

Linear Programming



THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

(Established by Act of Parliament No 15 of 1965)

Are you a young man/woman?
Do you have **5 credits** in WAEC, NECO, GCE, etc?

If yes, please reject the lockdown of your
future and urgently register for the

March 2021 ATSWA Examination

For more details call
0803 714 6126, 0805 530 2710.
or visit www.icanig.org

"It always seems impossible until it's done" - Nelson Mandela

 [ican_ng](https://www.instagram.com/ican_ng)

 [ICAN_NGR](https://twitter.com/ICAN_NGR)

 [ICANngr](https://www.facebook.com/ICANngr)

 www.icanig.org

 0704 032 7465



IN THIS ISSUE

NEWS

4-5

- Adhere Strictly to Conduct of Professionalism, Adewuyi Tells New AAT Inductees
- Distinguish Yourself As a Professional, ICAN Charges New Members
- ICAN Blacklists Six Students for Examination Malpractices

COVER

6-10

- Linera Programming
- Professor Taiwo Ashaolu

LIST OF ICAN RECOGNISED TUITION CENTERS

12-13

THE EXAMINER

14-21

EDITORIAL BOARD

Chairman

Haruna N. Yahaya (Mallam) mni, FCA

Deputy Chairman

Sylvester Nwanna, FCA

Members

Yekini Iskilu Ojo, FCA
Allison Amachree Rollins, FCA
Oseni Michael, FCA
Ochei Anthony Onochie, FCA
Olusola Esther Igbekoyi (Dr, Mrs.), FCA
Oyedokun Godwin Emmanuel (Prof.), FCA
Adewoyin Mojisola (Mrs.), FCA
Eke Robert Ike (Dr.), FCA
Augustine Ojeh (Dr.), FCA
Mr. Okonkwo Philip Uchechukwu, FCA
Ben Ukaegbu (Dr.), FCA

EDITORIAL STAFF

EDITOR

Bunmi Owolabi

DEPUTY EDITOR

Dayo Kowe

ASSISTANT EDITOR

Muyiwa Dare

ADVERTS

Jacob Nkem

LAYOUT & DESIGN

Alonge Moyosore T.

ICAN Students' Journal

(ISSN: 1119-9636) is published quarterly by the Institute of Chartered Accountants of Nigeria. Plot 16, Professional Centre Layout, Idowu Taylor Street, Victoria Island, P.O. Box 1580, Lagos. Tel: 09053847510, 09053847511. E-mail: info.ican@ican.org.ng corporateaffairs@ican.org.ng; ICANWebsite:www.icanig.org

The views expressed by correspondents or contributors in this journal are not necessarily those of the Institute. The Institute reserves the right to refuse, cancel, amend or suspend an advertisement or insertion and no liability can be accepted for loss arising from non-publication or late publication of any advertisement or insertion. All articles are subject to editing. By making submissions to ICAN Students' Journal, the contributors undertake that the contributions are original and have not been accepted or submitted elsewhere for publication.

Correspondence should be addressed to:
The Corporate Communication Directorate,
ICAN P.O. Box 1580, Lagos.

Editor's Note

Solving problems is the prerogative of the management of any organisation and this could be done in many ways to realize the objectives of the organisation. In our lead article in this edition entitled "Linear Programming", the author described Linear Programming as a mathematical technique available to management for solving problems of rationing limited facilities and resources among alternative uses in such a way that the optimum benefits can be derived from their utilization.

According to him, it is a procedure adopted to maximize or minimize the values of some objectives, subject to some constraints e.g. maximizes contribution, gain, opportunities or minimize cost, time, loss or threats.

He added that Linear programming is applicable to decisions such as product mix selection, production planning and scheduling, warehouse shipping pattern, transportation routes., capital rationing, blending diet selection, resource allocation and assignment problems. The author gave valuable illustrations to drive home the topic. Please seize the opportunity to gain insights to the topic.

The Institute recently reviewed its syllabus for professional examinations as part of its resolve to continue to produce future-ready Chartered Accountant with skills and competencies desired by the market. The syllabus which takes effect in November 2021 takes into account the new trends in the Nigerian economic environment such as the Finance Act 2019 which introduced new developments in the country's tax system and the new Companies and Allied Matters Act (CAMA 2020).

It would be recalled that the current syllabus was reviewed in 2018 but the rapidly changing environment necessitated a revisit of the status quo from the five-year policy of the syllabus review to a more regular one that proactively responds to the demands of the market. The details of the syllabus review and other news items are published in this edition for your reading delight.

As usual, we publish some past questions and solutions to guide our students on how to tackle examination questions in future.

The detailed reports of all these and other regular columns are contained in this edition.

Your comments and contributions are welcome. Please contact the Editor via: editor@ican.org.ng or aoololabi@ican.org.ng

Adhere Strictly to Conduct of Professionalism, Adewuyi Tells New AAT Inductees



Overall best qualifying candidate at the 66th induction ceremony Asipa Oluwaseye Ibukun with the President, Dame Onome Adewuyi FCA



Best qualifying female candidate at the 66th induction ceremony Adefusi Oluwaseun Praise with the President, Dame Onome Adewuyi FCA.

The newly inducted members of the Association of Accounting Technician West Africa (AATWA) of the Institute have been charged to adhere strictly to the rules and conduct of professionalism the needs of its members.

The President of the Institute, Dame Onome Joy Adewuyi gave the admonition at the 53rd induction ceremony for 244 members of AATWA, at Amuwo Odofin, Lagos on Monday 14th December 2020.

She advised the inductees to adhere to the ethics of the profession and remain focused in order to succeed since they have chosen the best profession.

The ICAN President expressed satisfaction at the growth rate of accounting profession in Nigeria, adding that the world expects

Accountants to bring to the fore, the profession's culture of transparency, integrity and hard work.

In his paper entitled "From Youth to Legend: Pathway for the Young Professionals", the guest speaker and Past President of the Institute, Otunba Lateef Adebayo Owoyemi enjoined the new members not to relent in the pursuance of their set goal.

He urged the young professionals to embrace integrity and hard work to succeed in their chosen career. He said success can only come through discipline and good time management.

He said, "The way to success is to free your potential. Your potential is the unlimited you, the limitless you. Success is about setting reasonable goals as without goals, you simply drift and flow on the current of life. Goals are the fuel in the furnace of achievement,".

ICAN Unveils New Examination Syllabus

The Institute has launched a new syllabus for its professional in Examination. The new syllabus which takes effect from March 2021 was developed in line with the "Institute's bring to fore the technical skills acquired in the process resolve to continue to produce future-ready Chartered Accountants with skills and competences desired by the market".

She explained further that new trends in the Nigerian environment such as the Finance Act 2019 which introduced new developments in the country's tax system and the new Companies and Allied Matters Act (CAMA 2020) also presented added impetus for the review.

According to her, "a Chartered Accountant worth its salt is not just an expert in the technical aspect of the profession but

should be furnished with soft skills including effective communication, integrity, accuracy and good professional judgment".

She added that the current syllabus was reviewed in 2018 but the rapidly changing environment necessitated a revisit of the status quo from the five-year policy of the syllabus review to a more regular one that proactively responds to the demands of the market. The review also necessitated the restructuring the various levels of the Institute's examinations to reflect the new changes in the syllabus and equally expanded the contents of the various subjects against the backdrop of the new normal. While retaining the fifteen (15) subjects, there are now four (4) subjects at the Foundation level.

ICAN Blacklists Six Students for Examination Malpractices

The Institute has blacklisted six students caught cheating during the March/July 2020 diet of Professional Examinations. The numbers of the six students are:

- (i) Exam. Number: 20201/201442/S/12345
(Reg. number – 231770)
- (ii) Exam. Number: 20201/201746/S/134
(Reg. number – 207399)
- (iii) Exam. Number: 20201/205546/S/512345
(Reg. number – 189492)
- (iv) Exam. Number: 20201/306871/P/4
(Reg. number – 225533)
- (v) Exam. Number: 20201/300787/P/34
(Reg. number – 194155)
- (vi) Exam. Number: 20201/300093/P/123
(Reg. number – 240467)

During the March/July 2020 diet of the professional examinations, the six candidates were caught with various malpractices ranging from: written materials hidden inside calculator during Financial Reporting paper; written materials at the back of docket during Performance Management paper; candidate caught with written materials during PSAF paper; candidate caught in the toilet checking a written material during Advanced Taxation paper; candidate caught with mobile phone during Advanced Taxation paper and candidate caught with mobile phone during Strategic Financial Management paper.

The exhibit, the invigilator's report as well as the candidates confessions were evidences against them. After due investigations, the Council of the Institute approved that the six students be blacklisted and barred from all the Institute's examinations. They were deregistered as candidates and have all the papers taken during the March/July 2020 diet professional examination cancelled.

Issuance of Transcripts Automated

The Institute has strengthened the processing of transcripts issuance to make it seamless.

ICAN President Dame Onome Joy Adewuyi FCA said this during a virtual session with members of Joint Minds International on Friday, November 6, 2020 tagged "Time Out with ICAN President".

The event gave the President the opportunity to take numerous questions from members of the group who participated in the programme virtually about the Institute.

Mrs. Adewuyi explained that the reorganization of the transcript processing was part of the Institute's technology innovation which included the automation of its document management system in line with global standards.

She said that one of the major objectives of the Institute which she would drive during her presidency was to produce future-ready chartered accountants through continuous learning, unlearning and re-learning to adapt to the needs of the future. She advised members to sharpen their accounting and soft skills to make them indispensable to employers and users of accounting services.

The 56th President said that the Institute recognizes the importance of building a robust technology infrastructure for smooth-running of its affairs and would continue to invest in it, adding that the long term objective was to migrate its examinations to computer based testing system.

She also revealed that ICAN is working with other stakeholders to take the Accounting Technicians Scheme West Africa examination to the rest of Africa as a means of harmonizing accounting education at the sub-professional level in the continent, while also working on achieving reciprocity with other professional accounting organizations to give our members the opportunity to work anywhere in the world without having to write examinations again.

Linear Programming

By Professor T.O. Asaolu



This is a mathematical technique available to management for solving problems of rationing limited facilities and resources among alternative uses in such a way that the optimum benefits can be derived from their utilization.

It is a procedure adopted to maximize or minimize the values of some objectives subjects to some constraints e.g. maximize contribution, gain, opportunities or minimize cost, time, loss, threats.

Linear programming is applicable to decisions such as product mix selection, production planning and scheduling, warehouse shipping pattern, transportation routes., capital rationing, blending diet selection, resource allocation and assignment problems.

STRUCTURE OF A LINEAR PROGRAMMING

The structure of a linear programming model is divided into:

- Objective function
- Constraints
- Solution

Objective function

• The first stage of a linear programming structure is the determination of the objective function i.e. the required result. This may be to maximize opportunities strengths, gains, profits, contributions or to minimize loss, time, cost, weaknesses, threats etc.

• The following are the characteristics of an objective function:

Objective function

- The decision maker has a single and measurable objective.
- Several activities known as decision variables such as products, services and processes can be used to achieve the stated objective.
- There should be a mathematical relationship between the objective function and the decision variables involved in achieving the objective.
- The objective function is linear i.e. it is raised to the first power. This means that the contribution per unit for each product and the utilization of resources per unit are the same irrespective of the quantity of output produced and sold within the output range being considered.

• Each decision variable appears in a separate form.

• Constraints

• Constraints are divided into two groups namely:

- (a) Structural constraints
- (b) Non-negativity constraints.

Structural constraints

The structural constraints are the finite budgetary restrictions limiting production and sales indefinitely such as limited resource supply, shortage of materials, labor hours, machine hours, minimum

production standards. These constraints are usually stated in the form of inequalities which could either be less than or equal to (\leq) or greater than or equal to (\geq). This means that we cannot use more than the available resources supply or that we must have at least as much output as a required resource demand.

These constraints are usually stated in the form of inequalities which could either be less than or equal to (\leq) or greater than or equal to (\geq). This means that we cannot use more than the available resources supply or that we must have at least as much output as a required resource demand.

Each constraint which is presented in a mathematical form has a linear relationship i.e. concepts like diminishing marginal returns, discount on large quantity, synergy etc do not come into focus.

Non-negativity constraints

The non-negativity constraint confirms the fact that working must be limited to the first quadrant of the two Cartesian coordinates or that our recommended solution or decision variables must either be positive or zero but can never be negative.

- Solution
- The decision maker has to determine the combination of activities or decision variables that will result in the optimum value of the objective function after all constraints would have been satisfied.

- If only one resource is in short supply, the simple approach is to produce the product with the largest contribution margin per unit of limiting factor as priority.

- Where there are two or more limiting factors and a decision has to be taken to combine the production of just two products in such a way as to maximize profit or minimize cost, then the graphical approach can be adopted.

- Where there are two or more constraints and a decision has to be taken to combine for the production of more than two products in such a way as to maximize profit or minimize cost, then an iterative approach called the simplex method would have to be adopted.

DUAL PRICE, SHADOW PRICE OR SENSITIVITY ANALYSIS

- This is defined as the amount by which profit of a company will increase or decrease if any additional unit, of the scarce resource is made available or taken away.

- A dual price is the increase in the value of the objective function of a linear programme made possible by a unit relaxation in one of the constraints.

- A dual price or shadow price tests the sensitivity of profit to a slight favourable or unfavourable change in a scarce resource.

- Dual and shadow prices are associated with the opportunity cost of the resources. At the optimum combination, some constraints are binding i.e. at this point, the resources are in short supply for production or they are just enough to produce the optimal production max.

- Whereas at the optimum production level, some resources are available in excess quantity of what is required to meet the optimum combination, they will be said to be non-binding constraints, i.e. a constraint is said to be binding if and only if it is fully utilized at the optimum level of production.

- The dual or shadow price of a non-binding constraint is zero, therefore, shadow prices are found only for binding constraints.

Uses of dual/shadow prices

- Shadow prices are useful in the following ways:

- To assist management in determining the additional profit that can be earned by a company if one more unit of the binding constraint is made available.

- It shows the maximum amount which a company should be willing to pay to make available an extra unit of a scarce and binding constraint.

- Dual prices show the resources that are most critical.

- They can be used directly to evaluate new projects.

Limitations of dual/shadow prices

- The main limitation is that a given set of dual prices may have validity only for small changes from the optimal plan. Large changes in the quantity of resources used might mean that the nature of the optimal plan is changed.

Assumption underlying linear programming

- All relationships are linear.

- All constraints and coefficients are stated with certainty i.e. with known magnitudes.

- Solutions in fractional units are allowable; otherwise, rounding up of figures is performed.

- Negative solutions are not permitted for the decision variables.

- There is only one single objective at a time and this may be to maximize or minimize cost.

- Limitations of linear programming

- It fails to consider the effect of risk

- All relationships may not be linear at all times.

- Products are assumed to be infinitely divisible and that a fraction of a product may be produced. The truth of these assumptions lies in the type of product under consideration.

- Products are assumed to be independent. This may not be true at all times.

Approaches to linear programming solutions

- For a problem that has more than one constraint but with two products to be mixed, the graphical approach can be adopted. In a situation where there are more than one constraint, and the products involved are more than two, than an iterative method referred to as simplex shall be employed.

- Procedures for a graphical solution to a linear programming and problem

- State the objective function.

- State the structural constraints.

- State the negativity constraint.

- From the structural constraints, turn inequalities to equalities and determine the number of units that will be produced from the available resources if only one product will be produced at a time.

- Represent the extreme assumption of producing only one product at a time from the available resources on a graph.

- Label the inner most interceptions and this is the region where a feasible solution lies.

- Evaluate each of the interceptions to determine the point that will give the highest contribution.

- Arrive at a conclusion based on the evaluation done above. The point giving the highest contribution will yield the highest contribution.

- Test to know if any of the constraints is binding at the optimal production mix.

ILLUSTRATION

- KOBOWU NIG LTD. manufactures for sales two products X and Y from three raw materials, R1, R2 and R3 which are in short supply.

- The usage of these raw materials per product is as follows:

Raw material per unit

	X	Y
R1	6	2
R2	2	2
R3	2	4

The supply of each of raw material is limited to:

R1 = 240

R2 = 120

R3 = 200

The contribution per product is N100 for X and N16 for Y

You are required to:

(a) Formulate and determine graphically the optimal solution

(b) At the optimal solution, determine the shadow price of each raw material.

Solution to Illustration 1

Obj.fn...Max.C. = 100 X + 160Y
 Subject to the following constraints:
 $6x + 2y \leq 240$R1
 $2x + 2y \leq 120$R2
 $2x + 4y \leq 200$ R3
 $x, y, \geq 0$ Non negativity
 Turn inequalities to equalities

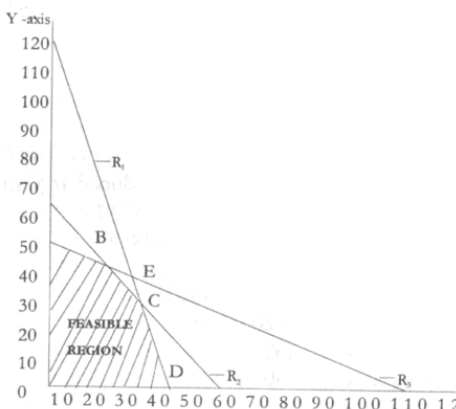
Obj.fn...Max.C. = 100 X + 160Y

Subject to the following constraints:
 $6x + 2y \leq 240$R1
 $2x + 2y \leq 120$R2
 $2x + 4y \leq 200$ R3

- $x, y, \geq 0$ Non negativity
- Turn inequalities to equalities
- If only X is produced:

	X	Y
R1....	40	0
R2....	60	0
R3....	100	0

Plot this value on a graph and label the inner-most inert-sections. The inner-most space will be the feasible region i.e. the optimal solution will be at one of these innermost inter-sections.



Evaluation of the intersections

X	Y	100X + 160Y = CONTRIBUTION N
0	0	100(0) + 160(0) = 0
A	0	100(0) + 160(50) = 8,000
B	20	100(20) + 160(40) = 8,400
C	30	100(30) + 160(30) = 7,800
D	40	100(40) + 160(0) = 4,000

DECISION - The optimal production mix to maximize contribution is to produce 20 units of X and 40 units of Y i.e. 20x and 40y since contribution is highest at this mix.

Determination of binding constraints

	X	Y	Raw material Consumed	Raw material Available	Surplus
R ₁	6(20)	+2(40)	= 200	240	40
R ₂	2(20)	+2(40)	= 120	120	-
R ₃	2(20)	+4(40)	= 200	200	-

• **DECISION** — Raw materials R₂ and R₃ are fully utilized at the optimal production mix and will therefore become binding constraints. Raw material R₁ still has 40 units surplus at the optimal production mix and can therefore not be a binding constraint. Once R₁ has been determined not to be a binding constraint, its shadow price would be zero.

B. Determination of the shadow prices of binding constraint.

SHADOW PRICE OF R1:

- Increase the availability of resource R2 by 1 and hold equation R3 constraint:

$2x + 2y = 121$
 $2x + 4y = 200$

- Solving these two equations simultaneously:

$2y = 79$
 $y = 39.5$
 $x = 21$

- Substitute these values into the contribution equation as follows:

$C = 100x + 160y$
 $= 100(21) + 160(39.5)$
 $= N8,420.00$

New contribution8,420
 Less contribution at the optimal mix 8,400
 SHADOW PRICE OF R2
 SHADOW PRICE OF R3

Increase the availability of resource R3 by 1 and hold equation R2 constant.

$2x + 2y = 120$
 $2x + 4y = 201$

- Solving these two equations simultaneously,
 $2y = 81$
 $y = 40.5$ and $x = 19.5$

- Substitute these values into the contribution equation as follows:
 $C = 100x + 160y$
 $= 100(19.5) + 160(40.5)$
 $= N8,430$

New contribution..... 8,430
 Less contribution at optimal mix 8,400
 SHADOW PRICE OF R3..... 30

Alternative approach: the dual pricing method

This method converts a maximization problem into a minimization one. In adopting the method to determine the shadow price of a scarce resource, the resources must be binding at the optimal product mix. In this situation, we have the following:

$2x + 2y = 120$ R2
 $2x + 4y = 200$ R3

Obj. fn. Max ... 100x + 160y

The above will now be converted into a minimization problems as follows:

Objective fn... Minimize... $120R_2 + 200R_3$
 Subject to...X constraints... $2R_2 + 2R_3 \geq 100$
 Y constraints... $2R_2 + 4R_3 \geq 160$

So, $2R_2 + 2R_3 = 100$
 $2R_2 + 4R_3 = 160$
 $2R_3 = 60$
 Shadow price of $R_3 = N30$
 $2R_2 + 2R_3 = 100$
 $2R_2 + 2(30) = 100$
 $2R_2 = 100 - 60$
 $2R_2 = 40$
 Shadow price of $R_2 = N20$

Obj.fn. Minimize..... $120R_2 + 200R_3$
 $= 120(20) + 200(30)$
 $= 2400 + 6000 = N8, 400$
 N8,400 as the optimal contribution derived in the maximization problem

• The Simplex method

The simplex method is an iterative approach that is used to solve linear programming problems that have more than two unknown variables.

Procedures for adopting the simplex method

- Formulate the problem into a standard form.
- Convert all the inequality signs to equality signs by adding extra variables known as the slack variables. Every constraint will have a slack variable added to its equation. The slack variable is to represent the excess in any constraint that is not fully utilized at the optimal production mix and will therefore have a shadow price of zero.
- Develop a tableau by preparing four columns for the iteration namely:
 - (i) Solution variable
 - (ii) Products — a letter to present each of the products to be produced, mixed or blended
 - (iii) Slack variables
 - (iv) Solution quantity

• Prepare rows for each of the structural constraints featuring only the coefficients. The last row identified as Z represents the values of the objective function.

- Identify the highest value in the Z row.
- The figures in the solution quantity column are divided by the corresponding figures in the column having the highest figure in the Z — row.
- From above, select the row that gives the lowest result while ignoring rows with zero.
- Asterisk the figure in the identified row and column. This figure is called the pivot number.

• The solution variable of the pivot figure is substituted with the letter representing the product where the pivot number lies.

• Turn the pivot figure into 1 by dividing the row throughout by the pivot figure. This row is now called the new pivot row.

• Turn other figures in the pivot column into zero by multiplying the new pivot row with an equivalent amount such that it will be possible to make addition or subtraction with other rows to give zero in the pivot columns.

• Repeat this procedure until none of the values in the Z-row corresponding to each of the products is positive.

• When there are no positive values in the Z-row, then the optimum solution would have been reached.

• Extract necessary information from the tableau.

Illustration 2

Referring to the illustration 1 under the graphical approach, the simplex approach would now be applied:

(a) Formulate the problem:
 Objective fn.....Max C. $100x + 160y$

Subject to the following constraints:
 $6x + 2y \leq 240$ R1
 $2x + 2y \leq 120$ R2
 $2x + 4y \leq 200$ R3

X, y ≥ 0 Non negativity

(b) Convert inequality signs to equalities by adding slack variables:

$6x + 2y + R_1 = 240$
 $2x + 2y + R_2 = 120$
 $2x + 4y + R_3 = 200$

(c) Develop a tableau:

Solution Variable	Products		Slack Variables			Solution Quantity
	X	Y	R ₁	R ₂	R ₃	
R ₁	6	2	1	0	0	240
R ₂	2	2	0	1	0	120
R ₃	2	4*	0	0	0	200
Z	100	160	0	0	0	0

(g) Turn the other figures in the pivot column into zero excluding the pivot unity (I) row R1:

Multiply Y row by 2 and deduct the result from R1:

6	2	1	0	0	240
-1	-2	-0	-0	-1/2	-100
5	0	1	0	-1/2	140

(ii) Row R2:

Multiply Y row by 2 and deduct the result from R2:

2	2	0	1	0	240
-1	-2	-0	-0	-1/2	-100
1	0	0	1	-1/2	20

(iii) Row Z:

Multiply Y – row by 160 and deduct the result from Row Z:

100	160	0	0	0	0
-80	-160	-0	-0	-40	-8000
20	0	0	0	40	-8000

(h) The results of the iterative process are collated into the following tableau:

Solution Variable	Products		Slack Variables			Solution Quantity
	X	Y	R ₁	R ₂	R ₃	
R ₁	5	2	1	0	-½	140
R ₂	1*	0	0	1	-½	20
R	½	1	0	0	¼	50
Z	20	0	0	0	-40	-8000

(a) Determine the new pivot figure:

20 is the remaining positive value. So X is the new pivot column.

(ii) $140 \div 5 = 28$

$20 \div 1 = 20^*$ *least result

$50 \div \frac{1}{2} = 100$

So, R₂ is the new pivot row 20 is the least result.

(iii) The pivot figure is 1, and is therefore asterisked.

(k) Fortunately, we already have 1 as the pivot figure, so the pivot is labeled x as follows:

(i) Since there is still a positive value of 20 in the Z row, it indicates that the result can be improved upon.

(i) Turn the other figures in the pivot column into zero excluding the pivot unity:

Row – R₁:

Multiply the X-row by 5 and deduct the result from row R₁.

5	0	1	1	0	140
-5	-0	-0	-5	-½	-100
0	0	1	-5	2	40

(i) Turn the other figures in the pivot column into zero excluding the pivot unity:

Row – R₁:

Multiply the X-row by 5 and deduct the result from row R₁.

5	0	1	1	0	140
-5	-0	-0	-5	-½	-100
0	0	1	-5	2	40

Solution Variable	Products		Slack Variables			Solution Quantity
	X	Y	R ₁	R ₂	R ₃	
R ₁	5	0	1	0	-½	140
X	1	0	0	1	-½	20
Y	½	1	0	0	¼	40
Z	20	0	0	0	-40	-8000

(i) Turn the other figures in the pivot column into zero excluding the pivot unity:

Row – R₁:

Multiply the X-row by 5 and deduct the result from row R₁.

5	0	1	1	0	140
-5	-0	-0	-5	-½	-100
0	0	1	-5	2	40

(ii) Row Y:

Multiply the X-row by ½ and deduct the result from Row Y:

½	1	0	0	¼	50
-½	-0	-0	-½	-¼	-10
0	0	0	-½	½	40

Row Z:

Multiply the X — row by 20 and deduct the result from row — Z

20	0	0	0	-40	-8000
-5	-0	-0	-20	-10	-400
0	0	0	-20	-30	-8,400

(m) The results of the iterative process are compiled into the following tableau:

Solution Variable	Products		Slack Variables			Solution Quantity
	X	Y	R ₁	R ₂	R ₃	
R ₁	0	0	1	-5	2	40
X	1	0	0	1	-½	20
Y	0	1	0	-½	½	40
Z	0	0	0	-20	-30	-8,400

(n) Since there are no positive values on the z — row, an optimal solution has been arrived at.

(o) The solution is interpreted as:

(i) Optimal production mix = 20 of x; and 40 of Y

(ii) Maximized contribution = N8,400

(iii) Shadow prices are...R₂ = N20; andR₃ = N30

(iv) Excess capacity in R₁ = 40units



THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

(Established by Act of Parliament No 15 of 1965)

PROFESSIONAL EXAMINATIONS SYLLABUS

&

**REGULATIONS FOR THE TRAINING OF
CHARTERED ACCOUNTANTS IN NIGERIA**



EFFECTIVE NOVEMBER 2021

LIST OF RECOGNISED ICAN TUITION CENTERS

	RECOGNISED TUITION CENTRES	ADDRESSES	E-MAIL	TELEPHONE	VALID TILL
1	3A Professional Tutors Limited	3A Professional Tutors Limited,(Doseg Int'l College, 41B Akin Mateola Street.By GT Bank, Lilly Estate, Amuwo Odofin, Lagos	info@3AProfessionalTutors.com/ kunleecomat@gmail.com	07030003251, 08033757234	March , 2023
2	Able God Professionals College	47, Ikotun/Egan Road, Market B/stop, Igando, Lagos	agpcentres@yahoo.com	234-8035398818, 08033531527	March 1,2022
3	ABUAD Tuition Centre	Department of Accounting, ABUAD Ado -Ekiti			April. 2021
4	Accountancy Training Centre , Makurdi	Uni-Agric Road, Opposite First Gate, Makurdi, Benue State	gealfred@yahoo.com	07038068866, 08053559666,	2018
5	Accuracy Tutors, Aba	Immaculate Girls Secondary School, Umungasi, Aba, Abia State	ijiomao@yahoo.co.uk	8068548135, 08053054434	Aug-21
6	Achievers' Tutor Nig. Ltd	Junior Secondary School Phase 3, Gwalalada, Abuja	akinsanwo@gmail.com	8133488948	April. 2020
7	Alternative School, Port Harcourt	Plaza 21, Alcon Road, By Welcome U Supermarket Woji. Port Harcourt.	figalternativeschool@gmail.com	08176014423, 08176014424	October,2022
8	Assurance Success Point	22, Ijede Road, Itamaga, Ikorodu	successpointassociate@gmail.com	07034608759, 08077595821	May. 2022
9	Best Option Tuition Centre, Makurdi	9, kashim Ibrahim Road, Makurdi, Benue State	terencegoddy@yahoo.com	8034932068	2017
10	Best-Ranked Dynamic Professional Tutors	1, Institute of Continuing Education, off Wire Road, Benin City, Edo State	fisayoacca@gmail.com	234-7033322328	April. 2021
11	Brace Management Solution	Proactive Chamber, 131 Ofada road, Mowe, Ogun State	waleakanbi@yahoo.com, bmanagementsolution@yahoo.	8023509889, 08023509872	Apr-21
12	Brainy Professional Academy	2nd & 4th floor, ANCE Building, Magazine road, Jericho, Ibadan, Oyo State	taofik.adeagbo@gmail.com	907,022,347,108,034,000,000	March. 2022
13	Bratim Training Centre Limited	Ground Floor, National Library Building, Adjacent Reiz Continental Hotel, Central Area, Abuja	tejan@bratim.com	08059125288, 08030408384	2019
14	CIP Consulting Ltd	Solid Rock International, FHA, Lugbe, FCT, Abuja	cipconsulting@yahoo.com	234-9096762550	Jan. 2022
15	Crest Professional Tutors, Ijeshatedo, Lagos	Florida House, Plot 133 Apapa/Oshodi Expressway, beside GTBank, Agunlejika B/s Ijeshatedo	crestprofessionals@gmail.com	08056243941, 07025289695, 08033721559	2019
16	Crown Academy	14, Abdulsalam Street, Off old Akute Road, Obawole, Iju, Lagos State	crownacademynigeria@gmail.com	8023181240	Sept.2021
17	Deo-Gratia Professional Tutors, Oshogbo	25, Oyedokun Street, Ago-Wande, Oke -Onitea Road, Oshogbo, Osun State	deogratiasp.t.edu@gmail.com	08060053496	2019
18	Dynamic Stride Professional Ltd, Ibadan	28, Adebayo Street, Kongi layout, New Bodija, Ibadan	dynamicprofessionalTutors@gmail.com	08064904411, 08069198274, 08059134594	2020
19	Edge Educational Services & Logistics	47, Athur Eze Avenue (Emmaus House), Awka, Anambra State	edgelogistics15@gmail.com	8033036184	2018
20	Edo Wyse School of Professional	75/98, Arthur Eze Avenue, by Unizik Temp-Site Junction, Awka, Anambra state	edo-wyse@hotmail.com, fidelisabiah	07038584227, 08065303399	2018
21	Ehivram International Consultancy Ltd	172, Idimu Road, Abule-Odu Bus stop, Idimu , Lagos	ehivrameduconsult@gmail.com	8066759953	Dec. 2021
22	Equitorial Tutors limited	Iponri Grammar School, behind Lead Way Assurance, Iponri	sabamaudit@yahoo.com	8097118222	May. 2022
23	Excel Professional Centre	11, Queen Elizabeth Road, Mokola, Ibadan, Oyo State	excelprofessionalcentreeng@yahoo.com, moolaoluwa@yahoo.com	07081488611	2016
24	Excellent Associates Tutors	African Church Model College, College Road, Ifako-Ijaiye, Ogba Lagos	excellentassociates@yahoo.co.uk	08025112972 , 07060616956	2019
25	First access Associate Ltd	Gobi Plaza, 221/223 Idimu Road, Egbeda	firstaccessltd@gmail.com	8023032873	Mar-22
26	First Attempt Associates	15, Udotung Ubo Street, Off Aka road, Uyo Akwa-Ibom State	sunnymanekpo@yahoo.com	8023168512	Sept.2021
27	First Class Associate Tutors	Millbank Hall Secondary School, 26 LASU Isheri road, Agboroko, Bus Stop, Ojoo, Lagos	fcattutor@gmail.com	08028407323, 08131672267	Nov. 2020
28	Foresight Professional Institute	24 Road Opposite H Close, Festac Town, Lagos	foresight_professional@yahoo.com	08033034504, 08024145121	2019
29	Galaxy Professional Tutor & Consultant	L.E.A Primary School, by Mopol Junction, Opposite Diamond Bank Plc, Nyanya, Abuja	galaxytutors11@yahoo.com	08063513106, 08056922440	October,2022
30	GAMP Tuition house	Bamidele Ajala House, Plot 8-9, State Residential Estate, Ise road, Ikere Ekiti	registrar@gamptuitionhouse.com	8034093675	Apr-22
31	Hedge Professional Services Ltd	Suite 323 Lozumba Plaza, Opposite GSS Garki Area 10, Abuja FCT	hedg323@gmail.com	08033081244, 08033812878	Aug.2021
32	Horizon Business School	13, Edede street, Owerri, Imo State	info@horizonbusinessschool.com	9024241669	April. 2021
33	ICAN Minna Tuition centre	Women Day College, Opposite Keystone Bank, Bosso Shiroro road, Minna	mohammedsoja@yahoo.co.uk	08099529225, 08036875196	March. 2022
34	Ideal Professional Tutors, Ago-Iwoye	Along OOU Mini campus road, Adjacent, Limba Fuel Station, Ago Iwoye	adesanwotobae@yahoo, emma adesanwo@gmail.com	08053846329, 08056182849, 081381059914	2019
35	Insight Professional Mgt & Consulting	St. Brigid's Convent School, Mokola, Ibadan, Beside St. Gabriel Catholic Church, Mokola	labzkuzle2@yahoo.com	0.07031054988	Oct. 2020
36	Integrity Professional Academy, Warri	253 Warri Sapele Road, Warri, Delta State	pintegrity@yahoo.com 08028808182	08060008880, 08028808182	2018
37	IQ Bryte, Ipaja Lagos	Towergate Private School, Falola Street, Off Church B/Stop Ipaja, Lagos	iqbryteprofessionals@yahoo.co	08062933469, 08171890482	2019
38	Knight Business School, Oyingbo	80, Murtal Mohammed Way, Ebute-Metta	braingro@yahoo.com	08034034195, 08084369290	2018
39	Legacy Associate Limited	Olatunji HSE/Legacy HSE, 299/295, Ikorodu Rd, Idiroko B/stop, Maryland, Lagos	legacyassociates@ymail.com	07038917831, 08023226913	Jul-22
40	Legend Business School	105, Ogombo Road, Off Abraham Adesanya Estate Round about, Lekki-Ajah	bencisa@yahoo.com	234-8023200577	Jan. 2022

LIST O RECOGNIZED ICAN TUITION CENTRES

41	Lekki Professional & Associate Ltd	Tollywood Schools, Km 43 Lekki Epe Expressway Oko Ado By Splash	topefatai@gmail.com	08022222174, 08099445029	April, 2023
	London College of Science &Tech.		cashflowacademy2017@gmail.		
43	Management Education & Training Ltd	43A Seriki Aro Street, Off Ajao Road, Off Adeniyi Jones, Ikeja	ican@meteducationng.com	08034855960, 08138562897, 08143219884	June.2020
44	Maximus Professionals	Palmville College, 41/411 Road, Gowon Estate, Opposite Ponle St.Ipaja, Egbeda	kingslevodion@gmail.com	08121332706, 08137047329	2019
45	MSL, School of Accountancy & Mgt. Studies	L8, Ahmadu Bello Way, Katsina Round-about, same building with Studio 24, Kaduna, Kaduna State	mucomail@yahoo.com	08038492871	2018
46	Navigation Tutors	Saints Model Colle, Ogun State Housing Corporation, Ota , Ogun State	ipuoleddavid@yahoo.com	8032324206	Sept. 2021
47	Networth Professional Academy, VI	Kings College Annex, Adeyemo Alakija Street, Victoria Island Lagos	networthacademy@gmail.com, info@networthacademy.co	07015688772, 08182429689	2019
48	Nomba Limited	28, Jemila Joy St. off Obafemi Awolowo Rd, Radio B/S, Ikorodu Video lectures-Odyssey Place, Plot 4 TF Kuboye Rd, Oniru Lekki	gwasiu009@gmail.com	8171396487	Aug.2021
49	Onitsha Business School, Onitsha	19A Lady Regina Nwankwu Avenue, GRA, Onitsha, Anambra State	info@onitshabusinessschool.com	08037060685, 08059271049	February, 2023
50	Opsy Consult Limited	Anthens College, 3rd Avenue, C Close , Opposite Immigration Office, Festac Town	opsyawa@yahoo.com	08023743124, 07030272744	Aug.2021
51	Password Professional Tutors, Akoka	Oluwole Pry School Complex, Beside Unilag Main gate, Akoka	pwplimited@yahoo.com	gsm 08097526579	2018
52	Pointon Academy	Govt. Secondary School, Phase 4, Kubwa, Abuja	pointonacadey@gmail.com	08033148445, 08039581008	Aug.2021
53	POSSE Associates Tutors, Enugu	WTC Primary School Compound, Off WTC B/Stop, Near University of Nigeria, Enugu Campus (UNEC	posseassociates@yahoo.com, sesan.sosanolu@yahoo.com	08038036940	2019
54	Potec Training Centre, Abuja	84, Gado NASCO Road, Phase 2, Site 1, Kubwa	osalorp@gmail.com	08060311442	Aug-21
55	Potec Training Centre, Port-Harcourt	1 Chinda Street, Off Stadium Road, Opposite BEKO Port-Harcourt	potectrainingcentre@yahoo.com	8033403848	2019
56	Precept with Passion Consulting	164, Iju Road, Opposite Fagba grammar school & 57, Isheri rd, County B/stop Ogba	consultingpwp@gmail.com	08053642805	2020
57	Professional Tutor for Success	PTS Building, Opposite NUJ Secretariat, Iwo/Ibadan Road, Dada Estate, Oshogbo, Osun State	ptsosogbo@gmail.com, ayojayjobe@yahoo.com	08023526689, 08038550380	2019
58	Protrac Associates Limited	68, TOS Benson (Beach) road, opposite Ikorodu library, Ebute, Ikorodu	agbaawo2014@gmail.com	8033050586	May, 2021
59	Real Professional Tutors	Wuse Zone 6, School Compound, behinde Oando filling Station, Abuja	realtutorsltd@hotmail.com	08136111191, 036184645	2018
60	Risk Free Standards Associates Limited	5, Olusoji Idowu Street, Off Association Avenue, Ilupeju, Obanikoro B/Stop, Lagos	riskfreestandards@yahoo.com, seyiolanrewaju@yahoo.co	08023050654, 08039475507, 013423986	July, 2020
61	Safe Associate Limited	31, Ore-Ofe Street, Gbaja, Off Barracks B/Stop, Onitolo, Opposite Laspotech Surulere Campus, Lagos	safeican@yahoo.com, oyemolu@yahoo.co.uk	08038103492, 08023210622,07034030255	2017
62	Salvage Professional School, Ibadan	9, Kabiawu Street, Opp. Veterinary, Mokola Ibadan	salvageconsultants@yahoo.com	8057741108	2019
63	Speedysuccess Professional	391, Old Ojo Road , Rooftop Tanterlizer Building, Satelite Town, Lagos	speedysuccesspro@gmail.com	8148421111, 08029563287	Sept. 2019
64	Springboard Associate	6, Adeyemi Olusegun Street (Near Munirat Filling Station) off University road, Tanke, Ilorin	springboardassociates12@gmail.com	234-8147383987	Jan. 2022
65	SQUAD Associates	Excellent Foundation College, Beside Big Treat, Omole Bus Stop, Ajidingbi, Lagos	sqdassociates@gmail.com	08038314631, 08028842327	July, 2020
66	Starry gold Academy	Suit D2 Alhaja Humani Shopping Mall, 82 Kudirat Abiola Way, Oregon , Lagos	starry.gold3@yahoo.com	07038174484 , 08023428420 , 08123189141	2018
67	Students SWOT Associate, Enugu	Govt. Secondary school, opposite shoprite, Abakaliki rd, Enugu	nwabuzorlexy@yahoo.ca	8063582316	October,2022
68	Superiorpoints Associates Limited	148 Olojo Drive, FCMB Building, Opposite Ojo Local Govt Secretariat, Ojo	gomoregbee@yahoo.com	07064963490, 07044913730	2019
69	Sure Success Better Consult, Lokoja	Ule Close, GRA, Lokoja, Kogi State	suressuccess4real@gmail.com	08027870760, 08077175165, 08053956630	2019
70	Synergy Professionals, Iponri	2, Afric Road, Off Funsho Williams Avenue, Iponri, Surulere, Lagos State	synergypfros@yahoo.com	7050571587, 08038426744	2018
71	Taraba Business School, Jalingo	Opposite Civil Service Commission, 183 Hammaruwa Way, Jalingo	gayinka2006@yahoo.com	Gsm 080606060861	2019
72	Technion Academy Limited, Sango Ota	71, Idiroko Road, Sango Ota, Dental Bus Stop, Oju-ore, Ogun State	adegbola_michael@yahoo.com	08036960102, 08177465141	2019
73	Tekoa Consult, Ijebu Ode	12 Omo owo Street, Along General Hospital, Ijebu - Ode	tekoconsult@gmail.com	8037272718	Sept. 2019
74	Timerte Tuition	4, Idi-Iroko Road, Leadwell Academy, beside Justrite Supermarket, Ota, Ogun State	timrite74@gmail.com	08033965019, 08028555956	May, 2022
75	Top Professional Solutions,Port Harcourt	5B, Omerelu Street, GRA Phase 1, Port Harcourt	toriyomi@tpsnq.com	8022275354	2018
76	Topclass Tutors Limited	27, Moronfolu Street, Pako Bus Stop, Akoka, Lagos	tajudeenalabi6791@yahoo.com	08023003675	August 2022
77	Topnotch Learning Centre Ltd, Abuja	Suite 23, 2nd Floor, O'neal Centre, Plot 360 Obafemi Awolowo Way, Jabi, Abuja	info@topnotcn.ng , www.topnotch.ng	08104012026 , 07059491175	2019
78	Toptalented Tutors, Lekki	SM Fasirno Memorial School, 12, Ayetoro Ajah Ilaje, Ajah, Lagos	chriscapital@yahoo.com	8037447917	July,2021
79	Trace Professional Associates Limited	Answar-ul-Islam Girls High School, Km 27, Lagos/Abeokuta Exp. Ahmadiyya B/S Ijaye Ojokoro	tracepass008@gmail.com, mayowale003@yahoo.com	08064302210,08025870770, 08053949705	2019
80	Treasurerhall Training, Festac, Lagos	Waterfront Plaza, 1st Avenue, Near 1st Gate Festac Town, Lagos	info@treasurerhalltraining.com , chidiotumba@gmail.com	08035237320, 07089676799, 08182005099	2019
81	Triumph Dynamics Professional Limited	UMC Demonstration School, Molete, Ibadan, Oyo State	triumphglobal2000@yahoo.com	08034087611	2017
82	Unique Professional Tutors Limited	Govt Junior Secondary Sschool, Tudun Wada, Zone 4, Wuse, Abuja	uniquetutors@yahoo.com	7040500671	Nov. 2020
83	Wellspring Professional Solutions	Management Development Institute, Mary Slessor Avenue, Calabar	wellspringprofessional@gmail.com	234-90782442361	Mar-22
84	Wide-Range Professionals Ltd, Arepo Ogun	Floimic Private School, Plot 2210 Alao Arasi Street, Glory Land Estate, Arepo Ogun State	qbadeyanolushola@yahoo.com	8131140984, 08030454946	2019
85	WYSE Associates Limited	C/O Immaculate College Compound, Maryland, Lagos	wysestudents@yahoo.com, adeniji.adeniyi@gmail.com	08033078065, 08023168451	2019

Our goal is to ensure success in ICAN exams. We have, therefore, provided solutions to some past questions to guide candidates in future exams. Although these suggested solutions have been published under the Institute's name, they do not represent the views of the Council of the Institute. ICAN will, therefore, not enter into any correspondence about them.

NOVEMBER 2019 DIET FOUNDATION LEVEL EXAMINATIONS 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 documents will a supplier send to a customer whose invoice was understated?

- A. Pro-formal invoice
- B. Debit note
- C. Credit note
- D. Statement of account
- E. Cheque stub

2. In which of the following books of prime entry will trade discount be recorded?

- A. Pro-forma note
- B. Sales day book
- C. Purchases day journal
- D. Cash account
- E. Petty cash book

3. Which of the following combinations of accounting concepts are the fundamental assumptions in the preparation of financial statements?

- A. Accrual and double entry
- B. Going concern and entity
- C. Materiality and consistency
- D. Accrual and going concern
- E. Going concern and offsetting

4. In accordance with the requirements of IAS-8 - Accounting Policies, Estimates and Errors, which of the following change in method does not give rise to changes in accounting policy?

- A. Measurement of PPE from cost to revaluation model
- B. Presentation of depreciation from cost of sale to administrative expense
- C. Calculation of depreciation from straight line to sum of digit method
- D. Recognition of an expense from capitalisation to expensing
- E. Reclassification of non-current asset to current asset

5. Which of the following information CANNOT be revealed by a statement of cash flow?

- A. The entity's short-term solvency
- B. Operating cash position
- C. Financial position of the entity
- D. Liquidity position of the entity
- E. Investing activities of the entity

6. In accordance with IAS1-Presentation of Financial Statements, which of the following is not a component of financial statement?

- A. Statement of financial position
- B. Statement of value added
- C. Statement of changes in equity
- D. Statement of cash flows
- E. Statement of profit or loss

Use the information below to answer questions 7 and 8

The following is an information extract from the books of accounts of Walling Parking Enterprises, a sole trader:

Trade receivables balance for the period N1,300,000

The chance of collecting 2% of the receivables figure is remote. It is virtually certain that 95% of the balance of the receivables is collectable.

7. What is the amount of allowance recognised in the statement of profit or loss?

- A. N26,000
- B. N63,700
- C. N89,300
- D. N89,700
- E. N98,700

8. What is the net amount of trade receivables recognised in the statement of financial position?

- A. N1,110,000
- B. N1,201,000
- C. N1,210,300
- D. N1,274,000
- E. N1,300,000

Use the following information to answer questions 9 and 10

The extract from the financial statements of Benchmark Ventures for the year ended September 30, 2019 is as follows:

Capital
 Net profit
 Drawings
 Cash and cash equivalent
 Accounts payables
 Inventory
 Accounts receivables

9. Determine the amount of the current assets

- A. N32,000
- B. N37,000
- C. N 64,000
- D. N67,000
- E. N107,000

10. Calculate working capital of the business

- A. N17,000
- B. N30,000
- C. N38,000
- D. N50,000
- E. N67,000

11. Which of the following is not an element of financial statements?

- A. Asset
- B. Liability
- C. Equity interest
- D. Income
- E. Profit

12. Which of the following is not a book of prime entry?

- A. Cash book
- B. Purchases journal
- C. Trial balance
- D. Returns inwards day book
- E. Sales day book

13. An Accounts officer extracted a trial balance for the year ended October 31, 2019 and discovered that the debit side exceeded the credit side by N30,000. Which of the following could explain the reason for the imbalance?

- A. Sales of N30,000 was omitted from the sales journal
- B. Returns inwards of N15,000 was posted to the debit side of the trial balance
- C. Discounts received of N15,000 were posted to the credit side of the trial balance
- D. The bank ledger account did not agree with the bank statement by a debit of N30,000
- E. N30,000 spent on repairs of office equipment was debited to office equipment account

14. The following explains the imprest system of operating petty cash, EXCEPT

- A. Weekly expenditure cannot exceed a set amount
- B. The exact amount of expenditure is reimbursed at intervals to maintain a fixed float
- C. The petty cashier collects revenue on behalf of the organisation
- D. A petty cashier receives cash, makes expenses of relatively small amount and maintains records for the transactions
- E. Regular equal amounts of cash are transferred into petty cash at regular intervals

15. Your company's statement of profit or loss for the year ended October 31, 2019 showed a profit of N836,000. It was later discovered that N180,000 paid for the purchase of motor van had been debited to motor expenses account. It is the company's policy to depreciate motor van at 25% per annum on a straight line basis, with full depreciation charged in the year of purchase. What will be the net profit after adjusting for this error?

- A. N656,100
- B. N701,000
- C. N791,000
- D. N971,000
- E. N1,016,100

16. Which of the following represents members' interest in a Society or Club?

- A. Recurrent fund
- B. General reserve
- C. Working capital fund
- D. Unwinding fund
- E. Accumulated fund

17. In which of the following segments of statement of financial position of Institute of Professional Accountants is students' subscription received in advance recognised?

- A. Non-current assets
- B. Fictitious assets
- C. Current assets
- D. Current liabilities
- E. Intangible assets

18. Which of the following will not affect the agreement of cash book balance and bank statement bank balance?

- A. Dishonoured lodgement
- B. Cash payments
- C. Bank charges
- D. Standing order for the payment of annual subscription
- E. Error in the bank statement

Use the following information to answer questions 19 and 20

Obi and Ora are partners, trading under the name, Obiora & Co. and sharing profits or losses equally.

The extract from the partnership books for the period ended September 30, 2019 is as follows

Obi Ora
 N'000 N'000
 Opening capital balances 200 100
 Opening current account balances 40 80
 Drawings 20 30
 Salary 28 24
 Interest on capital 10% 10%

Profit for the period amounted to N240,000

19. What is Obi's share of profit for the year?

- A. N20,000
- B. N28,000
- C. N39,000
- D. N79,000
- E. N89,000

20. What is the balance in Ora's current account at the end of the reporting period?

- A. N79,000
- B. N82,000
- C. N101,000
- D. N115,000
- E. N163,000

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. Explain the term trial balance (2 Marks)
- b. The balancing of a trial balance does not necessarily mean that such trial balance is error free.

Required:

Using a two-column tabular format, highlight **FOUR** errors that do not affect the trial balance and **FOUR** errors that affect the trial balance. (8 Marks)

- c. Using the following list of balances extracted from the ledger accounts of John Thomas Enterprises, the MD/CEO wants you to confirm if the various double entries passed by the newly employed accounts officer were arithmetically correct:

	N'000
Revenue	53,000
Purchases	32,200
Property, Plant and equipment: - Cost	59,000
- Accumulated depreciation	25,000
Inventory as at July 1, 2018	7,800
Interest expense	200
Administrative expenses	7,000
Accrued expenses	400
Distribution cost	8,900
Retained earnings	23,500
Bank overdraft	1,000
Cash and cash equivalent	200
Accounts receivables	9,000
Finance cost	1,000
5% Loan note	5,000
Share capital	10,000
Other components of equity (OCE)	5,000
Accounts payables	2,400

Required:

Extract a trial balance for the period ended June 30, 2019
(10 Marks)

(Total 20 Marks)

QUESTION 2

The objective of IAS-16 Property, Plant and Equipment (PPE), is to make a clear distinction between capital and revenue expenditure, formulate accounting policy for the recognition of PPE and promote consistency in the application of the policy.

Required:

- a. Explain briefly the requirements of IAS 16 in relation to subsequent expenditure and subsequent measurement (3 Marks)
- b. After the acquisition of item of PPE, an entity continues to incur subsequent expenditure on the item.

Required:

Explain briefly the requirements of IAS 16 in relation to subsequent expenditure and subsequent measurement. (3 Marks)

- c. Ahmed Ventures Ltd acquired an item of plant from Judexco Machine Ltd to facilitate its operations.

The schedule of expenditure for the plant is given below:

	%	N'000
Purchase price		48,000
Trade discount applicable to the purchase price of the plant	8	
Early settlement discount on the payable amount	5	
Straight line depreciation rate	10	
Other Costs:		
Freight charges		25,000
Pre-production testing cost		15,000
One year maintenance contract		12,000
Staff cost in relation to the use of the machine		8,000
Electrical installation cost		19,000
Concrete reinforcement		9,000
Cost of correcting installation error		17,000
Dismantling and restoration cost		20,000
Staff training in the use of the plant		14,000

Required:

Using the format provided below, classify the above plant costs into capital and revenue expenditure respectively.

Classification of cost into capital and revenue expenditure

Expenditure	Capital	Revenue
N	N	N

(14 Marks)
(Total 20 Marks)

QUESTION 3

The accounts clerk of Jide Electronics is unsure of the difference between bank statement and bank reconciliation statement and has asked for your assistance in this direction

Required:

- a. Explain to the accounts clerk, the difference between a bank statement and bank reconciliation statement (2 Marks)
- b. The accounts clerk also needs your assistance in order to ensure that the cash book balance of her organisation agrees with the bank statement balance for the month ended September 30, 2019;

She has provided you with the following summary of banking transactions for the period under review:

- 1. A cheque amounting to **N280,000** received and paid into the bank was not credited by the bank until after September 30, 2019;
- 2. The cash book balance of the business showed an overdraft of N200,000, while the bank statement balance on the same date indicated that the business had a credit balance of **N1,930,000**;
- 3. A customer made a direct credit transfer into the business bank account amounting to **N1,140,000** in settlement of trade debt and this was not known until after the receipt of bank statement;
- 4. A cheque amounting to **N670,000** for the purchase of goods was posted into the cash book as **N760,000**;
- 5. A cheque of **N1,230,000** dishonoured by the bank remained unreversed in the cash book;
- 6. Cheque amounting to **N2,680,000** issued to a supplier was presented to the bank on October 08, 2019;
- 7. The bank statement revealed that there was a dividend of **N580,000** received as investment income
- 8. The bank transferred the sum of **N200,000** to ICAN, being the payment on a standing order for annual subscription of staff who were writing professional examinations;
- 9. A cash payment of **N120,000** was posted to the bank column of the cash book;
- 10. The bank statement indicated that there was charges of **N140,000**, this being the cost of SMS and other bank charges; and
- 11. A cheque of **N630,000** deposited by Jide was credited to Deji's account By the bank.

Required:

- i. Prepare the adjusted cash book. (11 Marks)
- ii. Starting with the balance as per bank statement, prepare bank reconciliation statement for the month ended September 30, 2019. (7 Marks)

(Total 20 Marks)

SOLUTION

MCQ

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

Tutorials

QUESTIONS 7 AND 8

Trade receivables balance
 Allowance for irrecoverable debt
 (1,300,000*2%)
 Allowance for bad debt
 ((1,300,000-26,000)*5%)
 Amount recognised in Profit or Loss
 Amount recognised in Statement
 of Financial position

QUESTIONS 9 AND 10

9 Current Assets

Inventory
 Accounts receivables Cash
 and Cash Equivalent

10 Less Current Liabilities

QUESTION 15

Computation of adjusted net profit

	N	N
		836,000
Profit as per account		
Reversal of carrying amount of motor van:		
Cost of motor van	180,000	
Depreciation thereon (180*25%)	-45000	
Carrying amount added back to profit		
Adjusted Profit	135,000	135,000
		971,000

WORKING FOR QUESTION 19 AND 20

	TOTAL N'000	
Current account B/F		
Profit for the period	240	
Interest on capital	(30)	
Drawing -		
Salary	(52)	
Share of Profit	158	
Partner's Current Account		
	Obi	Ora
	N'000	N'000
Opening balance	40	80
Partners' salary	28	24
Interest on capital	20	10
Share of profit 158/2	79	79
Drawings	(20)	(30)
Closing balance	147	163

EXAMINER'S REPORT

- The questions covered the entire areas of the syllabus.
- More than 95% of the candidates attempted the question and performance was above average.
- The commonest pitfall was the inability of candidates to correctly answer questions relating to correction of errors.
- Candidates require good understanding of the double entry principle for better performance in future examinations.

SECTION B

SOLUTION 1

a. TRIAL BALANCE

- A trial balance is a list of all the debit balances and credit balances on the general ledger accounts. If the double entry principles have been applied correctly to all the items in the general ledger, then total of the entries on the debit side should agree with the total on the credit side.
- A trial balance is used to check the arithmetical accuracy of the accounting system. It also serves as

a first step in the preparation of the financial statements.

(b)

S/N ERRORS THAT DO NOT AFFECT TRIAL BALANCE

- Error of commission
- Error of principle
- Error of original entry
- Compensating error
- Error of omission
- Complete reversal of Entries

ERRORS THAT AFFECT TRIAL BALANCE

- Error of casting
- Error of transposition of figure
- Posting of transaction on the wrong side of ledger
- Omission of transaction from books of original entry in the ledger
- Omission of transaction or wrong posting of transactions from ledger to the trial balance.
- Omission of opening balance either in the ledger or trial balance.
- Extraction of wrong balance from the ledger

ERRORS THAT AFFECT TRIAL BALANCE

- Error of casting
- Error of transposition of figure
- Posting of transaction on the wrong side of ledger
- Omission of transaction from books of original entry in the ledger
- Omission of transaction or wrong posting of transactions from ledger to the trial balance.
- Omission of opening balance either in the ledger or trial balance.
- Extraction of wrong balance from the ledger

**JOHN THOMAS ENTERPRISES
TRIAL BALANCE AS AT 30 JUNE, 2019**

	Debit N'000	Credit N'000
Revenue		53,000
Purchases Property, Plant and equipment:	32,200	
- Cost	59,000	
- Accumulated depreciation		25,000
Inventory as at July 01, 2018	7,800	
Interest expense	200	
Administrative expenses	7,000	
Accrued expenses		400
Distribution cost	8,900	
Retained earnings		23,500
Bank overdraft		1,000
Cash and cash equivalent	200	
Accounts receivables	9,000	
Finance cost	1,000	
5% Loan notes		5,000
Share capital		10,000
Other components of equity (OCE)		5,000
Accounts payables		2,400
	<u>125,300</u>	<u>125,300</u>

EXAMINER'S REPORT

The question tests candidates' understanding of the meaning of the trial balance, nature of trial balance errors and the extraction of trial balance.

More than 95% of the candidates attempted the question and performance was excellent.

Few candidates use the T-format to prepare the trial balance. Candidates should always remember that financial statements have five elements with asset and expenses being on the debit side while income, equity and liabilities are on the credit side.

Marking Guide

- Definition of trial balance	1	
- Uses 3of trial balance	1	2
Errors that do not affect the trial balance	4	
Errors that affect trial balance	4	8
Extraction of trial balance		
- Correct title	1/2	
- Debit and credit entries	9	
- One of the total amounts	1/2	10
Total		20

EXAMINER'S REPORT

The question tests candidates' understanding of the nature of capital and revenue expenditure, measurement of PPE and accounting entries for PPE under IAS 16.

The question was poorly attempted and the candidates' overall performance was below average.

The candidates exhibited lack of knowledge of the requirements of IAS16 on initial recognition and subsequent measurement of PPE. More than 90% of the candidates could not differentiate between capital and revenue expenditure.

SOLUTION 2

Property, Plant and Equipment (PPE)

a. Requirements of IAS 16 on initial recognition of Property, Plant and Equipment

IAS 16 requires that Property, plant and equipment should be initially measured at cost. Cost of PPE consists of the following.

- The purchase price, excluding trade discount but plus any import taxes or non-refundable sales taxes; Plus
- Directly attributable cost in bringing the asset to its present location and condition, by management, for its intended use. Estimated cost of removing and dismantling the assets and restoring the site.

Requirements of IAS 16 on subsequent expenditure and subsequent measurement

- b. Requirements of IAS 16 on subsequent expenditure and subsequent measurement
- Subsequent expenditure on PPE should usually be written off to profit or loss as incurred but subsequent expenditure can only be capitalised if it enhances the economic benefits to be derived from the asset.
 - After initial recognition, PPE should be measured at cost or revalued amount less accumulated depreciation and accumulated impairment losses.

Classification of cost into capital and revenue expenditure

Expenditure	Capital N	Revenue N
Purchase price	480,000	
Trade discount applicable to the purchase price of the plant	(38,400)	
Other costs:		
Depreciation at 10% (ie, 10% of 529,6700)		52,960
Freight charges	25,000	
Pre-production testing cost	15,000	
One year maintenance contract		12,000
Staff labour cost in relation to the machine		8,000
Electrical installation cost	19,000	
Concrete reinforcement	9,000	
Cost of correcting installation error		17,000
Dismantling and restoration cost	20,000	
Staff training in the use of the plant		14,000
Total	<u>529,600</u>	<u>86,960</u>

The candidates should be encouraged to have extensive study of past questions and good understanding of the relevant accounting standards.

Marking Guide

a	- Measure PPE initially at cost	1	
	- Components of purchase price	1	
	- Definition of attributable cost	1	3
b	- Measurement of subsequent expenditure	1.5	
	- Measurement of PPT after initial recognition	1.5	3
c	- Capital expenditure	7	
	- Revenue expenditure	5	
	- Total under capital and revenue expenditure	2	14
			<u>20</u>

SOLUTION 3

- (a) The issues involved in this case are whether or not a company director is entitled to remuneration and whether or not a director is entitled to be reimbursed for expenses incurred in respect of the company's operations.
- (b) On the issue of directors' remuneration, the position of the law is that a company is not bound to pay remuneration to its directors, except it is contained in the company's Articles of Association or there is a written agreement to that effect. Conversely, the position of the law on reimbursement of directors' expenses is that, a company shall reimburse its directors, all travelling and other expenses related to attending and returning from company meetings.

In this case, YEBA Ltd is not liable to pay remuneration to Bala, as directors' remuneration is not contained in the Articles of Association and, there was no written agreement on payment of remuneration to its directors.

- (b) Factors that influence individual ethical behavior in business environment include the following:
- Individual family influence and background at early age;
 - Educational attainment and academic exposure of the individual;
 - Religious inclination of the individual;
 - Professional affiliation of the individual;
 - Cultural and ethnic consideration of the individual;
 - Existence of laws that define and regulate societal behaviour;
 - Peer influences of colleagues and associates;
 - Nature and structure of the business organisation; and
 - The existence of clear procedures for punishment for breach of ethical rule.

- (c) The legal issues involved relate to frustration of contract and principle of part-performance, also referred to as quantum meruit in law of contract.
Frustration arises when unforeseen circumstances or events, which are beyond the control of the parties, happen, and make it impossible for the parties to perform their contractual obligations under the contract.
Part-performance or quantum meruit is a remedy available to a party who has partly performed his obligation under the contract, to claim the cost he has suffered.

In this case, the contract for furnishing and painting of Chief WADADA’s building by Exclusive Décor Enterprises was frustrated by rain floods, which made it impossible to execute the contract. The contract was thus discharged and both parties are absolved from liability. Exclusive Décor Enterprises cannot succeed in suit to claim the contract sum from Chief WADADA.

However, under the principle of quantum meruit, Exclusive Décor Enterprises, who had incurred costs in delivery of materials to site, all of which were destroyed by rain floods, may succeed to claim the loss suffered on the materials.

EXAMINER’S REPORT

The question tests candidates’ knowledge of director’s remuneration and expenses reimbursement, business ethics and part-performance principle (Quantum meruit) under frustration of contract.

Attempt rate was about 65% and general performance was average at about 50% pass rate.

Candidates’ major pitfalls were lack of understanding of quantum meruit principle and rules of business ethics.

Candidates are advised to read the ICAN study text properly.

MARKING GUIDE Marks

(a) * State legal issue – director’s remuneration and expenses reimbursement	2	
* Explain legal position on director’s remuneration and expenses reimbursement	2	
* Advise Bala – not entitled to remuneration, but can claim expenses reimbursement	2	8
(b) State 4 factors affecting ethical behaviour in business environment (1 mark each)	2	4
(c) * State legal issues – frustration and <i>quantum meruit</i>	2	
* Explain legal position on frustration and <i>quantum meruit</i>	2	
* Apply to case – contract discharged by frustration and parties not liable	2	
* Advice to Exclusive Decor - can claim <i>quantum meruit</i>	2	8
		<u>20</u>

SOLUTION 4

- (a) The conditions under which an insolvent company may be placed under receivership are as follows:
- i. When a company is unable to repay loans borrowed when due or the interest payable falls into arrears;
 - ii. If the property or assets of the insolvent company is in jeopardy, or when events occur to reasonably conclude that the debenture holders’ interests are under threat;
 - iii. When the company fails to honour or defaults to fulfill any of its obligations imposed on it by the debenture trust deed;
 - iv. If any circumstance occurs which prevents the terms of the debenture from realising its assigned or pledged security;
 - v. If the company is being wound-up as a result of insolvency;
 - vi. If any creditor of the company issues a process of execution against any of the company’s assets;
 - vii. If the company ceases to carry on business; and
 - viii. If secured creditors with amounts that exceed specified amount apply to court for receivership.

- (b) Under the Criminal Code, the broad classifications of gratification are as follows:

i. Demand or offer and receipt of things of monetary values.
These include cash gifts, donations of assets, loans, financial rewards, value securities and stocks, discounts, commission, rebates, bonuses,deductions, contracts for supply of goods and services, discharge or liquidation of any loan, financial obligation or liability whether in whole or in part, property or interest in property, whether movable or immovable, any forbearance to demand any money; all with the aim of inducing performance or non-performance of a public official’s normal duties.

ii. Demand or offer and receipt of things of intangible values
These include any offer of employment, grant of public privileges, sexual gratification, award of chieftaincy titles or dignity, benefits in kind, protection from legal proceedings and prosecution, either civil or criminal, etc; all these acts are usually made to induce performance or non-performance of public officials’ normal duties

- (c) Agency contract may be terminated by operation of the law under the following circumstances:
- i. Death of either party;
 - ii. Insanity of either party;
 - iii. Bankruptcy of the principal;
 - iv. Frustration of the subject-matter;
 - v. Subject-matter is illegal ab *initio*;

- vi. Subject-matter no longer exists;
- vii. Expiration or effluxion of time;
- viii. Subsequent legal incapacity of either party; and
- ix. Completion of the work.

(d) The following are essential factors necessary to claim contribution by an insurance company:

- i. The subject-matter of the insurance must be the same and common to both the insurer and the assured. It is sufficient if the insured entered into double or multiple insurance and the loss is covered by both insurance policies;
- ii. The interest insured must be the same, although both or any of the insurance policies may include other interests, but the loss must be caused by a peril common to both insurance policies;
- iii. The same assured must be covered by both insurance policies and which must have been effected by the same assured or by any other person acting for him or on his behalf; and
- iv. Both insurance policies must be legally enforceable at the date of the peril or loss. Thus, an expired or invalid insurance policy at the time of the peril will not qualify for contribution.

EXAMINER'S REPORT

The question tests candidates' understanding of company insolvency and receivership, bribery and corruption, agency termination and contribution under multiple insurance.

About 80% of the candidates attempted the question, and performance was good.

MARKING GUIDE

- (a) State 4 conditions for receivership.
- (b) * Explain gratification
 - * State 2 examples (1 Mark each).
- (c) State 6 reasons for agency termination by operation of law
(1 Mark each)
- (d) Explain 3 essential factors for contribution in multiple insurance
(2 Marks each).



THE INSTITUTE OF CHARTERED ACCOUNTANTS OF NIGERIA

(Established by the Act of Parliament No. 15 of 1965)



Your global accounting career starts with **ICAN**.
Let's kick start you as a **Chartered Accountant**
today.

Headquarters:

Plot 16, Idowu Taylor Street,
Victoria Island, Lagos.

Tel: 09053847511
09053847510

Annex:

82 Murtala Mohammed Way,
Ebute-Metta, Lagos.

Tel: 09053847532, 09053847525
Email: studentsaffaira@ican.org.ng

Abuja Liaison Office:

Akintola Williams House
Plot 2048, Michael Okpara Way
Zone 7 Wuse District, Abuja.

Tel: 08076369788

Email: icanabuja@ican.org.ng

www.icanorg.ng



How are you preparing for your exams?

Avoid distraction and procrastination, take extra care to set firm boundaries as you study, Goodluck!



**THE INSTITUTE OF CHARTERED
ACCOUNTANTS OF NIGERIA**

(Established by Act of Parliament No 15 of 1965)

 [ican_ng](https://www.instagram.com/ican_ng)

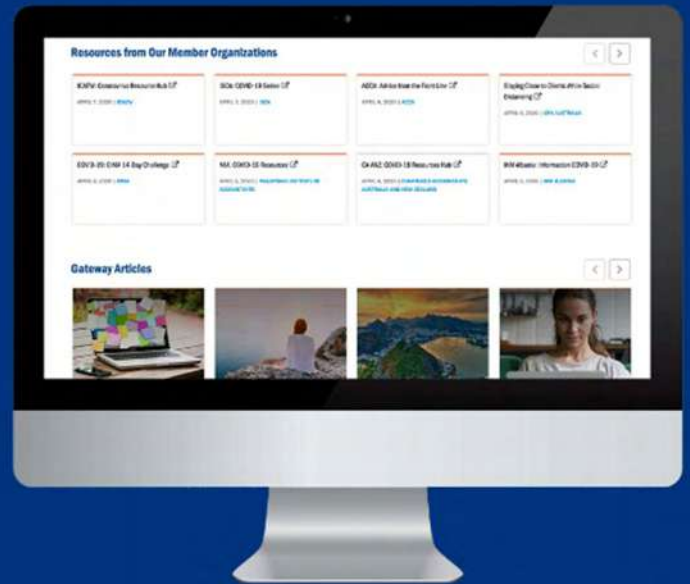
 [ICANngr](https://www.facebook.com/ICANngr)

 [ICAN_NGR](https://twitter.com/ICAN_NGR)

 www.icanig.org

Do You Know?

You can access the Institute's e Library for amazing resources?



Call 08088250031 or send a mail to eoemeka@ican.org.ng for details.

