- A. Premeditation of harm
 - B. Real threat
 - C. Aggravation of harm
 - D. Contributory carelessness
 - E. Consequential damage to the plaintiff
14. Sale, in a sale of goods transaction, is the transfer of
- A. Possession
 - B. Possession and property
 - C. Property
 - D. Bailment
 - E. Merchantable quantity
15. The hirer, in a hire purchase contract, has the following rights **EXCEPT** the right to
- A. Use the goods
 - B. Quiet possession of the goods
 - C. Know the exact instalments to be paid
 - D. Choose the insurer if the goods is motor vehicle
 - E. Repossess the goods
16. A contract to pay indemnity for an event that is bound to happen is called
- A. Suretyship
 - B. Guaranteeship
 - C. Insurance
 - D. Assurance
 - E. Protection

17. Banking business includes the following **EXCEPT**
- A. Purchase of bills and cheques
 - B. Granting of money loans
 - C. The effect of transfers and clearing
 - D. Warehousing
 - E. Purchasing and Sales of Securities for account of others
18. For a person to be a party to a contract of employment, he/she must be at least
- A. 16 years old
 - B. 17 years old
 - C. 18 years old
 - D. 19 years old
 - E. 21 years old
19. The purposes of a charitable trust include
- A. Advancement of education
 - B. Governance of private institutions
 - C. Public acceptance
 - D. Protection of Soliloquy
 - E. Security of tenure
20. The objects of the Central Bank of Nigeria include the following **EXCEPT**
- A. Ensure monetary and price stability
 - B. Issue of legal tender
 - C. Maintenance of external reserves
 - D. Promotion of sound financial system
 - E. Banker to the ECOWAS

SECTION B:**OPEN - ENDED QUESTION****(80 MARKS)**

INSTRUCTION: YOU ARE REQUIRED TO ANSWER ANY FOUR OUT OF THE SIX QUESTIONS IN THIS SECTION

QUESTION 1

- a. Courts of record are classified as superior and inferior courts.

Required:

State **THREE** superior courts of record. (3 Marks)

- b. Case law is also known as judicial precedents.

Required:

State **FOUR** advantages of case law. (4 Marks)

- c. Adigwe and thirty of his friends formed an association named "Adigs 30 Partners" in 2015. Last week, all the friends met and decided to register "Adigs 30 Partners" under the Business Names provisions of the Companies and Allied Matters Act. To that effect, they have approached you for legal advice.

Required:

- i. Advise Adigwe and his friends on the legality of their proposal. (2 Marks)
- ii. State **THREE** types of business that could fit the proposal of Adigwe and his friends. (6 Marks)
- d. State **FIVE** reasons for which the Corporate Affairs Commission may refuse to register the documents of a proposed company. (5 Marks)
- (Total 20 Marks)**

QUESTION 2

- a. Ajoge Plc has just been incorporated as a manufacturing company. It desires to uphold all laws and business ethics. Consequently, the directors have approached you for an advice on the following matters that relate to the General Meeting:

i. The maximum period within which to hold the first Annual General Meeting. (2 Marks)

ii. The interval between one general meeting and the next. (1 Mark)

iii. The period for which the Corporate Affairs Commission may extend the holding of an Annual General Meeting. (1 Mark)

- iv. **FOUR** of the Ordinary Businesses that the company must carry out. (4 Marks)
 - v. Any other meeting that the company must hold urgently and the time line. (2 Marks)
- b. Section 105(1) of the Companies and Allied Matters Act (CAMA) provides that “except as provided by this Act, a company having share capital shall not reduce its issued capital.”
- Required:**
- i. State **TWO** cases of capital reduction permitted under the CAMA. (2 Marks)
 - ii. State **TWO** purposes for which a company may reduce its share capital under the CAMA. (4 Marks)
- c. State **FOUR** features of a Limited Partner. (4 Marks)
- (Total 20 Marks)**

QUESTION 3

- a. Explain briefly the role of the Securities and Exchange Commission (SEC) in the appointment of a Company Auditor. (2 Marks)
- b. Jaugernaut Plc borrowed ~~₦~~100 million from Kokote Bank Plc and secured the payment of the loan with a property named in the loan document as the house at No 2, Coconut Avenue, Enugu. The document is expressed to be a deed, and the borrower company does not have the power to manage the house in the ordinary course of business. The house is transferred to Kokote Bank Plc subject to cessation on redemption.

Required:

- i. Explain the nature of the security of the indebtedness under insolvency law. (2 Marks)
 - ii. From the facts, state if it amounts to a mortgage or pledge and indicate the type. (4 Marks)
- c. Adikolu, a tax consultant and real property dealer, took possession of a house at 2, Wharf Road, Kokoko in Delta State so as to collect the rent due from tenancy of the house on behalf of Boss who lives in the United States. Adikolu collected rents on the house for two years in advance to the tune of ~~₦~~50 million without informing Boss. On learning that Boss would be visiting Nigeria after five years, he removed from the house and sold fifty air-conditioning units and thereafter set the property on fire.

Required:

In criminal law, explain the implication of Adikolu's conduct in

- i. Collection of the rent without informing Boss; and (3 Marks)
 - ii. Removing and selling the air-conditioning units. (3 Marks)
- d. The National Drug Law Enforcement Agency has certain powers over bank accounts pursuant to the Money Laundering (Prohibition) Act.

Required:

State **THREE** powers that the Agency may exercise to identify and locate proceeds of property or things related to commission of offence.

(6 Marks)

(Total 20 Marks)

QUESTION 4

- a. The terms of a contract may be express or implied.

Required:

State **THREE** ways by which a term may be read into a contract as if the parties had agreed to them. (6 Marks)

- b. Electronic contracts vary in types from paper and parol contracts.

Required:

State **THREE** types of e-contract. (3 Marks)

- c. The law on computer fraud cases allows the calling of expert witnesses.

Required:

State **THREE** things that an Accountant must satisfy the court on as an expert witness in a computer fraud case. (6 Marks)

- d. There is a marked difference between criminal law and ethics.

Required:

Distinguish between an offence and ethics (5 Marks)

(Total 20 Marks)

QUESTION 5

- a. The Directors of Kitanga Bank Plc intend to please the shareholders of the bank by ensuring that they distribute all the profits of the bank as dividends without any fund conservation. They plan to do that so that the shareholders may vote to retain them in office. The bank's paid up capital is less than its reserve.

Required:

As the Company Secretary of Kitanga Bank Plc with knowledge of the Banks and Other Financial Institutions Act, advise the bank on reserve funds.

(6 Marks)

- b. Agents have rights that the law accords them.

Required:

State **THREE** rights of an agent

(3 Marks)

- c. While Kalu was away, Kazeem acted for him as the manager of KK Firm. In the process, Kazeem gave a client a wrong advice, although Kalu had advised Kazeem to refrain from giving such an advice in his absence.

Required:

Explain briefly whether or not Kalu is liable in tort to the client.

(3 Marks)

- d. There are implied conditions in all contracts of sale of goods.

Required:

Where goods are sold by sample, which conditions are implied?

(3 Marks)

- e. State **TWO** remedies of a hirer in a Hire Purchase contract.

(2 Marks)

- f. A contract of insurance has elements of offer and acceptance.

Required:

Explain briefly the making of offer and acceptance in insurance contract.

(3 Marks)

(Total 20 Marks)

QUESTION 6

- a. Kukute employed Uthdom to oversee the Customer Relations Department of his business. He also employed Dunga as the Head of Haulage Division of the business. Last week, Police officers from the Divisional Headquarters arrested Dunga because a pistol was found in the luggage of a passenger on Kukute's truck that Dunga was driving. Dunga claims that he gave the person a ride because he is his neighbour. The Police have arrested Dunga and impounded Kukute's truck. A customer of Kukute also wrote a petition to him, alleging that Uthdom takes gratification from customers.

Required:

Explain briefly the remedies that Kukute has against Dunga and Uthdom respectively under employment law. (4 Marks)

- b. A private trust is classified into three broad categories.

Required:

Explain briefly **TWO** ways of creating a private trust. (4 Marks)

- c. A Bill may be an "Order Bill" or a "Bearer Bill".

Required:

i. State the **TWO** factors for identifying an "Order Bill" (2 Marks)

ii. Explain briefly a "Bearer Bill" (2 Marks)

- d. Electronic evidence is currently admissible under the Nigerian law.

Required:

On which condition could a customer's online transaction be admitted in evidence? (2 Marks)

- e. The firm of Hazeem is being considered as the Auditor of Kunte Plc. The company has approached you for an advice on his duties as auditor.

Required:

State **THREE** matters that Hazeem's audit must cover. (6 Marks)

(Total 20 Marks)

SUGGESTED SOLUTION

Section A - MULTIPLE-CHOICE SOLUTIONS

PART A

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

EXAMINER'S REPORT

The questions cover the entire syllabus. All the candidates attempted them and about 75% of them passed.

SOLUTION 1

- a. Superior courts of record include the following:
 - i. Supreme Court of Nigeria;
 - ii. Court of Appeal;
 - iii. Federal High Court;
 - iv. High Court of the Federal Capital Territory;
 - v. Customary Court of Appeal;
 - vi. Sharia Court of Appeal;
 - vii. High Court of a State; and
 - viii. National Industrial Court.
- b. The advantages of Judicial Precedents are:
 - i. It makes for an orderly development of the law;
 - ii. It confers certainty and consistency on the law;
 - iii. It saves the time of the court;
 - iv. To the extent that law could change through overruling, reversing and distinguishing, it makes law dynamic or flexible;
 - v. It curtails arbitrariness and excesses of judicial officers.
- c. The advice to Adigwe and his friends is as follows:
 - i. Adigwe 30 Partners is not validly registrable as a general partnership for trading because the membership must not exceed 20 by virtue of Section 19 of the Companies and Allied Matters Act;
 - ii. Three types of business that could be registered as partnerships with 30 or more members are –
 - A partnership for the practice of accountancy by persons that are qualified to practice accountancy under the Nigerian law;
 - A partnership for the practice of law by persons, all of whom are legal practitioners; and
 - A cooperative society registered under the applicable laws in Nigeria.
- d. FIVE reasons for which the Corporate Affairs Commission may refuse to register the documents of a proposed company are if:
 - i. They do not comply with the provisions of the Companies and Allied Matters Act (CAMA);
 - ii. Any of the proposed business of the company is illegal;
 - iii. Any of the subscribers to the memorandum is incompetent or disqualified from being a member of the company under Section 20 of the CAMA;
 - iv. There is non-compliance with any other law on registration of companies; or
 - v. The proposed name of the company conflicts with a registered trade mark or name in Nigeria.

EXAMINER'S REPORT

The question tests candidates' understanding of

- (a) Superior courts of records;
- (b) Advantages of judicial precedents;
- (c) Partnership that may exceed twenty in membership; and
- (d) The reasons for which the Corporate Affairs Commission may refuse to register the documents of a proposed company.

Over 95% of the candidates attempted the question and performance was good

MARKING GUIDE

	Marks	Total
(a) State THREE superior courts		3
(b) State FOUR advantages of case law		4
(c) i. Proposed partnership is illegal	2	
ii. *Partnership for practice of Accounting	2	
*Partnership for practice of law	2	
*Cooperative Society	<u>2</u>	
		8
(d) State 5 reasons C.A.C. may not register the documents of a proposed company		<u>5</u>
		<u>20</u>

SOLUTION 2

- a. The advice to the Directors of Ajoge Plc is as follows:
- i. The period within which the company must hold its first Annual General Meeting is 18 months after incorporation, provided that it need not be in the year of incorporation;
 - ii. The interval between one Annual General Meeting and the next should not be more than 15 months;
 - iii. The maximum period for which the Corporate Affairs Commission may extend the holding of Annual General Meeting is 3 months;
 - iv. Matters classified as Ordinary Businesses at the Annual General Meeting are as follows:
 - Declaration of dividends;
 - Presentation of financial statements;
 - Presentation of the Report of Directors and Auditors;
 - Election of Directors;
 - Appointment and fixing of the remuneration of Auditors; and
 - Appointment of the Audit Committee.
 - v. The company must hold the Statutory Meeting within 6 months from the date of incorporation.
- b.
- i. Permitted cases of capital reduction are –
 - If so authorized by the company's Articles of Association;
 - If authorized by a special resolution; or
 - By obtaining the permission of the court.
 - ii. The **TWO** purposes for which a company may reduce its share capital are to:
 - Extinguish or reduce liability on its unpaid share or capital;
 - Cancel any paid up share capital which is lost or unrepresented by available assets; or
 - Cancel any paid up share capital that is in excess of the company's needs.
- c. The features of a limited partner are as follows:
- The partner is liable to the extent of his/her contribution to the business;
 - The partner cannot bind the firm;
 - The partner cannot participate in managing the company, but he may give advice;
 - The partner's death or insanity will not dissolve the partnership as that

- of a general partner;
- The partner cannot dissolve the firm by notice; and
- The partner cannot assign his/her share in the partnership without the consent of other partners.

EXAMINER'S REPORT

The question tests candidates' understanding of:

- a. Periods of company meetings;
- b. Ordinary Businesses of the General Meeting;
- c. The exceptions to the rule on reduction of company capital as well as the purposes of the reduction; and
- d. The features of limited partners.

About 90% of the candidates attempted the question and performance was average.

MARKING GUIDE

	Marks	Total
(a) Matters that relate to holding of General Meeting of company:		
i. State period within which to hold First Annual General Meeting – 18 months	2	
ii. State intervals between Annual General Meeting – 15 months	1	
iii. State period for which C.A.C. may extend Annual General Meeting	1	
iv. State 4 Ordinary Businesses	4	
v. Meeting Public Company must hold urgently	<u>2</u>	
		10
(b) i. State TWO permitted cases of capital reduction under C.A.M.A.	2	
ii. State TWO purposes of capital reduction	<u>4</u>	
		6
(c) State FOUR features of Limited Partnership		<u>4</u>
		<u>20</u>

SOLUTION 3

- (a) The role of the Securities and Exchange Commission in the appointment of a Company Auditor is to register the person who shall audit a public company, under the terms and conditions it may prescribe from time to time.

- (b)
 - i. The security is a fixed charge in nature because the document is expressed to be a deed, and the borrower company does not have the power to manage the house in the ordinary course of business.

 - ii. The transaction is a legal mortgage because the document is expressed to be a deed.
In addition, proprietary interest in the house is transferred to Kokote Bank Plc subject to cessation on redemption.

- (c)
 - i. By collecting the rent on Boss' house without informing him, Adikolu has demonstrated an intent to permanently deprive Boss of the money, which is an element of the offence of Stealing;

 - ii. The removal by Adikolu of the fifty air-conditioning units from the building showed that it was movable and capable of being stolen. Thus, Adikolu stole the air conditioning units.

- (d) The National Drug Law Enforcement Agency has the following powers over bank accounts pursuant to the Money Laundering (Prohibition) Act:
 - i. To place a bank account under surveillance;
 - ii. To tap any relevant telephone line or place it under surveillance;
 - iii. To have access to any computer system; and
 - iv. To obtain communication of any authentic instrument or private contract, including all banks, financial and commercial records.

EXAMINER'S REPORT

This question tests candidates' understanding of:

- a. The requirement for Public company auditor to register with the Securities and Exchange Commission;
- b. Fixed charge and legal mortgage;
- c. Elements of stealing; and
- d. The powers of the National Drug Law Enforcement Agency over bank accounts under the Money Laundering (Prohibition) Act.

Less than 50% of the candidates attempted the question and performance was poor.

MARKING GUIDE

	Marks	Total
(a) State that the Auditor must be registered by SEC		<u>2</u>
(b) i. Explain the nature of security-fixed charge	2	
ii State that it amounts to legal mortgage	<u>4</u>	
		<u>6</u>
(c) i. State action as demonstrating intent to permanently deprive owner of rent	3	
ii State that air conditioning is removable and capable of being stolen	<u>3</u>	
		<u>6</u>
(d) State THREE powers of NDLEA		<u>6</u>
		<u>20</u>

SOLUTION 4

- (a) A term may be read into a contract as if the parties had agreed through the
- i. Custom of the particular trade, profession or locality;
 - ii. Provisions of the law regulating that transaction;
 - iii. Decisions of the courts in previous similar cases; and
 - iv. Inference of the court in novel cases.
- (b) e-contracts are of the following three types:
- i. Click-through contract;
 - ii. Shrink-wrap contract; and
 - iii. Browse-wrap contract.
- (c) **THREE** things that an accountant must satisfy the court on as an expert witness in a computer fraud case are that:
- i. The document sought to be tendered was generated in the ordinary course of business;
 - ii. The document is either the original or a certified true copy of the document generated from the computer;
 - iii. The function of the person tendering the document is related to the subject matter of the document.
- (d) An offence is a crime or wrong against the state, the guilt for which is based on the proof of the two elements of *mens rea* (guilty mind) and *actus reus* (guilty act). Upon conviction, the offender is sentenced to a custodial or non-custodial punishment.

Ethics consist of commonly accepted mode of conduct or behavior in a given society, or a moral persuasion against wrongdoing or unacceptable conduct.

EXAMINER'S REPORT

The question tests candidates' knowledge of:

- a. implied terms in contracts;
- b. e-Contract types;
- c. things that an accountant must prove in court as an expert witness; and
- d. the distinction between an offence and ethics.

About 55% of the candidates attempted the question and performance was below average.

MARKING GUIDE

	Marks	Total
(a) State THREE implied terms of contract		6
(b) State THREE types of implied contract		3
(c) State THREE things an accountant must present to court in computer fraud case		6
(d) Define offence	3	
Define Ethics	<u>2</u>	
		<u>5</u>
		<u>20</u>

SOLUTION 5

- (a) Kitanga Bank will violate Section 16 of the Banks and Other Financial Institutions Act by paying out all its profits to its shareholders.

By virtue of the provision above, every licensed bank must, out of its annual net profits and before dividends are declared, transfer not less than 30% to its reserve fund where the fund is less than its paid up capital, or 15% where the reserve fund is equal to, or is in excess of the paid up capital.

The penalty for non-compliance is ₦500,000.

- (b) The rights of an agent include right to:

- i. Be indemnified by the principal for any cost reasonably incurred in the performance of his duties;
- ii. Reward for work done;
- iii. Have the principal ratify his lawful actions;
- iv. Hold the principal liable for all acts authorized by him;
- v. Enforce a contract against a third party; and
- vi. Have lien over her principal's goods for commission due to her.

- (c) Kalu is vicariously liable for the act of Ade because the latter gave the wrong advice in the course of Kalu's business.

According to *Twine v Bean's Express Limited*, Kalu's warning to Ade will not avail Kalu to be exonerated since the act is committed in the normal course or scope of Ade's employment.

- (d) Under the Sale of Goods Act, where goods are sold by sample, it is implied that

- i. The bulk will correspond to the sample and the buyer would have reasonable opportunity to compare the sample with the bulk;
- ii. The goods are free from apparent defect.

- (e) The remedies of a hirer where there is a breach by the owner include the following:
- i. Repudiation of the contract;
 - ii. An action for damages where the breach is due to defect in the owner's title.

- (f) In an insurance contract, the insurer makes an invitation to treat to the applicant or proposer when she gives him the proposal form to fill.

The applicant makes an offer when he submits the form he has completed.

The insurer indicates her acceptance by accepting the filled proposal form.

EXAMINER'S REPORT

The question tests candidates' understanding of:

- a. the reserve fund requirement for licensed bank out of profits;
- b. the rights of agents;
- c. vicarious liability in torts;
- d. implied terms in sale of goods; and
- e. the remedies of a hirer.

About 85% of the candidates attempted this question and 40% of them passed.

MARKING GUIDE

	Marks	Total
(a) State law on licensed banks reserve fund	5	
State penalty for non-compliance	<u>1</u>	6
(b) State THREE rights of an agent		3
(c) - State that Kalu is vicariously liable for Ade's act	2	
- Kalu's warning to Ade will not avail him	<u>1</u>	3
(d) i. Bulk will correspond with sample	2	
ii. Goods are free from apparent defect	<u>1</u>	3
(e) State TWO remedies of hirer		2
(f) Name proposer form as invitation to treat. Filling of form by applicant as offer	2	
Acceptance of form by insurer	<u>1</u>	3
		<u>20</u>

SOLUTION 6

- (a) Since Dunga is in the process of being investigated for an alleged commission of an offence, Kukute could interdict him pending the conclusion of the investigation.

Kukute could suspend Uthdot on the basis of the allegation of receipt of gratification, and then investigate the allegation.

- (b) A Private Trust may be created in any of the following ways:
- i. **Express trust** – This is created deliberately and expressly by the settlor vesting property in trustees or constituting herself a trustee for the beneficiaries;
 - ii. **Implied Trust** – This is known also as a Resulting Trust, and it arises from the presumed intention of the settler;
 - iii. **Constructive Trust** – This Trust is imposed by equity on the parties involved regardless of their intention, and is designed to prevent persons from unlawfully benefitting from trust property.
- (c) i. The two factors for identifying Order Bill are as follows:
- The word ‘Order’ must be written on it; and
 - It is payable to the specified person without any prohibition of transfer
- ii. Bearer Bill is expressed to be payable to the bearer, that is, the person in possession of the Bill by mere delivery.
- (d) Evidence of a customer’s online transaction is admissible if it is the customer’s online activity on the Internet Service Provider’s (ISP’s) record that is properly authenticated.
- (e) As the Auditor of Kunte Plc, the firm of Hazeem’s investigation must form an opinion on whether or not
- i. The company has kept proper accounting records and the auditors have received proper returns from the branches not visited by them;
 - ii. The company’s financial statements agree with the accounting records and returns;
 - iii. The information in the directors’ report for the accounting year is consistent with the accounts; and
 - iv. That the financial statements present a true and fair view of the transactions.

EXAMINER'S REPORT

The question tests candidates' understanding of the:

- a. remedies of an employer against employees;
- b. classification of private trusts;
- c. admission of electronic evidences; and
- d. the duties of an auditor

About 50% of the candidates attempted the question and performance was average

MARKING GUIDE

	Marks	Total
(a) - Dunga to be interdicted	2	
- Uthdot to be suspended	<u>2</u>	4
(b) Describe creation of TWO out of Express Trust, Implied Trust and Constructive Trust		4
(c) i. State TWO factors that identify Order Bill	2	
ii. Define Bearer Bill	<u>2</u>	4
(d) State condition for admitting evidence of customer online transaction		2
(e) State THREE things company auditor's opinion must show		<u>6</u>
		<u>20</u>