THE REPUBLIC OF UGANDA
Ministry of Education and Sports

Directorate of Industrial Training

Assessment and Training Package For a JUICE PROCESSOR

Qualification Level: 1

Occupational Cluster: Nutrition and Food Technology

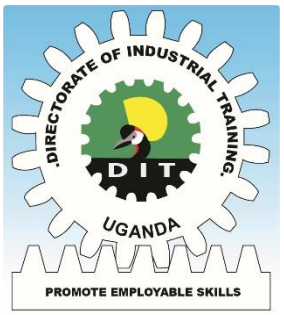
September 2020

Reviewed by:

Qualifications Standards Department
Directorate of Industrial Training

Supported by:

Government of Uganda



Assessment and Training Package

For a

JUICE PROCESSOR

Qualification Level: 1

Occupational Cluster: Nutrition and Food Technology

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Under BTVET Act, 2008, the functions of the Directorate of Industrial Training are:

(a) To identify the needs of the labour market for occupational competencies that fall under the UVQF.
(b) To regulate apprenticeship schemes.
(c) To foster and promote entrepreneurial values and skills, as an integral part of the UVQF.
(d) To secure adequate and sustainable financing for the efficient operations of the Directorate.
(e) To accredit training institutions or companies as assessment centres.
(f) To determine fees payable under the Act.
(g) To develop, apply, expand and improve the purposeful application of Uganda vocational qualifications defined in the UVQF.
(h) To assess and award Uganda Vocational Qualifications.
(i) To promote on-the-job training in industry for apprenticeship, traineeship and indenture training and for other training such as further skills training and upgrading.
(j) To prescribe the procedure for the making of training schemes.

Further to the above provisions, there is an established Uganda Vocational Qualifications Framework (UVQF), under part V of the BTVET Act, 2008. It is stated that:

The purpose of the UVQF is to;
(a) Define occupational standards in the world of work.
(b) Define assessment standards.
(c) Award vocational qualifications of learners who meet the set standards of different studies.
(d) Provide guidelines for modular training.

The UVQF shall follow principles of Competence Based Education and Training (CBET) which include:
(a) Flexible training or learning modules.
(b) Positive assessment and certification.
(c) Assessment of prior learning.
(d) Recognition of formal and non-formal training.
(e) Self-paced or individual learning.
(f) Work place learning.

For award and recognition of certificates, the BTVET Act, 2008 provides that:

(1) The Directorate and other examination boards established under the Act shall award certificates and diplomas for Business, Technical or Vocational Education and Training under the UVQF.

(2) The Certificates and Diplomas to be awarded shall be in the form prescribed by the Minister on the recommendation of the Industrial Training Council.

(3) The Certificates and Diplomas awarded under the Act shall be recognised in the Uganda education system and by the labour market.

Under the TVET Implementation Standards 2020, the proposed new mandate of the Directorate of Industrial Training shall be restricted to promoting the highest standards in the quality and efficiency of industrial training in the country and ensuring an adequate supply of properly trained manpower at all levels in the industry and the world of work.

The functions shall include:

(a) Regulating Industrial Training and Trainers.
(b) Developing Industrial Training Curricula.
(c) Harmonising Curricula and Certificates of competence.
(d) Assessing Industrial Training.
(e) Development of Occupational Standards and Assessment and Training Packages (ATPs) for Trade Testing for the industry and world of work.
(f) Awarding certificates in that respect.

At operational level in the Directorate, the Qualification Standards Department performs development tasks related to concepts, procedures and instruments for establishment of the UVQF in close collaboration with both public and private stakeholders in vocational training.

In particular, the Department organises and coordinates the development of Assessment and Training Packages for use in competence-based vocational training as well as standards-based assessment and certification.

The Directorate has therefore produced this Assessment and Training Package for use in implementing Competence-Based Education and Training mechanisms.

Table of Contents

Word from Permanent Secretary iv
Executive Summary vi
Acknowledgement viii
Abbreviations and Acronyms ix
Key Definitions x
1.0 ATP - PART I 1
Occupational Profile for a Juice Processor 1
2.0 ATP - PART II 11
Training Modules for a Juice Processor 11
3.0 ATP - PART III 31
Assessment Instruments for a Juice Processor 31
Written Test Items (Samples) 33
Performance Test Items (Samples) 39
4.0 ATP - PART IV 45
Information on Review Process 45

Word from Permanent Secretary

The Kajubi Report (1989) and the Uganda Government White Paper on Education Review (1992) emphasised that the Uganda Secondary School Education should be vocationalised.

The World Bank Report on education in Uganda 2007 observed that although Uganda was experiencing steady economic growth on one hand, the secondary education curriculum was inadequately addressing the social and economic needs of the country on the other. The Report further noted that it is not the very top academic cadres that contribute most to the growth of the GDP but rather the competent middle level technicians that are flexible and technologically literate that the economy needs in the labour market at all levels.

Correspondingly, the NDP III 2020/21- 2024/5 highlights (i) low labour productivity (ii) high youth unemployment (38%) (iii) low transition rates from training to employment (35%) as some of the key challenges to Human Capital Development in Uganda.

In order to overcome these challenges, NDP III 2020/21- 2024/5, under objective 2 peaks the need to train the learners for the urgently needed skills and mainstream a dual education and training system. This paved way for the development of the lower secondary school vocational curriculum which supports both academic and vocational training.

The afore is in line with the Uganda Vision 2040. Under section 261, it emphasises that learners will be accorded opportunities to excel in the skills areas they are placed into. These will range from sports and cut to technical and vocational training. Hitherto, section 262 clearly states that the entire education system will be changed to emphasise practical skills, attitude and moral values.

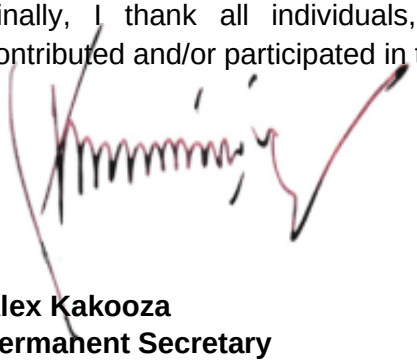
Government of Uganda through the Ministry of Education and Sports rolled out the New Lower Secondary Curriculum in secondary schools countrywide during the first term of the academic year 2020. The overall goal of this curriculum is to produce graduates with employable skills and who are competitive in the labour market. It should be emphasised that vocational training will produce graduates who are employable. In the New curriculum, emphasis will be on equipping learners with employable skills and competencies. This will enable learners perform the requisite duties of the specified occupations. This is the reason why the lower secondary school vocational curriculum was tailored to the assessment requirements of the world of work.

Reading from the Curriculum Framework page 12, it is stated that the learners will be assessed by DIT. Upon assessment and certification, the graduates will be employable and competitive in the labour market. It's against this background that DIT, within its mandate vested in the BTVET Act, 2008 comes on board to take the lead in the development of the requisite Assessment and Training Packages (ATPs) for the various occupations that will be assessed under the Lower Secondary Curriculum.

The ATPs can be used by any training provider and/or those who wish to present themselves for Occupational Assessment and Certification.

Herewith, the Directorate of Industrial Training presents the Assessment and Training Package for training, assessment and certification of a **JUICE PROCESSOR QUALIFICATION LEVEL 1.**

Finally, I thank all individuals, organisations and review partners who have contributed and/or participated in the review of this noble document.



Alex Kakooza
Permanent Secretary

Executive Summary

This Assessment and Training Package is a Competence-Based Education and Training (CBET) tool and consists of three major parts:

0.1 **PART I: The Occupational Profile (OP) of a JUICE PROCESSOR.** This Occupational Profile which was reviewed by Juice Processors practicing in the world of work mirrors the duties and tasks that Juice Processors are expected to perform.

0.2 **PART II: Training Modules** in the form of guidelines to train Juice Processors both on the job as well as in training centres (or combinations of both venues of learning). The Training Modules herein have been reviewed basing on the Occupational Profile and hence are directly relevant for employment.

0.3 **PART III: Assessment Instruments** in the form of performance (Practical) and written (theory) test items that can and should be used to assess whether a person complies with the requirements of employment as a JUICE PROCESSOR. These assessment instruments were reviewed jointly by job practitioners (Juice Processors) and instructors based on the occupational profile and training modules.

0.4 While the Occupational Profile (OP) contained in PART I of this document provides the information on **WHAT a person is expected to do** competently in the world of work, the test items, - including performance criteria- of PART III qualify the **HOW and/or HOW WELL a person must do the job**.

0.5 The modular format of the curriculum (PART II) allows learners to acquire job specific skills and knowledge (i.e. competencies) module by module. A single module can be accomplished within a relatively short duration allowing flexibility for learners to move directly into an entry level job, go for further modules or advance to higher levels of training. Modular courses allow more learners to access the training system because training centres as well as companies can accommodate more learners in a given period of time.

0.6 In addition to improved access, equity and relevance of BTVET, the UVQF will also enable people who are convinced to have acquired competencies laid down in this ATP through prior training and on-the-job experience to access assessment and certification directly; be it on the basis of a single module, a group of modules or all modules pertaining to the occupation at once. This achievement will facilitate Recognition of Prior Learning (RPL).

0.7 The parts of this Assessment and Training Package were sequentially reviewed as follows:

i Part 1: Occupational Profile: ***August 2020***
ii Part 2: Training Modules: ***August 2020***
iii Part 3: Assessment Instruments (initial bank): ***August 2020***

This ATP (or parts of it) may be periodically revised to match the dynamic trends in the occupation and hence issued in different versions.

DIT takes responsibility of any shortcomings that might be identified in this publication and welcomes suggestions for effectively addressing the inadequacies. The suggestion can be communicated to DIT through P.O. Box 20050, Kampala or through email uvaf.dit@gmail.com.

Patrick Byakatonda
Ag Director

Acknowledgement

The Qualifications Standards Department of DIT acknowledges the valuable contributions to the review of this Assessment and Training Package by the following persons, Institutions and organisations:

- Members of the DIT Industrial Training Council.
- The Director and staff of DIT.
- Ministry of Education and Sports.
- The practitioners from the world of work.
- Teachers and instructors of Juice Processor from various secondary schools.
- Nutrition and Food Technology Curriculum Specialists from NCDC.
- Examination specialists from UNEB.
- The facilitators involved in guiding the development panels in their activities.
- The Government of Uganda for financing the development of this ATP.
-

Abbreviations and Acronyms

A&C	Assessment and Certification
ATP	Assessment and Training Packages
CBET	Competency Based Education and Training
DIT	Directorate of Industrial Training
ITC	Industrial Training Council
GoU	Government of Uganda
LWA	Learning-Working Assignment
MC	Modular Curriculum
MoES	Ministry of Education and Sports
OP	Occupational Profile
PEX	Practical Exercise
PTI	Performance (Practical) Test Item
QS	Qualification Standards
RPL	Recognition of Prior Learning
TIB	Test Item Bank
TVET	Technical, Vocational Education and Training
UVQ	Uganda Vocational Qualification
UVQF	Uganda Vocational Qualifications Framework
WTI	Written (Theory) Test Item

Key Definitions

Assessment Assessment is the means by which evidence is gathered and judged to decide if an individual has met the stipulated assessment standards or not. Testing is a form of formal assessment.

Certification Certification is a formal procedure to issue a certificate (qualification) to an individual that has demonstrated during formal assessment that he/she is competent to perform the tasks specified in the occupational profile.

Competence Integration of skills, knowledge, attitudes, attributes and expertise in doing /performing tasks in the world of work to a set standard.

Competency (Occupational) competency is understood as the ability to perform tasks common to an occupation to a set standard.

CBET Competence-based education and training means that programmes:

1. have content directly related to work
2. focus is on 'doing something well'
3. assessment is based upon industry work standards, and
4. curricula are developed in modular form

Duty A Duty describes a large area of work in performance terms. A duty serves as a title for a cluster of related Tasks (see also: TASK).

Learning-Working Assignment (LWA) LWA are simulated or real job situations / assignments that are suitable for learning in a training environment (e.g. "small projects"). In a working environment LWAs are real work situations /assignments.

Modules Modules are part(s) of a curriculum. Modules can be considered as "self-contained" partial qualifications which are described by learning outcomes or competencies and which can be assessed and certified individually.

Occupational Profile (OP) An Occupational Profile is an overview of the duties and tasks a job incumbent is expected to perform competently in employment.
Occupational Profiles developed by practitioners from the world of work enhance the relevance of training and learning to the requirements of the world of work.

Occupational Profiles define what a person is supposed to do in performance terms. It also contains generic information regarding related knowledge and skills, attitudes/behavior, tools, materials and equipment required to perform as well as trends/ concerns in the occupation.

Occupational profiles are the reference points for developing modular curricular and assessment standards

Qualification A qualification is a formal recognition for demonstrating competence, based on formal assessment against set standards. A qualification is provided to the individual in form of a certificate specifying the nature of the competence.

Task Job tasks represent the smallest unit of job activities with a meaningful outcome. Tasks result in a product, service, or decision. They represent an assignable unit of work and have a definite beginning and ending point. Tasks can be observed and measured. *(Also see: Duty)*

1.0 ATP-PART I

Occupational Profile for a JUICE PROCESSOR

1.1 The OCCUPATIONAL PROFILE (OP) for "JUICE PROCESSOR" below defines the ***Duties*** and ***Tasks*** a competent Juice Processor is expected to perform in the world of work (on the job) in Uganda and the East African region today.

1.2 Since it reflects the skill requirements of work life, the Occupational Profile is the reference document for the subsequent development of training modules and assessment instruments (test items) which are directly relevant to employment in Ugandan and the East African businesses and industries.

1.3 To ensure that the Occupational Profile is relevant for employment in Uganda and East Africa, the DIT used the method of "occupational/job profiling.[1]

This approach involves the brainstorming of a panel of 8 to 12 competent job practitioners guided by trained and experienced facilitators. During a two-day workshop the panelists defined the duties and tasks performed in employment, as well as the prerequisite skills, knowledge, attitudes, tools and equipment, and the future trends and concerns in the occupation/job.

1.4 The panelists, facilitators and coordinators who participated in developing this Occupational Profile are listed on the following page.

Job Expert Panel

Lutale Dalausi
Dalausi Juice, Wandegeya

Enaru Francis
Ministry of Trade Industry and Cooperatives

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Funded by
The Government of Uganda

THE REPUBLIC OF UGANDA
Ministry of Education and Sports

Directorate of Industrial Training

Occupational Profile for a ''Juice Processor''

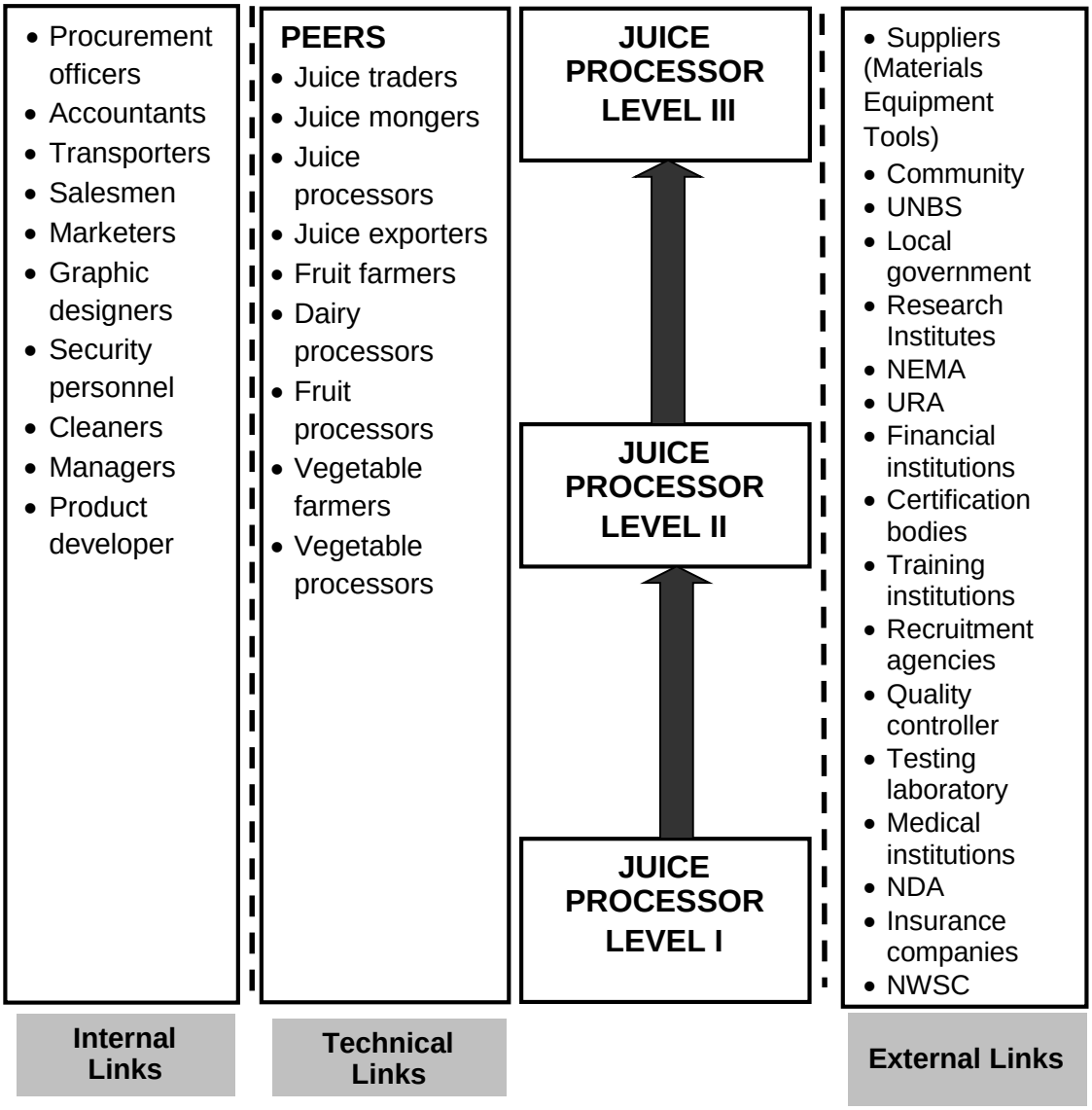
Reviewed by: Qualifications Standards Department of Directorate of Industrial Training

Dates of workshop: 31st August - 4th September 2020

NOMENCLATURE FOR THE OCCUPATION OF JUICE PROCESSOR

Definition: A JUICE PROCESSOR: is one who extracts and makes juice of acceptable quality from fruits, vegetables and natural raw materials for immediate or future consumption.

JOB ORGANISATION CHART FOR A JUICE PROCESSOR



UVQ Level I Juice Processor; is a person who produces quality juice for immediate consumption and extended shelf-life with minimal preservation methods.

UVQ level II Juice Processor; is a person who produces quality juice with moderate preservation methods for immediate and future consumption.

UVQ Level III Juice Processor; is a person who develops produces and preserves quality juice using advanced technology.

Duties and Tasks

A. PREPARE BUSINESS PLAN	**A1** Carryout feasibility study	**A2** Determine enterprise location	**A3** Determine source of funding
	A4 Determine source of human capital	**A5** Identify source of materials and equipment	**A6** Prepare budget
	A7 Prepare work schedule		

B. ESTABLISH A JUICE PROCESSING PLANT	**B1** Select site	**B2** Secure site	**B3** Setup structures
	B4 Prepare storage facilities	**B5** Procure tools equipment and materials	**B6** Install equipment
	B7 Store raw materials, tools and equipment	**B8** Set up laboratory	

C. PROCESS JUICE	**C1** Develop formula	**C2** Secure raw materials	**C3** Prepare pulp
	C4 Extract juice	**C5** Blend juice	**C6** Prepare additives
	C7 Add additives	**C8** Homogenise juice	**C9** Pasteurise juice
	C10 Preserve juice	**C11** Pack juice	**C12** Label juice
	C13 Store juice		

D. PERFORM QUALITY CONTROL	**D1** Perform Biological tests	**D2** Perform organolyptic tests	**D3** Perform physical tests
	D4 Perform chemical tests	**D5** Generate quality assurance records	**D6** Correct defects

E. MARKET JUICE	**F1** Brand juice	**F2** Price juice	**F3** Promote juice
	F4 Transport juice	**F5** Sell juice	**F6** Provide after sale services
	F7 Provide customer care	**F8** Advertise juice	

F. MAINTAIN JUICE PROCESSING PLANT	**E1** Develop maintenance schedule	**E2** Manage raw materials	**E3** Calibrate equipment and tools
	E4 Service tools and equipment	**E5** Replace tools and equipment	**E6** Repair tools and equipment
	E7 Keep maintenance record	**E8** Control pests and rodents	

G. PERFORM OCCUPATIONAL SAFETY, HEALTH AND ENVIRONMENTAL PROTECTION PRACTICES	**G1** Wear protective gear	**G2** Administer first aid	**G3** Perform fire fighting
	G4 Manage waste	**G5** Sensitise workers on key health issues	**G6** Develop standard operating procedures
	G7 Maintain personal hygiene		

H. PERFORM ADMINISTRATIVE TASKS	**I 1** Mobilise resources	**I 2** Communicate with stakeholders	**I 3** Recruit workers
	I 4 Orient workers	**I 5** Assign roles	**I 6** Train workers
	I 7 Mentor workers	**I 8** Supervise workers	**I 9** Apprise workers
	I 10 Manage human resource	**I 11** Participate in meetings	**I 12** Register business/ enterprise
	I13 Offer technical guidance to customers	**I 14** Make reports	**I15** Set up organisational polices
	I16 Pursue continuous professional development		

Additional Information

Generic Knowledge & Skills

1. Good manufacturing practices (GMP)
2. Hazard analysis critical control points (HACCP)
3. Cleaning in place (CIP)
4. Standard operating procedures
5. Types of fruit and vegetables
6. Degree of ripeness& Level of maturity of raw materials
7. Acid levels in fruits and vegetables
8. Methods of juice extraction
9. Sterilisation of tools and equipment
10. Determination of profits and loses
11. Waste management
12. Water quality
13. First aid
14. Budgeting
15. Work scheduling
16. Weighing skills
17. Control of pests and rodents
18. Advertising
19. Juice formulation
20. Transportation of raw materials
21. Storage of raw materials
22. Sourcing raw materials
23. Seasons of fruits and vegetables
24. Regulatory requirements of juice processing
25. Insurance
26. Management of backups and affiliated parts
27. Sourcing capital
28. Additives and methods of application
29. Packaging materials
30. Labeling
31. Marketing skills
32. Communication skills
33. Equipment used in juice processing
34. Record keeping
35. Problem solving skills
36. Business planning

Tools, Equipment and Materials 1. Computers 2. Weighing scale 3. Buckets 4. First aid box 5. Tables 6. Tumpline 7. Stationery 8. Buckets 9. Sauce pans 10. Measuring jars 11. Water 12. Water tanks 13. Masks 14. Gloves 15. Aprons 16. Headgear 17. White gumboots & safety shoes 18. Sieves 19. Carriers 20. Trolleys 21. Polyethene bags 22. Packing machine 23. Pasteurisers 24. Boilers 25. Pallets	26. Blenders 27. Sugar 28. Yeast 29. Fruits 30. Vegetables 31. Cutting boards 32. Knives 33. Spoons 34. Generators 35. Fuel source 36. Refrigerator 37. Cool boxes 38. Printing machine 39. Thermometers 40. Disposal pits 41. Radio 42. Television 43. Soak pits 44. Brochures 45. Refractometers 46. Notice boards 47. Packaging materials 48. Seals 49. Laboratory reagents	50. Labels 51. Sign posts 52. Soap and detergents 53. Scrubbing brushes 54. Moppers 55. Clock 56. Towels and clothes 57. Boxes 58. Spades 59. Mobile phones 60. pH metre 61. Juice filling machine 62. Pasteurisers 63. CCTV Cameras 64. Sterilisers 65. Pipes 66. Pumps 67. Buffers 68. Liquid soap and detergents 69. Dispensers 70. Funnels 71. Beakers 72. Juice filling machine

Attitudes/Traits/ Behavior	Future Trends and Concerns	
1. Organised 2. Hardworking 3. Respectful 4. Punctual 5. Active 6. Social 7. Knowledgeable 8. Dedicated 9. Trust worthy 10. Confident 11. Tolerant 12. Honest 13. Team player 14. A good listener 15. Disciplined 16. Creative 17. Innovative 18. Observant 19. Strategic 20. Patient 21. Resilient 22. Visionary 23. Patriotic	1. Expansion of market 2. Advancing technology 3. Exportation 4. Need for juice processor association 5. Price fluctuation 6. Need for training juice processors 7. Lack of capital 8. Need for technical assistance to the processors 9. Minimisation of waste 10. Gender issues	11. Competition 12. Product diversification 13. Insufficient raw materials 14. Poor quality raw materials 15. Expensive packaging materials 16. Unreliable power supply 17. Unfavorable government polices 18. Weather uncertainties 19. Product certification 20. Counterfeit products on the market

2.0 ATP – PART II

Training Modules for a JUICE PROCESSOR

2.1 A curriculum is a "guide /plan for teaching and learning" which provides a guide to teachers, instructors and learners. In the envisaged system of competence-based or outcome-oriented education and training (CBET), Curricula are no longer the benchmark against which assessment is conducted. It is rather the Occupational Profile that provides the benchmark for Curriculum development as well as assessment.

2.2 This modular format of the curriculum allows learners of Juice Processor to acquire job specific skills and knowledge (i.e. competencies) module by module. A single module can be accomplished within a relatively short duration allowing learners to move directly into an entry level job, do further modules and advance to higher levels of training. Modular courses allow more learners to access the training system because training centres, as well as companies can accommodate more learners in a given period of time.

2.3 The modules were reviewed jointly by both instructors and job practitioners. They were reviewed using the Occupational Profile as a reference point and taking into account the specifications of training and learning outcomes.

2.4 The modules contain "Learning-Working Assignments" (LWAs) and related "Practical Exercises" (PEXs) as key elements.

LWAs are simulated or real job situations/assignments that are suitable for learning in a training environment (e.g. "small projects"). In a working environment, LWAs are real work situations.

PEXs are therefore sub-sets of a LWA.

2.5 In principle, and following the philosophy of Competence-Based Education and Training (CBET), the modules can be used as a guide for learning in a training Centre, at the workplace; or a combination of both.

WHO IS A JUICE PROCESSOR QUALIFICATION LEVEL 1?

A **Juice Processor level 1** is a person who produces quality juice for immediate consumption and extended shelf-life with minimal preservation methods

TRAINING MODULES FOR A JUICE PROCESSOR UVQ LEVEL 1

Code	Module Title	Average duration	
		Contact hours	**Weeks**
UE/JP/M 1.1	Process Juice	320	8
UE/JP/M 1.2	Maintain and Manage Juice Processing Enterprise	160	4
UE/JP/M 1.3	Perform Entrepreneurship Tasks	240	6
Summary	**6 Training Modules**	**720hours**	**18weeks**

Note: Average duration is contact time but NOT calendar duration

It is assumed that:

- 1 day is equivalent to 8 hours of nominal learning and
- 1 month is equivalent to 160hours of nominal learning

Information given on the average duration of training should be understood as a guideline. Quick learners may need less time than indicated or vice versa.

At completion of a module, the learner should be able to satisfactorily perform the included Learning Working Assignments, their Practical exercises and attached theoretical instructions, as the minimum exposure.

Prior to summative assessment by recognised agencies, the users of these Modules Guides are encouraged to carefully consider continuous assessment using samples of (or similar) performance (practical) and written test items available in part 3 of this ATP.

Code	**UE/JP/M 1.1**
Module title	**M1.1: Process Juice**
Related Qualification	Part of Uganda Vocational Qualification (Juice Processor UVQ 1)
Qualification Level	1
Module purpose	After completion of this module, the trainee shall be able to process and preserve juice
Learning-Working Assignments (LWAs)	**LWA 1/1: Prepare Raw Materials** **LWA 1/2: Develop a Product** **LWA 1/3: Extract Juice** **LWA 1/4: Prepare Fresh Juice** **LWA 1/5: Preserve Juice** **LWA 1/6: Package Juice** **LWA 1/7: Perform Occupational Health, Safety and Environmental Protection Practices** **Note:** *1. The learning exercises may be repeated until the trainee acquires targeted competence;* *2. The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment*.
Related Practical Exercises (PEXs)	**LWA 1/1: Prepare Raw Materials** PEX 1.1: Receive raw materials PEX 1.2: Sort raw materials PEX 1.3: Clean raw materials PEX 1.4: Store raw materials
	LWA 1/2: Develop a Product PEX 2.1: Make a formula PEX 2.2: Make a prototype PEX 2.2: Carryout sensory evaluation
	LWA 1/3: Extract Juice PEX 3.1: Select tools and equipment PEX 3.2: Clean working surface, tools and equipment PEX 3.3: Defrost raw material PEX 3.4: Blanch raw materials PEX 3.5: Rinse raw materials PEX 3.6: Perform size reduction PEX 3.7: Crash raw material PEX 3.8: Pulp raw material

	PEX 3.9: Brew raw material PEX 3.10: Press raw material PEX 3.11: Strain pulp/ concentrate PEX 3.12: Clarify juice PEX 3.13: Add additives PEX 3.13: Homogenise juice
	LWA 1/4: Prepare Fresh Juice PEX 4.1: Make single fruit juice PEX 4.2: Make cocktail juice PEX 4.3: Make a mock tail PEX 4.4: Make smoothies PEX 4.5: Make vegetable juice
	LWA 1/5: Preserve Juice PEX 5.1: Add additives PEX 5.2: Perform heat treatment PEX 5.3: Freeze juice
	LWA 1/6: Package Juice PEX 6.1: Select packaging material PEX 6.2: Quality check packaging material PEX 6.3: Clean packaging material PEX 6.4: Pre-heat juice PEX 6.5: Pack juice PEX 6.6: Cool juice PEX 6.7: Label juice PEX 6.8: Store juice
	LWA 1/7: Perform Occupational Health, Safety and Environmental Protection Practices PEX 7.1: Wear protective equipment PEX 7.2: Undergo routine medical examination PEX 7.3: Administer first aid PEX 7.4: Perform firefighting PEX 7.5: Manage waste PEX 7.6: Display safety signs PEX 7.7: Observe personal hygiene PEX 7.8: Sensitise workers on key health issues
Occupational health and safety	Precautions, rules and regulations in occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre- requisite modules	None

Related knowledge/ theory	*For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:* • Standard processing procedures • Cleaning in place (CIP) • Hazzard analysis critical control process (HACCP) • Critical control points (CCP) • Material storage methods • Sensory evaluation • Measurements and weights • Health and safety code • Safety rules and regulations • Food hygiene and sanitation • Good manufacturing practices • Raw material quality control measures • Use of FIFO/FEFO principal • 5ps observed during good manufacturing principles • Waste management
Average duration of learning	320hours (60 days) of nominal learning suggested to include: • *20 days of occupational theory and* • *40 days of occupational practice*
Suggestions on organisation of learning	The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training center or juice processing establishment with the outlined list of tools, equipment and materials.
Assessment	Assessment to be conducted according to established regulations by a recognised assessment body using related practical and written test items from item bank.
Minimum required tools/ equipment/ implements or equivalent	weighing scale, crates, knives, storage racks, pallets, refractometer, blender, fire extinguisher, first aid kit, chopping boards, source of heat, disposal bins, cleaning troughs, thermometer, vacuum seamer, filters, wooden spoons, buckets, jerricans, sieve.
Minimum required materials and consumables or equivalent	stationery, labels, cleaning detergents, disinfectants, fruits and vegetables (raw materials), preservatives, additives, packaging materials, PPE.
Special notes	This module is applicable to people with special needs

Code	**UE/JP /M1.2**
Module title	**M 1.2: Maintain Juice Processing Enterprise**
Related Qualification	Part of Uganda Vocational Qualification (Juice Processor UVQ 1)
Qualification Level	1
Module purpose	After completion of this module, the trainee shall be able to operate and maintain juice processing enterprise
Learning-Working Assignments (LWAs)	**LWA 2/1: Perform Quality control & Assurance** **LWA 2/2: Manage Raw Materials** **LWA 2/3: Control Pests and Vices** **LWA 2/4: Maintain Tools and Equipment** **LWA 2/5: Perform Occupational Health, Safety and Environmental Protection Practices** **Note:** 1. *The learning exercises may be repeated until the trainee acquires targeted competence;* 2. *The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment*.
Related Practical Exercises (PEXs)	**LWA 2/1: Perform Quality Control & Assurance** PEX 1.1: Perform organoleptic PEX 1.2: Perform physical test PEX 1.3: Perform brix analysis PEX 1.4: Keep quality assurance records PEX 1.5: Dispose rejects
	LWA 2/2: Manage Resources PEX 2.1: Receive raw materials PEX 2.2: Sort raw materials PEX 2.3: Grade raw materials PEX 2.4: Clean raw materials PEX 2.5: Weigh raw materials PEX 2.6: Store raw materials
	LWA 2/3: Control Pests and Vices PEX 3.1: Select tools, equipment and materials PEX 3.2: Fumigate the premises PEX 3.3: Clean premises PEX 3.4: Dispose waste PEX 3.5: Install meshes and repellants PEX 3.8: Dispose unwanted tools and equipment

	LWA 2/4: Maintain Tools and Equipment PEX 4.1: Prepare maintenance schedule PEX 4.2: Repair tools and equipment PEX 4.3: Replace tools and equipment PEX 4.4: Train workers on equipment use PEX 4.5: Engrave tools and equipment PEX 4.6: Service equipment PEX 4.7: Clean tools and equipment PEX 4.8: Store tools and equipment
	LWA 2/5: Perform Occupational Health, Safety and Environmental Protection Practices PEX 5.1: Wear protective equipment PEX 5.2: Undergo routine medical examination PEX 5.3: Administer first aid PEX 5.4: Perform firefighting PEX 5.5: Manage waste PEX 5.6: Display safety signs PEX 5.7: Observe personal hygiene PEX 5.8: Sensitise workers on key health issues
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed of related knowledge should be observed and demonstrated during LWAs and PEXs.
Pre-requisite modules	None
Related knowledge/ theory	*For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:* • Environmental awareness • Financial literacy • Safety and hygiene • Store keeping • Procurement cycle • Waste disposal and management • Asset disposal and management • Operation and maintenance of tools and equipment • Simple repair of tools and equipment
Average duration of learning	160 hours (30days) of nominal learning suggested to include: • 10 *days of occupational theory and* • *20 days of occupational practice*

Suggestions on Organisation of learning	The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training center or in a juice processing establishment provided all equipment and materials required for training are in place.
Assessment	Assessment to be conducted according to established regulations by a recognised assessment body using related practical and written test items from item bank
Minimum required tools/ equipment/ implements or equivalent	weighing scale, buckets, first aid kit, trolleys, boiler, disposal bins, scrubbing brushes, moppers, clock, towels and cloths, generator, rat traps
Minimum required materials and consumables or equivalent	cleaning detergent, water, polythene bags, sanitisers, lubricators, pesticides, disinfectants, PPE
Special notes	• Safety precautions must be followed at all time • This module is applicable to people with special needs

Code	UE/JP /M1.3
Module title	**M1.3: Perform Entrepreneurship Tasks**
Related Qualification	Part of Uganda Vocational Qualification (Juice Processor UVQ1)
Qualification Level	1
Module purpose	After completion of this module, the trainee shall be able to perform entrepreneurial tasks related to juice processing
Learning-Working Assignments (LWAs)	**LWA 3/1: Prepare a Business Plan** **LWA 3/1: Cost Finished Product** **LWA 3/2: Market Juice** **LWA 3/3: Generate Records** **LWA 3/4: Perform Administrative Tasks** **LWA 3/5: Perform Occupational Health, Safety and Environmental Protection Practices** **Note:** *1. The learning exercises may be repeated until the trainee acquires targeted competence;* *2. The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment.*
Related Practical Exercises (PEXs)	**LWA 6/1: Prepare a Business Plan** PEX 1.1: Make a budget PEX 1.2: Make a production plan PEX 1.3: Prepare company profile PEX 1.4: Make a financial plan PEX 1.5: Make a SWOT analysis PEX 1.6: Prepare work schedules
	LWA 5/2: Cost Finished Product PEX 2.1: Calculate cost of production PEX 2.2: Determine net profit PEX 2.3: Price products
	LWA 6/2: Market Juice PEX 2.1: Package juice PEX 2.2: Brand juice PEX 2.3: Label juice PEX 2.4: Price juice PEX 2.5: Promote juice PEX 2.6: Transport juice PEX 2.7: Sell juice PEX 2.8: Offer after sales service

	PEX 2.9: Advertise juice
	LWA 6/3: Generate Records PEX 3.1: Prepare financial records PEX 3.2: Prepare inventory records PEX 3.3: Keep compliancy records PEX 3.4: Prepare production records PEX 3.5: Prepare human resource records
	LWA 6/4: Perform Administrative Tasks PEX 4.1: Recruit staff PEX 4.2: Train staff PEX 4.4: Assign work PEX 4.5: Resolve conflicts PEX 4.6: Supervise work PEX 4.7: Appraise staff PEX 4.8: Prepare work schedules PEX 4.9: Pay tax PEX 4.10: Remunerate staff
	LWA 6/5: Perform Occupational Health, Safety and Environmental Protection Practices PEX 5.1: Observe hygiene PEX 5.2: Manage waste PEX 5.3: Wear protective gear PEX 5.4: Perform firefighting PEX 5.5: Display health and safety signs PEX 5.6: Administer first aid PEX 5.7: Check for medical fitness PEX 5.8: Comply with legal requirements
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs
Pre-requisite modules	None
Related knowledge/ theory	*For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:* • Qualities of a good location • Marketing • Benchmarking • Information communication technology (ICT) • Costing • Types of records

	• Counseling and guidance of staff • Promotional strategies/ techniques • Resource mobilisation and management • Training methods
Average duration of learning	240 hours (30 days) of nominal learning suggested to include: • *10 days of occupational theory and* • *20 days of occupational practice*
Suggestions on organisation of learning	The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training center or its equivalent provided all equipment and materials required for training are in place.
Assessment	Assessment to be conducted according to established regulations by a recognised assessment body using related practical and written test items from item bank.
Minimum required tools/ equipment/ implements or equivalent	telephone, computer, calculator, office furniture, generator, first aid box, fire extinguisher & printer.
Minimum required materials and consumables or equivalent	stationery, reference textbooks
Special notes	This module is applicable to people with special needs

3.0 ATP- PART III

Assessment Instruments for a JUICE PROCESSOR

3.1 Assessment of occupational competence is the procedure by which evidence is gathered and judged to decide if an individual (candidate) has met the stipulated assessment standards.

3.2 Assessment of occupational competence should comprise of both practical (performance) testing and written (theory/knowledge) testing.

3.3 Based on the Occupational Profile and Training Modules, a combined panel of job practitioners and Instructors reviewed a substantial number of test items for assessing (practical) performance as well as items for assessing occupational knowledge (theory) all stored in an electronic Test Item Bank (TIB) at the Directorate of Industrial Training.

3.4 Performance (Practical) Test Items (PTI)are closely related to typical work situations in Ugandan business enterprises. They comprise of a test assignment for candidates and assessment criteria and/or scoring guides for assessors' use.

3.5 Written Test items (WTI) for written testing of occupational theory, (knowledge) are presented in different forms which include:

- Short answer test items.
- Multiple choice test items
- Matching test items,

These WTIs herein focus on functional understanding as well as trouble-shooting typically synonymous with the world of work.

3.6 Composition of assessment/test papers will always require good choices of different types of WTI in order to ensure the assessment of relevant occupational knowledge required of candidates to exhibit competence.

3.7 The test items contained in the Test Item Bank may be used for continuous/formative assessment during the process of training as well as for summative assessment of candidates who have acquired their competences non-formally or informally.

3.8 In this document, samples of test items for assessing both performance (practical) and occupational knowledge (theory) of a JUICE PROCESSOR are included.

Overview of Test Item Samples Included

No	Type of test Items	Numbers included
1	Written (Theory)- short answer	2
2.	Written (Theory)- multiple choice	2
3.	Written (Theory)- matching with generic	1
4.	Written (Theory)- matching work sequence	1
5.	Performance (Practical) test items	2
Total		**8**

WRITTEN TEST ITEMS (SAMPLES)

<table>
<tr><th>DIT/ QS</th><th colspan="4">Test Item Database
Written (Theory) Test Item- no. 1</th></tr>
<tr><td>Occupational Title:</td><td colspan="4">Juice Processor</td></tr>
<tr><td>Competence level:</td><td colspan="4">Level 1</td></tr>
<tr><td>Code no.</td><td colspan="4"></td></tr>
<tr><td>Test Item type:</td><td colspan="4">
<table>
<tr><td>Short answer</td><td colspan="3">√</td></tr>
<tr><td>Multiple choice</td><td colspan="3"></td></tr>
<tr><td rowspan="2">Matching item</td><td>Generic</td><td>Cause-Effect</td><td>Work-sequence</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Complexity level:</td><td colspan="4">C2</td></tr>
<tr><td>Date of OP:</td><td colspan="4">September 2020</td></tr>
<tr><td>Related model:</td><td colspan="4">M 1.5</td></tr>
<tr><td>Time allocation:</td><td colspan="4">3 minutes</td></tr>
</table>

Test Item	Give four (4) quality parameters of fruits that should be considered when inspecting fruits at reception for processing
Answer spaces	(i) …… (ii) …… (iii) …… (iv) ……
Expected key (answers)	(i) Maturity (over-ripe or unripe) (ii) Colour (iii) Size or shape (iv) Texture of fruit (v) Taste of the fruit (vi) Visible molds or rot (vii) Serious bruising or cuts (viii) Presence of foreign matter (ix) Presence of large amounts of leaves

<table>
<tr><th>DIT/ QS</th><th>Test Item Database
Written (Theory) Test Item- no. 2</th></tr>
<tr><td>Occupational Title:</td><td>Juice Processor</td></tr>
<tr><td>Competence level:</td><td>Level 1</td></tr>
<tr><td>Code no.</td><td></td></tr>
<tr><td>Test Item type:</td><td>
<table>
<tr><td>Short answer</td><td colspan="3">√</td></tr>
<tr><td>Multiple choice</td><td colspan="3"></td></tr>
<tr><td rowspan="2">Matching item</td><td>Generic</td><td>Cause-Effect</td><td>Work-sequence</td></tr>
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<tr><td>Complexity level:</td><td>C2</td></tr>
<tr><td>Date of OP:</td><td>September 2020</td></tr>
<tr><td>Related model:</td><td>M1.5</td></tr>
<tr><td>Time allocation:</td><td>3 minutes</td></tr>
</table>

Test Item	Name any two types of contaminants found in fruits and give an example in each case
Answer spaces	(i) ……..…… (ii) ……..……
Expected key (answers)	(i) Biological contaminants e.g. bacteria, molds, yeast and viruses. (ii) Chemical contaminants e.g. pesticides residues, detergents (iii) Physical contaminants e.g. metal pieces from machines, stones, glass, hair, excretes, bones

<table>
<tr><th>DIT/ QS</th><th>Test Item Database
Written (Theory) Test Item- no. 3</th></tr>
<tr><td>Occupational Title:</td><td>Juice Processor</td></tr>
<tr><td>Competence level:</td><td>Level 1</td></tr>
<tr><td>Code no.</td><td></td></tr>
<tr><td>Test Item type:</td><td>
<table>
<tr><td>Short answer</td><td colspan="3"></td></tr>
<tr><td>Multiple choice</td><td colspan="3">√</td></tr>
<tr><td rowspan="2">Matching item</td><td>Generic</td><td>Cause-Effect</td><td>Work-sequence</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Complexity level:</td><td>C1</td></tr>
<tr><td>Date of OP:</td><td>September 2020</td></tr>
<tr><td>Related module:</td><td>M1.6</td></tr>
<tr><td>Time allocation:</td><td>1 minute</td></tr>
</table>

Test Item	Which of the following is **NOT** a sensory evaluation parameter for juice?
Distractors and correct answer	A. Colour B. Taste C. Viscosity D. Mouth feel

Key (answer)	C

<table>
<tr><th>DIT/ QS</th><th>Test Item Database
Written (Theory) Test Item- no. 4</th></tr>
<tr><td>Occupational Title:</td><td>Juice Processor</td></tr>
<tr><td>Competence level:</td><td>Level 1</td></tr>
<tr><td>Code no.</td><td></td></tr>
<tr><td>Test Item type:</td><td>
<table>
<tr><td>Short answer</td><td colspan="3"></td></tr>
<tr><td>Multiple choice</td><td colspan="3">√</td></tr>
<tr><td rowspan="2">Matching item</td><td>Generic</td><td>Cause-Effect</td><td>Work-sequence</td></tr>
<tr><td></td><td></td><td></td></tr>
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</td></tr>
<tr><td>Complexity level:</td><td>C2</td></tr>
<tr><td>Date of OP:</td><td>September 2020</td></tr>
<tr><td>Related module:</td><td>M1.5</td></tr>
<tr><td>Time allocation:</td><td>1 minute</td></tr>
</table>

Test Item	Which one of the following is a reason for deseeding during orange juice extraction?
Distractors and correct answer	A. Seeds will increase sugars of the juice B. Seeds contain compounds that will colourise the juice C. Seeds contain bitter compounds that will affect juice taste D. Seeds contain bitter compounds that will reduce the shelf life of juice

Key (answer)	C

<table>
<tr><td>DIT/ QS</td><td colspan="4">Test Item Database
Written (Theory) Test Item- no. 5</td></tr>
<tr><td>Occupational Title:</td><td colspan="4">Juice Processor</td></tr>
<tr><td>Competence level:</td><td colspan="4">Level 1</td></tr>
<tr><td>Code no.</td><td colspan="4"></td></tr>
<tr><td>Test Item type:</td><td colspan="4"><table>
<tr><td>Short answer</td><td colspan="3"></td></tr>
<tr><td>Multiple choice</td><td colspan="3"></td></tr>
<tr><td rowspan="2">Matching item</td><td>Generic</td><td>Cause-Effect</td><td>Work-sequence</td></tr>
<tr><td>√</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Complexity level:</td><td colspan="4">C2</td></tr>
<tr><td>Date of OP:</td><td colspan="4">September 2020</td></tr>
<tr><td>Related module:</td><td colspan="4">M1.5</td></tr>
<tr><td>Time allocation:</td><td colspan="4">5 minutes</td></tr>
</table>

Test Item	Match the following extraction means with their corresponding raw materials

Column A	
1	Crush
2	Brew
3	Pulp
4	Clarify

Column B	
A	Beetroot
B	Pineapple juice
C	Mangoes
D	Pineapple peels
E	Sugar canes
F	Hibiscus flowers

Key (answer)	1-E, 2-F, 3-C, 4-B

DIT/ QS	Test Item Database Written (Theory) Test Item- no. 6
Occupational Title:	Juice Processor
Competence level:	Level 1
Code no.	
Test Item type:	Short answer: Multiple choice: Matching item: Generic: Cause-Effect: Work-sequence: √
Complexity level:	C3
Date of OP:	September 2020
Related module:	M1.3
Time allocation:	5 minutes

Test Item	Arrange the activities of obtaining mango juice from fresh mangoes below, in their order of performance

Column A (chronology)	**Column B (work steps) in wrong chronological order**	
1st	A	Weighing
2nd	B	Labeling
3rd	C	Pulping
4th	D	Peeling
5th	E	Cleaning
6th	F	Packaging
7th	G	Storage of juice
8th	H	Sorting and grading
9th	I	Reception of raw materials

Key (answer)	1- I, 2- H, 3- A, 4- E, 5- D, 6- C, 7- F, 8- B, 9- G.

PERFORMANCE TEST ITEMS (SAMPLES)

DIT/ QS	Test Item Database Performance Test Item No.7
Occupational Title:	Juice Processor
Competence level:	Level 1
Code no.	
Test Item:	Prepare hibiscus juice and store it to last for not less than one week.
Complexity level:	P1
Date of OP:	September 2020
Related module:	1.4
Related skills and knowledge:	GMP/GHP, Brewing process, packaging and storage;
Required tools, Materials and Equipment:	Source of heat, pans, stirrer, refrigerator, packaging materials, cold storage facility (Ice boxes, glass packaging).
Time allocation:	2 hours
Preferred venue:	Laboratory/ production room
Remarks for candidates	Candidates should be in possession of the necessary personnel protective equipment
Remarks for assessors	Provide students with dry hibiscus flowers and other resources required

#	Assessment criteria	Scoring guide	Max Score	
			Process	Result
1	Preparation for task	Maintained personal hygiene • No jewelry • Short finger nails • No strong perfumes • Trimmed hair and beard • No visible cuts and wounds		4
		Wore personnel protective gear • lab coat/ apron • nose mask • safety shoes • head gear • gloves		4

		Cleaned working area	2	
		Dirt free working area observed		3
		Used food grade materials for cleaning working surfaces observed		3
		Assembled tools and equipment	1	
		Cleaned tool and equipment	2	
		Clean tools and equipment observed		2
4	Brewing hibiscus	Boiled Hibiscus in water	2	
		Hibiscus brewed for a short time (5-15 minutes)		3
		Sieved the boiled mixture	2	
		No foreign materials seen in the juice		3
		Obtained hibiscus juice		2
		Added preservatives	2	
5	Packaging juice	Cleaned packaging material	2	
		Clean packaging material observed		3
		Filled containers with juice	3	
		Left head space of 5-10 percent		3
		Capped containers	2	
		No leakage of juice observed		3
6	Storing juice	Cleaned the store	2	
		No dirt in the store observed		2
		Stored the hibiscus juice		2
7	Post handling activities	Cleaned working area	2	
		Dirt free working area observed		2
		Cleaned tools and equipment	2	
		Clean tools and equipment observed		2
TOTAL			**24**	**41**
Maximum score (Y)		**(X/Y) x 100**	**65**	

DIT/ QS	Test Item Database Performance Test Item No.8
Occupational Title:	Juice Processor
Competence level:	1
Code no.	
Test Item:	Extract and store juice from 2kgs of fresh pineapples
Complexity level:	P2
Date of OP:	September 2020
Related module:	M1.3
Related skills and knowledge:	• Food Hygiene and sanitation • Minimal food preservation • Sensory evaluation • Physical properties of fruits
Required tools, Materials and Equipment:	knife, chopping board, screw press, sauce pans, bucket, waste bin, de-aerator, disinfectant, potable water, jerry can, packaging materials, storage facilities, blender, juicer, stirrer
Time allocation:	1:30 hours
Preferred venue:	Production room
Remarks for candidates	Should provide personnel protective Equipment
Remarks for assessors	Provide candidates with required resources for assessment.

#	Assessment criteria	Scoring guide	Max Score	
			Process	Result
1	Preparation for the task	Wore personnel protective equipment ▪ Gloves ▪ White laboratory coat/ apron ▪ Safety shoes ▪ Head gear ▪ Face mask		4
		Cleaned work area	3	
		Work area free from dirt observed		2
		Cleaned tools and equipment	3	
		Weighed pineapples	1	
		Specification of 2kg obtained		2
		Cleaned the pineapples	2	
		Use of a food grade materials for cleaning observed		2

		No foreign material observed on the pineapples		2
		Peeled pineapples	3	
		No wastage of pineapples observed		2
		No eyes observed on the peeled fruit		2
3	Extracting juice	Squeezed juice from pineapples	2	
		Fine dry pineapple fiber observed		3
		Disposed waste	2	
		Obtained pineapple juice		2
		Added preservatives	3	
4	Storing juice	Prepared packaging material	2	
		Packed pineapple juice		2
		No spills observed		2
		Tightly sealed packages observed		2
		Cleaned storage facility	3	
		No dirt in storage facility observed		2
		Placed juice in cold storage facility	1	
5	Demobilisation of resources	Cleaned work area	3	
		Clean work area observed		1
		Cleaned tools and equipment	1	
		Disposed of waste		2
		Stored tools and equipment	2	
		Managed time	2	
TOTAL			**33**	**28**
Maximum score (Y)		**(X/Y)**	**61**	

4.0 ATP- PART IV

INFORMATION ON REVIEW PROCESS

4.1 Occupational Profile Review (September 2020)

The Occupational Profile was exclusively reviewed by job practitioners of Juice Processor occupation, Secondary school teachers who double as examiners of Food and Nutrition with the Uganda National Examination Board (UNEB) and Curriculum Development Specialists working with the National Curriculum Development Centre (NCDC).

The job expert panel, guided by UVQF Facilitators defined duties and tasks performed and provided additional generic information regarding the occupation.

4.2 Training Module Review (September 2020)

Based on the Occupational Profile for Juice Processor of September 2020, Training Modules were reviewed by job practitioners, guided by UVQF Facilitators.

4.3 Test Item Review (September 2020)

Based on the Occupational Profile for Juice Processor of September 2020, and Training Modules, Test Items were reviewed by combined panels of instructors and job practitioners, guided by UVQF Facilitators.

4.4 Methodology

The rationale for the Assessment and Training Package development was to link Vocational Education and Training to the real world of work by bridging Occupational Standards to Training Standards through industry-led Standards-Based Assessment.

Active participation of both instructors and job practitioners' panels consolidated the development philosophy.

The panelists worked as teams in workshop settings complemented by off-workshop field research and literature review activities including international benchmarking.

4.5 Review Panel

The participating panels of Job Practitioners required at different stages were constituted by members from the following organisations:

Review Panel		
No.	**Name**	**Institution/ Organisation**
1	Francis Enaru	Ministry of Trade, Industry & Cooperatives
2	Lutale Dalausi	Dalausi Juice, Wandegeya
3	Nahirya Brenda Irene	Uhuru Food Technology & Skilling Centre
4	Kasule Denis	Brisk Beverages (U) Ltd
5	Catherine Davis	CARIDA Juice
6	Mugabe Brian	Makerere Business School & Innovations Centre
7	Nayiga Grace	Kyambogo University
8	Oryem Raphael	Uganda National Examinations Board
9	Tom Obwol Ametto	Uganda National Examinations Board
10	Namayengo Prossy	National Curriculum Development Centre
11	Jumba Isaac	MIST Ventures Ltd
12	Nalubega Christine	Mengo Senior School

4.6 Facilitator team

This Assessment and Training Package was reviewed by a Facilitator team listed below:

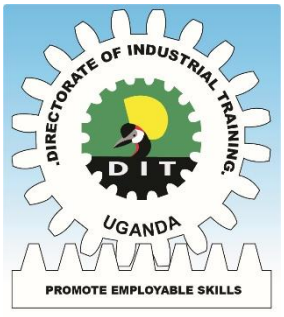
1. **Team Leader:** Ms Mukyala Ruth Ag. Deputy Director/QS Dept, DIT
2. **Facilitators:** Ms. Nakimuli Patra QS/ DIT; and Ms. Asiimwe Maureen, QS/DIT
3. **Data Entrants:** Mr Ongom Augustine, Mr. Tumusiime Edward, Mr. Nuwe Eriya, Ms. Kyatuhire Fortunate
4. **Compiled by:** Ms Nakimuli Patra QS/DIT
5. **Edited by:** Ms. Mukyala Ruth Ag. Deputy Director QS Dept. DIT
6. **Coordinated by:** Mr. Byakatonda Patrick, Ag. Director, DIT; and Ms. Mukyala Ruth Ag. DD Qualification Standards Dept. DIT

4.7 Reference time:

This Assessment and Training Package was compiled in September 2020 and may be periodically revised to match the dynamic trends in the occupation and hence issued in different versions.

References

1. Dev Raj (2004). *Food Science and Technology*
2. FM Clydesdale (2008). *Food Science and Nutrition; Current questions and answer*
3. Ron Wills, Terry Lee, Doug Graham (2011). *Postharvest:An Introduction to the Physiology and Handling of Fruits and Vegetables*
4. Steven Nagy, Chin Shu Chen and Philip E Shaw (1995). *Fruit Juice Processing Technology*
5. V Ravishankar Rai V and Jamuna A Bai (2014). *Microbial Food Safety and Preservation Techniques*
6. Victor Falguera and Albert Ibarz (2014). *Juice Processing: Quality, Safety and Value Added Opportunities*. ISBN-13:978-1138033740



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