

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARD**

**FOR**

**ANIMAL HEALTH AND PRODUCTION TECHNICIAN**

**LEVEL 5**

**OS ISCED CODE:0841 454 A**

First published 2024

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social-economic development. Quality education and training will contribute to the achievement of Kenya’s development blueprint, Vision 2030 and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. These reforms resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No.14 of 2012). A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET be competency based, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

The reforms also demand that industry takes a leading role in occupational standard development to ensure it addresses its competence needs. It is against this background that this occupational standard was developed for developing a Competency-Based Education and Training (CBET) curriculum for animal health and production technician level 5. This occupational standard will also be the basis for the assessment of an individual for competency certification.

It is my conviction that this occupational standard will play a great role in the development of a competent human resource for sustainable development.

# PREFACE

Kenya Vision 2030 aims to transform the country into a newly industrializing, middle-income country providing a high-quality life to all its citizens by the year 2030. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills, and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency-Based Education and Training (CBET).

TVET Act CAP 210A and Sessional Paper No. 14 of 2012 on reforming education and training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by the industry as well as increase the global competitiveness of the Kenyan labour force.

# ACKNOWLEDGMENT

This occupational standard was developed through the combined effort of various stakeholders from private and public organizations. I am thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided input towards the development of these occupational standards.

I also thank all the individuals and organizations who participated in the validation of these occupational standards.

# ABBREVIATIONS AND ACRONYMS

|  |  |
| --- | --- |
| VMD | Veterinary Medicines Directorate |
| OSH | Occupational Safety and Health |
| OSHA | Occupational Safety and Health Administration |
| WHO | World Health Organization |
| TVET | Technical and Vocational Education and Training |
| PPE | Personal Protective Equipment |
| CSF | Cerebrospinal Fluid |
| ELISA | Enzyme Linked Immunosorbent Assay |
| PCR | Polymarase Chain Reaction |
| CFT | Complements Fixation Test |
| IFAT | Immunofluorescent Antibody Test |
| ICT | Information Communication and Technology |
| CBPP | Contagious Bovine Pleuropneumonia |
| CCPP | Contagious Caprine Pleuropneumonia |
| FMD | Foot and Mouth Disease |
| PPR | Peste des Petits Ruminants |
| ECF | East Coast Fever |
| RVF | Rift Valley Fever |
| LSD | Lumpy Skin Disease |
| PH | Hydrogen Potential |
| CN Ratio | Carbon Nitrogen Ratio |
| Ig | Immunoglobulin |
| Soil EC | Soil Electrical Conductivity |
| DNA | Deoxyriboneucleic Acid |
| RNA | Ribonucleic Acid |
| HACCP | Hazard Analysis Critical Control Point |
| NCD | Newcastle Disease |
| ANOVA | Analysis of Variance |
| ILRI | International Livestock Research Institute |
| HIV/AIDS | Human Immunodeficiency Virus and Acquired Immune deficiency Syndrome |
| STI | Sexual Transmitted Infection |
| ARVs | Antiretrovirals |
| AMIS | Agricultural Marketing Information System |
| BOD | Biochemical Oxygen Demand |

# KEY TO ISCED UNIT CODE

Sector / Industry

Sub Sector

Occupational Area

Version Control

Unit of Competence Number

ISCED level, Programme Orientation and Level of Completion

xx

x

xxx

x

x

x

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# OVERVIEW

Animal health and production level 5 occupational standard consists of competencies required by a person to enable him/her perform duties of an animal health and production technician. The competencies managing parasitic, microbial, metabolic, nutritional and reproductive diseases and disorders. It also involves managing livestock parasites and veterinary pharmaceuticals and toxins, applying animal health skills, performing animal routine practices and conducting animal health extension services.

The occupational standard consists of the following basic, common and core units of competency.

# SUMMARY OF UNITS OF COMPETENCY

|  |  |
| --- | --- |
| **BASIC UNITS OF COMPETENCY** | |
| **ISCED UNIT CODE** | **UNIT TITLE** |
| 0611 451 01A | Apply digital literacy |
| 0031 441 02A | Apply communication skills |
| 0413 441 03A | Apply entrepreneurial skills |
| **COMMON UNITS OF COMPETENCY** | |
| 0912 441 04A | Apply basic knowledge of animal anatomy and physiology |
| 0811 441 05A | Apply knowledge of soil science |
| 0512 441 06A | Apply knowledge of basic biochemistry |
| 0511 441 07A | Apply knowledge of basic microbiology |
| 0811 441 08A | Apply knowledge of basic genetics in animal breeding |
| 0811 441 09A | Apply knowledge of farm structures and mechanization |
| 0811 441 10A | Apply knowledge of animal nutrition in feeding |
| 0811 441 11A | Apply knowledge of basic general pathology |
| 0811 441 12A | Apply knowledge of animal welfare, ethics and law |
| 0841 441 13A | Apply knowledge of basic epidemiology |
| 0841 441 14A | Apply knowledge of zoonosis and one health concept |
| 0841 441 15A | Apply knowledge of basic immunology in animal vaccination |
| 0811 441 16A | Apply knowledge of ruminant livestock production systems |
| 0811 441 17A | Apply knowledge of non-ruminant livestock production systems |
| 0811 441 18A | Manage companion and draught animals |
| 0913 441 19A | Apply knowledge of HIV/AIDS |
| 0314 441 20A | Apply knowledge of rural sociology |
| 0511 441 21A | Apply knowledge of botany and zoology |
| 0811 441 22A | Apply knowledge of agribusiness management |
| 0811 441 23A | Apply knowledge of marketing and value addition of animal products |
| 0521 441 24A | Apply knowledge of ecology and environmental science |
| 0811 441 25A | Apply knowledge of pasture and fodder production and conservation |
| 0811 441 09A | Apply knowledge of biostatistics and computer applications |
| 0811 441 10A | Apply knowledge of apiculture and aquaculture |
| 0811 441 11A | Conduct animal health extension activity |
| **CORE UNITS OF COMPETENCY** | |
| 0841 451 29A | Manage parasitic diseases |
| 0841 451 30A | Manage microbial diseases |
| 0841 451 31A | Manage metabolic, nutritional and reproductive diseases and disorders |
| 0841 451 32A | Manage veterinary pharmaceuticals and toxins |
| 0841 451 33A | Manage livestock parasites |
| 0841 441 34A | Apply animal health skills |
| 0811 451 35A | Perform animal routine practices |

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# BASIC UNITS OF COMPETENCY

## APPLY DIGITAL LITERACY

**UNIT CODE: 0611 451 01A**

**UNIT DESCRIPTION:**

This unit covers the competencies required to demonstrate digital literacy. It involves operating computer devices, solving tasks using the Office suite, accessing online/offline data and information, performing online communication and collaboration, applying cybersecurity skills and performing jobs online. It also involves applying job entry techniques.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace functions | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| --- | --- |
| 1. Operate computer devices | * 1. C***omputer device*** usage is determined as per workplace requirements.   2. ***Computer hardware*** is identified according to job requirements.   3. ***Computer software*** is identified according to workplace requirements.   4. Computer devices are turned on or off as per the correct workplace procedure.   5. ***Mouse techniques*** are applied in solving tasks as per workplace requirements.   6. Keyboardtechniques are applied in solving tasks as per workplace requirements.   7. Computer files and folders are created and managed as per workplace requirements.   8. ***Internet connection option***s are identified and applied in connecting computer devices to the Internet.   9. ***External devices*** are identified and connected to the computer devices as per the job requirement. |
| 1. Solve tasks using Office suite | 1. ***Word processing concepts***are applied in solving workplace tasks as per job requirements. 2. Worksheet data is entered and prepared in accordance with work procedures. 3. Worksheet data is built and edited in accordance with workplace procedures. 4. ***Data manipulation*** on a worksheet is undertaken in accordance with work requirements. 5. Worksheets are saved and printed in accordance with job requirements. 6. ***Electronic presentation concepts***are applied in solving workplace tasks as per job requirements. |
| 1. Manage data and information | * 1. Office ***internet services*** are identified and applied in accordance with office procedures.   2. ***Internet access applications*** are determined in accordance with office operation procedures.   3. Internet search is performed as per job requirements.   4. Online digital content is downloaded in accordance with workplace requirements.   5. Digital content is identified and backed up in accordance with workplace procedures. |
| 1. Perform online communication and collaboration | * 1. Netiquette principles are observed as per work requirements.   2. Electronic mail communication is executed in accordance with workplace policy.   3. Digital content copyright and licenses are identified and applied according to workplace policies and regulatory requirements.   4. ***Online*** ***collaboration tools*** are applied in accordance with workplace policies and regulatory requirements. |
| 1. Apply cybersecurity skills | * 1. ***Data protection*** and ***privacy*** is classified in accordance with workplace policies and regulatory requirements.   2. ***Internet security threats*** are identified as per workplace policies and regulatory requirements.   3. Computer threats and crimes are detected in accordance to Information Management security guidelines   4. ***Cybersecurity control measures*** are applied in accordance with workplace policies and regulatory requirements. |
| 1. Perform online jobs | * 1. ***Online job platforms*** are identified as per the job requirements.   2. Online accounts and profiles are created in accordance with the work requirements.   3. Online jobs are identified according to the bidder’s skillset.   4. Online digital identity is managed according to industry best practices.   5. Online job bidding is done as per the specific job requirements.   6. Online tasks are executed according to the job requirements.   7. Personal online payment account is managed in accordance with financial regulations. |
| 1. Apply job entry techniques | * 1. ***Job opportunities*** are sought based on competencies.   2. A winning resume/CV is developed as per job advertisement.   3. An application/cover letter is developed based on the job advertisement.   4. ***Certificates and testimonials*** are organized as per resume.   5. ***Interview skills*** are demonstrated as per job advertisement. |

**RANGE**

This section provides a work environment and conditions to which the performance criteria apply. It allows for a different work environment and situations that will affect performance.

| **Variable** | **Range** |
| --- | --- |
| 1. Computer devices may include but are not limited to: | * Desktops * Laptops * Smartphones * Tablets * Smartwatches |
| 1. Computer hardware may include but are not limited to: | * The System Unit E.g. Motherboard, CPU, casing, * Input Devices e.g. Pointing, keying, scanning, voice/speech recognition, direct data capture devices. * Output Devices e.g. hardcopy output and softcopy output * Storage Devices e.g. main memory e.g. RAM, secondary storage (Solid state devices, Hard Drives, CDs & DVDs, Memory cards, Flash drives * Computer Ports e.g. HDMI, DVI, VGA, USB type C etc. |
| 1. Computer software may include but are not limited to: | * System software e.g. Operating System (Windows, Macintosh, Linux, Android, iOS) * Application Software e.g. Word Processors, Spreadsheets, Presentations etc. * Utility Software e.g. Antivirus programs |
| 1. External devices may include but are not limited to: | * Printers * Projectors * Smart Boards * Speakers * External storage drives * Digital/Smart TVs |
| 1. Word processing concepts may include but are not limited to: | * Creating word documents * Editing word documents * Formatting word documents * Saving word documents * Printing word documents |
| 1. Mouse techniques may include but are not limited to: | * Clicking * Double-clicking * Right-clicking * Drag and drop |
| 1. Internet connection options may include but are not limited to: | * Mobile Networks/Data Plans * Wireless Hotspots * Cabled (Ethernet/Fiber) * Dial-Up * Satellite * ISDN (Integrated Services Digital Network) |
| 1. Data manipulation may include but are not limited to: | * Use of formulae * Use of functions * Sorting * Filtering * Visual representation using charts |
| 1. Electronic presentation concepts may include but are not limited to: | * Creating slides * Editing slides * Formatting slides * Applying slide effects and transitions * Creating and playing slideshows * Saving presentations * Printing slides and handouts |
| 1. Internet services may include but are not limited to: | * Communication Services * Information Retrieval Services * File Transfer * World Wide Web Services * Web Services * Directory Services * Automatic Network Address Configuration * NewsGroup * Ecommerce |
| 1. Internet access applications/software may include but are not limited to: | * Browsers * Email Apps * eCommerce Apps |
| 1. Online collaboration tools may include but are not limited to: | * Online Storage * Online productivity applications * Online meetings, * Online learning environments, * Online calendars * Social networks |
| 1. Data protection and privacy may include but not limited to: | * Confidentiality of data/information * Integrity of data/information * Availability of data/information |
| 1. Internet security threats may include but not limited to: | * Malware attacks * Social engineering attacks * Software supply chain attacks * Advanced persistent threats (APT) * Distributed denial of service (DDoS) * Man-in-the-middle attack (MitM) * Password attacks * IoT Attacks * [Phishing Attacks](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/#phishing-attacks) * [Ransomware](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/#ransomware) |
| 1. Security threats control measures may include but not limited to: | * Counter measures against cyber terrorism * Physical Controls * Technical/Logical Controls * Operational Controls |
| 1. Online job platforms may include but are not limited to: | * Remotask * Data annotation.tech * Cloudworker * Upwork * Oneforma * Appen |
| 1. Job opportunities may include but not limited to: | * Self-employment * Service provision * product development * salaried employment |
| 1. Certificates and testimonialsmay include but not limited to: | * Academic credentials * Letters of previous employments/ services rendered * Letters of commendation * Certifications of participation * Awards |
| 1. Interview skills may include but not limited to: | * Listening skills * Grooming * Language command * Articulation of issues * Body language * Time management * Honesty * Generally knowledgeable in current affairs and technical area |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Computer Hardware and Software Concepts
* Computer Security Concepts (Data security and privacy)
* Cyber security threats and control measures
* Understanding Computer Crimes
* Detection and protection against computer crimes
* Laws governing protection of ICT in Kenya
* Digital Identity Management
* Netiquette Principles
* Fundamentals of Copyright and Licenses
* Word processing;
* Functions and concepts of word processing;
* Documents and tables creation and manipulations;
* Document editing;
* Document formatting;
* Word processing utilities
* Spreadsheets;
* Meaning, types and importance of spreadsheets;
* Components of spreadsheets;
* Functions, formulae, and charts, uses and layout;
* Data formulation, manipulation and application to cells;
* Editing & formatting spreadsheets;
* Presentation Packages;
* Types of presentation Packages.
* Creating, formulating, running, editing, printing and presenting slides and handouts
* Networking and Internet;
* Internet connectivity.
* Browser and digital content management;
* Managing data, information, and digital content
* Electronic mail and World Wide Web
* Fundamentals of Online Working;
* Online Profile Management;
* e-Portfolio Management;
* Online Jobs Bidding;
* Online Payment Systems;
* Job entry techniques
* Job searching sites
* Interview preparation skills
* Interview handling

**Required skills**

The individual needs to demonstrate the following skills:

* Active listening
* Keyboard Skills
* Mouse Skills
* Analytical skills
* Creativity
* Interpretation Skills
* Communication
* Spreadsheet operations (applying fundamental operations such as addition, subtraction, division and multiplication)
* Computer Use Safety Skills
* Document Editing Skills
* Document Formatting Skills
* Document Printing Skills
* Netiquette Skills
* Internet Browsing Skills
* Problem Solving Skills
* Online Collaboration Skills
* Cybersecurity Skills
* CV writing
* Grooming

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge, and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | ***Assessment requires evidence that the candidate:***   * 1. Operated computer devices as per workplace policies and regulations.   2. Solved tasks using the office suite as per workplace policies and regulations.   3. Manage data and information as per workplace policies and regulations.   4. Performed online communication and collaboration as per workplace policies and regulations.   5. Applied cybersecurity skills in accordance with workplace policies and regulations.   6. Executed online tasks according to the job requirements.   7. Searched for job opportunity based on competencies.   8. Prepared job requirement documentations based on job opportunity.   9. Demonstrated interview skills based on the job opportunity. |
| 1. Resource implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place.   2. Access to relevant work environments where assessment can take place.   3. Resources relevant to the proposed activities or task. |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Competency may be assessed:   * 1. Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

# **APPLY COMMUNICATION SKILLS**

**UNIT CODE: 0031 441 02A**

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate communication skills. It involves applying communication channels, written, non-verbal, oral, and group communication skills.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements that specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| --- | --- |
| 1. Apply communication channels | 1. Specific communication channels are identified and applied based on workplace requirements. 2. Challenges are identified and addressed as per the operational standards of the organization. 3. Communication channels are evaluated to meet workplace needs. |
| 1. Apply written communication skills | * 1. Types of written communication are identified and applied according to the workplace requirements.   2. Written communication needs are identified and implemented according to workplace procedures.   3. Written communication guidelines are analyzed, evaluated, and revised based on workplace needs. |
| 1. Apply non-verbal communication skills | 3.1 Existing non-verbal communication techniques are identified and applied based on organization policy.  3.2 Non-verbal communication techniques are articulated and modeled to enhance inclusivity according to workplace requirements. |
| 1. Apply oral communication skills | 4.1 Types of oral communication are identified and established as per organization policy.  4.2 Pathways of oral communication are identified and established as per organization policy.  4.3 Pathways of oral communication are reviewed according to organization procedures.  4.4 Pathways of oral communication are maintained according to the organization standards. |
| 1. Apply group communication skills | 1. Group communication strategies are appliedbased on the workplace needs. 2. Groups are organized in accordance with workplace procedures. 3. Effective questioning, listening and non-verbal communication techniques are used as per needs.   5.4 Group communication challenges are identified and addressed according to the workplace needs. |

**RANGE**

This section provides the work environment and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| **Variable** | **Range** |
| --- | --- |
| 1. Communication strategies may include but are not limited to: | * Language switch * Comprehension check * Repetition * Asking confirmation * Paraphrasing * Clarification request * Translation * Restructuring * Generalization |
| 1. Effective group interaction may include but not limited to: | * Identifying and evaluating what is occurring within an interaction in a non-judgmental way. * Using active listening. * Making decision about appropriate words, behavior. * Putting together response which is culturally appropriate. * Expressing an individual perspective. * Expressing own philosophy, ideology and background and exploring impact with relevance to communication |
| 1. Situations may include but are not limited to: | * Establishing rapport * Eliciting facts and information * Facilitating resolution of issues * Developing action plans |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Active listening
* Interpretation
* Negotiation
* Writing
* Oral skills
* Creative thinking
* Critical thinking
* Decision making
* Analytical
* Innovation
* Conflict skills
* Leadership
* Problem solving skills
* Management
* Organizational
* Teamwork

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups
* Styles of group leadership
* Key elements of communications strategy
* Principles of effective communication
* Turn-taking techniques
* Conflict resolution techniques
* Work planning
* Work organization
* Company policies
* Company operations and procedure standards
* Fundamental rights at the workplace
* Personal hygiene
* Accountability
* Workplace problems and how to deal with them

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills, knowledge, and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency. | Assessment requires evidence that the candidate:   * 1. Identified and applied specific communication channels based on workplace requirements.   2. Identified and applied specific written communication correspondence according to the workplace requirements.   3. Applied and developed non-verbal strategies to communicate in all areas of the workplace requirements.   4. Established pathways of oral communication as per workplace policy.   5. Applied group communication strategies based on workplace needs. |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place. 2. Appropriately simulated environment where assessment can take place. 3. Resources relevant to the proposed activity or tasks. |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. In a simulated work environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## APPLY ENTREPRENEURIAL SKILLS

**UNIT CODE: 0413 441 04A**

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate an understanding of entrepreneurship. It involves demonstrating an understanding of financial literacy, applying entrepreneurial concepts identifying entrepreneurship opportunities, applying business legal aspects, developing business innovative strategies, and developing business plans.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements that specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in Range*** |
| --- | --- |
| 1. Apply Financial Literacy Skills | 1. **Sources of personal and business** ***funds*** are identified as per financial procedures and standards 2. Personal finances are managed as per financial procedures and standards 3. Savings are managed as per financial procedures and standards 4. Debts are managed as per financial procedures and standards 5. Investments are undertaken as per financial procedures and standards 6. Insurance services are procured as per financial procedures and standards |
| 1. Apply entrepreneurial concept | 1. Entrepreneurs and Business persons are distinguished as per principles of entrepreneurship 2. ***Types of entrepreneurs*** are identified as per principles of entrepreneurship 3. Ways of becoming an entrepreneur are identified as per principles of Entrepreneurship 4. ***Characteristics of Entrepreneurs*** are identified as per principles of Entrepreneurship 5. Salaried employment and self-employment are distinguished as per principles of entrepreneurship 6. ***Requirements for entry into self-employment*** are identified according to business procedures and standards 7. Roles of an Entrepreneur in an enterprise are determined according to business procedures and standards 8. **Contributions of entrepreneurship** to National development are identified as per business procedures and standards |
| 1. Identify entrepreneurial opportunities | 1. Business ideas are identified as per business procedures and standards 2. Factors to consider when evaluating business opportunity viability are explored based on business procedure and standards 3. Entrepreneurial opportunities are evaluated as per business procedures and standards 4. Business ideas and opportunities are generated as per business procedures and standards 5. Business life cycle is analysed as per business procedures and standards |
| 1. Apply business legal aspects | 1. ***Forms of business ownership*** are identified as per legal procedures and practices 2. Business Registration and Licensing processes are identified as per legal procedures and practices 3. Types of Contracts and Agreements are analysed as per legal procedures and practices 4. Employment Laws are identified as per legal procedures and practices 5. Taxation laws are identified as per legal procedures and practices |
| 1. Innovate Business strategies | 1. Business innovation strategies are determined by the organization standards 2. Creativity in business development is demonstrated in accordance with business standards 3. ***Innovative business standards***  are developed as per business principles 4. Linkages with other entrepreneurs are created as per best practice 5. ICT is incorporated in business growth and development as per best practice |
| 1. Develop Business Plan | 1. Business idea is described as per business procedures and standards 2. Business description is developed as per business plan format 3. Marketing plan is developed as per business plan format 4. Organizational/Management plan is prepared in accordance with business plan format 5. Production/operation plan is prepared in accordance with business plan format 6. Financial plan is prepared in accordance with the business plan format 7. Executive summary is prepared in accordance with business plan format 8. Business plan is presented as per best practice 9. Business ideas are incubated as per institutional policy. |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| **Variable** | **Range** |
| --- | --- |
| 1. Sources of personal funds mayinclude but not limited to: | * Salary/Wages * Investments * Savings * Inheritance * Government Benefits |
| 1. Sources of business finance mayinclude but not limited to: | * Equity Financing * Debt Financing, * Personal Savings/Investment * Retained Earnings * Grants and Subsidies * Crowdfunding * supplier Credit: * Leasing and Asset Financing: |
| 1. Types of entrepreneurs may include but not limited to: | * Innovators * Imitators * Craft * Opportunistic * Speculators |
| 1. Characteristics of Entrepreneurs may include but not limited to: | * Creative * Innovative * Planner * Risk taker * Networker * Confident * Flexible * Persistent * Patient * Independent * Future oriented * Goal oriented |
| 1. Requirements for entry into self-employment may include but not limited to | * Technical skills * Management skills * Entrepreneurial skills * Resources * Infrastructure |
| 1. Forms of businesses ownership may include but not limited to: | * Sole proprietorship * Partnership * Limited companies * Cooperatives |
| 1. Innovative business standards may include but not limited to: | * New products * New methods of production * New markets * New sources of supplies * Change in industrialization |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical
* Management
* Problem-solving
* Root-cause analysis
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Decision making
* Business communication
* Change management
* Competition
* Risk
* Net working
* Time management
* Leadership
* Factors affecting entrepreneurship development
* Principles of Entrepreneurship
* Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
* Conflict resolution
* Health, safety and environment (HSE) principles and requirements
* Customer care standards
* Basic financial management
* Business strategic planning
* Impact of change on individuals, groups and industries
* Government and regulatory processes
* Local and international market trends
* Product promotion standards
* Market and feasibility studies
* Government and regulatory processes
* Local and international business environment
* Relevant developments in other industries
* Regional/ County business expansion standards

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified Sources of personal and business finance as per financial procedures and standards 2. Managed Personal finances as per financial procedures and standards 3. Made Investment decisions as per financial procedures and standards 4. GeneratedBusiness ideas and opportunities based on business procedure and standards 5. Analysed business life cycle based on business procedure and standards 6. Determined business innovative standards as per business principles 7. Developed and presented a business plan as per regulatory framework. |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. In a simulated work environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# COMMON UNITS OF COMPETENCY

## APPLY BASIC KNOWLEDGE OF ANIMAL ANATOMY AND PHYSIOLOGY

**UNIT CODE: 0841 441 04A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to apply knowledge of animal anatomy and physiology. It involves applying principles of anatomy in animal handling, identifying animal tissues, organs and organ systems and identifying anatomical parts of the domestic fowl.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Apply anatomical and physiological principles. | * 1. Animal anatomical principles are applied as per work procedure   2. Animal cell physiology knowledge is applied as per work procedure   3. Mammalian cell types knowledge is applied as per work procedure |
| 1. Apply knowledge of animal’s body systems | 2.1 Animals tissues knowledge is applied as per work procedure  2.2 Animals organs knowledge is applied as per work procedure  2.3 Animals organ system knowledge is applied as per work procedure |
| 1. Apply knowledge of domestic fowl anatomy and physiology | 3.1 Domestic fowl digestive system knowledge is applied as per work procedure  3.2 Domestic fowl reproductive system knowledge is applied as per work procedure  3.3 Domestic fowl respiratory system knowledge is applied as per work procedure |
| 1. Apply knowledge of environmental physiology | 4.1 Environmental effects on animal physiology are managed as per work requirement.  4.2 Animal adaptive responses to environment are managed as per work requirement  4.3 Animal behavioral manifestation to environment are managed as per work requirement |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Branches of anatomy include | * Gross anatomy * Histology/ microscopic anatomy * Embryology * Comparative anatomy |
| 1. Animal tissues may include but are not limited to: | * Epithelial * Connective * Nervous * Muscle |
| 2.Animal organs may include but are not limited to: | * Brain * Heart * Lungs * Kidneys * Liver |
| 3.Animal organ system may include but are not limited to: | * Digestive * Skeletal * Muscular * Integument * Reproductive * Respiratory * Circulatory * Immune * Lymphatic * Endocrine * Nervous * Excretory |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Basic anatomy
* Anatomical terminologies
* Scope of anatomy

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:  1.1 Applied animal anatomical principles as per work procedure  1.2 Applied animal cell physiology knowledge as per work procedure  1.3 Applied mammalian cell types knowledge as per work procedure  1.4 Applied animal tissues knowledge as per work procedure  1.5 Applied animal organs knowledge as per work procedure  1.6 Applied animal organ system knowledge as per work procedure  1.7 Applied domestic fowl digestive system knowledge as per work procedure  1.8 Applied domestic fowl reproductive system knowledge as per work procedure  1.9 Applied domestic fowl respiratory system knowledge as per work procedure  1.10 Managed environmental effects on animal physiology as per work requirement.  4.2 Managed animal adaptive responses to environment as per work requirement  4.3 Managed animal behavioral manifestation to environment as per work requirement |
| 1. Resource implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Assessment could be conducted:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

## 

## APPLY KNOWLEDGE OF KNOWLEDGE OF SOIL SCIENCE

**UNIT CODE: 0811 441 05A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to demonstrate knowledge of soil science. It involves applying knowledge of principles of soil science, identifying properties of soil, identifying soil organisms and organic matter, and applying knowledge of soil fertility in fodder production.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply principles of soil science | 1.1 Soil formation knowledge is applied as per work requirement 1.2 Factors influencing soil formation are managed as per work procedure  1.3 Soil sampling methods are applied as per work procedure |
| 1. Apply knowledge soil organisms and organic matter | * 1. Types of soil organisms are identified as per work procedure   2. Effects of soil organisms on soil are managed as per work procedure   3. Organic matter knowledge is applied as per work requirement |
| 1. Apply knowledge of soil fertility in fodder production | 3.1 Organic farming knowledge is applied as per work procedure  3.2 Fertilizers are applied as per soil nutrient requirement  3.3 Soil fertility knowledge is applied as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Soil physical properties includes but not limited to: | * Soil texture * Soil aggregation * Soil consistency * Soil colour * Soil moisture * Soil air * Soil bulk density * Water holding capacity |
| 1. Soil chemical properties includes but not limited to: | * Soil pH * Soil EC * Cation exchange capacity * Percent base saturation * Salt index |
| 1. Soil biological properties includes but not limited to: | * Microbial activity * CN ratio |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Measuring
* Nutrients deficiency scouting
* Equipment calibration
* Technical Report writing
* Soil sampling
* Soil testing
* Plant tissue analysis
* Fertilizer recommendation
* Computation of lime requirement
* Observation
* Digital literacy

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Essential plant nutrients
* Soil-plant relationship
* Types of fertilizers and their nutrition content
* Sources of soil acidity
* Management of soil acidity
* Types of tools and equipment used in soil sampling and soil testing
* Soil degradation
* Soil conservation
* Standard operating procedures
* Good Agricultural Practices manual
* Accounting principles
* Production records and reports
* Waste Management
* Occupational Safety and Health Procedures

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied soil formation knowledge as per work requirement  1.2 Managed factors influencing soil formation as per work procedure  1.3 Applied soil sampling methods as per work procedure  1.4 Identified types of soil organisms as per work procedure  1.5 Managed effects of soil organisms on soil as per work procedure  1.6 Applied organic matter knowledge as per work requirement  1.7 Applied organic farming knowledge as per work procedure  1.8 Applied fertilizers as per soil nutrient requirement  1.9 Applied soil fertility knowledge as per work requirement |
| 1. Resource Implications (required for assessment) | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed:  Workplace or simulated workplace |
| 1. Guidance information for assessment | What can be assessed in holistic assessment (with other units relevant to the industry sector, workplace and job roles) is recommended. |

## APPLY KNOWLEDGE OF BIOCHEMISTRY

**UNIT CODE: 0512 441 06A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to apply knowledge of biochemistry. It involves applying the knowledge of macromolecules, enzymes in managing animal health, molecular genetics, biomolecule metabolism in animal health and knowledge of biochemistry in ruminant nutrition.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes**, which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements, which specify the required level of performance for each of the elements. ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Apply knowledge of macro-molecules in animal health | * 1. Carbohydrates knowledge is applied as per work requirement   2. Proteins knowledge is applied as per work requirement   3. Vitamins knowledge is applied as per work requirement   4. Lipids knowledge is applied as per work requirement |
| 1. Apply knowledge of enzymes in managing animal health | 2.1 ***Basic concepts of enzymes*** are applied as per work requirement  2.2 Catalytic reactions are managed as per work requirement  2.3 Enzymes metabolism knowledge is applied as per work procedure |
| 1. Apply knowledge of molecular genetics | * 1. Principles of molecular genetics are applied as per work procedure   2. Nucleic acid knowledge is applied as per work requirement   3. Nucleic acid metabolism knowledge is applied as per work requirement |
| 1. Apply knowledge of the biomolecule metabolism in animal health | 4.1 ***Biomolecule*** metabolism knowledge is applied as per work requirement  4.2 Metabolic pathways knowledge is applied as per work requirement  4.3 Effects of biomolecule metabolism on animal health are managed as per work procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variables** | **Range**  **May include but is not limited to:** |
| 1. Types of macromolecules include but not limited to: | * Carbohydrates * Proteins * Vitamins * Minerals * Lipids |
| 1. Basic concepts of enzymes include but not limited to: | * Isoenzymes * Holoenzymes * Coenzymes * Apoenzymes |
| 1. Types of biomolecules include but not limited to: | * Carbohydrates * Proteins * Vitamins * Minerals * Lipids |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem-solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* The basic structure of a living cell and its organization
* The structural elements of carbohydrates, proteins, lipids and their interactions with other small molecules
* The nature of enzymes
* The process of enzyme catalysis
* Biochemical reactions which micro and macromolecules undergo to maintain homeostasis, growth and maturation

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied carbohydrates knowledge as per work requirement  1.2 Applied proteins knowledge as per work requirement  1.3 Applied vitamins knowledge as per work requirement  1.4 Applied lipids knowledge as per work requirement  1.5 Appliedbasic concepts of enzymes as per work requirement  1.6 Managed catalytic reactions as per work requirement  1.7 Applied enzymes metabolism knowledge as per work procedure  1.8 Applied principles of molecular genetics as per work procedure  1.9 Applied nucleic acid knowledge as per work requirement  1.10 Applied nucleic acid metabolism knowledge as per work requirement  1.11Applied biomolecule metabolism knowledge as per work requirement  1.12 Applied metabolic pathways knowledge as per work requirement  1.13 Managed effects of biomolecule metabolism on animal health as per work procedure |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2. 2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

## APPLY KNOWLEDGE OF MICROBIOLOGY

**UNIT CODE: 0511 441 07A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to apply microbiological principles in diagnosing animal diseases. It involves applying knowledge of physiology and nutrition of microorganisms, microbial genetics and identifying microbes of veterinary importance.

**EL/EMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are **assessable** statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Perform basic laboratory techniques | * 1. Basic ***laboratory equipment*** are identified based on work requirement   2. Microbiological specimen are identified as per work requirement   1.3 Basic ***staining*** and processing techniques are applied as per work procedure |
| 1. Apply knowledge of physiology and nutrition of microorganisms | * 1. Bacterial cell knowledge is applied as per work requirement   2. Bacterial growth colony knowledge is applied as per work procedure   3. Staining technique is applied as per the work requirement   4. Microbe physiology and nutrition knowledge is applied as per work requirement |
| 1. Apply knowledge of microbial genetics | * 1. Microbes reproduction knowledge is applied as per work procedure   2. Sensitivity tests of microbes to drugs are performed as per work procedure   3. Microbial resistance to drugs knowledge is applied as per work requirement |
| 1. Identify microbes of veterinary importance | * 1. Pathogen-host relationships knowledge is applied as per work requirement   2. Microscopy of the microbes is performed based on the workplace procedures   3. Microbe culture is performed based on work procedures   4. Unique characteristics of organisms are identified as per work procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variables** | **Range**  **May include but not limited to:** |
| 1. Laboratory equipment include but not limited to: | * Microscope * Slides * Bunsen burner * Centrifuge * Spatula * Cover slip * Beakers * Petri dishes * Inoculating wires * Test tubes |
| 1. Staining include but not limited to: | * Gram staining * Giemsa staining * Methylene blue staining * Eosin staining |
| 1. Microbes include | * Bacteria * Fungi * Viruses * Mycoplasma * Rickettsia * Chlamydia |
| 1. Culture media include but not limited to: | * Blood agar * Mackonkey agar * Mannitol salt agar * Dextrose broth * Glucose agar |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Interpersonal skills
* Communication skills
* Problem-solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* The role of microbiology in animal health
* The nature and appropriate environmental conditions for the survival of microorganisms
* Diseases and physiological disorders associated with microorganisms
* Appropriate treatment and management of the various animal diseases caused by microorganisms
* Various laboratory tests in the diagnosis of diseases

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified basic laboratory equipment based on work requirement   2. Identified microbiological specimen as per work requirement   3. Applied basic staining and processing techniques as per work procedure   4. Applied bacterial cell knowledge as per work requirement   5. Applied bacterial growth colony knowledge as per work procedure   6. Applied staining methods knowledge as per the work requirement   7. Applied microbe physiology and nutrition knowledge as per work requirement   8. Applied microbes reproduction knowledge as per work procedure   9. Performed sensitivity tests of microbes to drugs as per work procedure   10. Applied microbial resistance to drugs knowledge as per work requirement   11. Applied pathogen-host relationships knowledge as per work requirement   12. Performed microscopy of the microbes based on the workplace procedures   13. Performed microbe culture based on work procedure   14. Identified unique characteristics of organisms as per work procedure |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# 

## APPLY KNOWLEDGE OF GENETICS IN ANIMAL BREEDING

**UNIT CODE: 0811 441 08A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to apply knowledge of genetics in animal breeding. It involves applying knowledge of basic concepts of animal genetics, identifying tools of animal breeding, applying knowledge of growth and development in animal breeding, and keeping of breeding records.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes**, which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements, which specify the required level of performance for each of the elements. ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Apply knowledge of basic concepts of animal genetics | * 1. Animal cell physiology knowledge is applied as per work requirement   2. ***Qualitative and quantitative*** genetic knowledge is applied as per work procedure   3. Effects of mutations and ***chromosomal aberrations*** are managed as per work requirement. |
| 1. Identify tools for animal breeding | * 1. ***Theory of selection*** knowledge is applied as per work requirement   2. Animal ***breeding tools*** knowledge is applied as per work requirement   3. Breeding systems and methods are applied as per work procedure |
| 1. Apply knowledge of growth and development in animal breeding | * 1. Factors influencing post-natal growth and development are managed as per work requirement   2. Compensatory growth knowledge is applied as per work requirement   3. Maturity and body composition knowledge is applied as per work requirement |
| 1. Keep breeding records | * 1. Breeding records are identified as per livestock production manual   2. Report on breeding records is prepared as per livestock production manual   3. Report on breeding records is disseminated as per livestock production manual |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variables** | **Range** |
| 1. Quantitative and qualitative genetic traits include but not limited to | * Coat colour * Udder * Egg production * Height * Weight * Milk production |
| 1. Chromosomal aberrations include | * Deletion * Translocation * Insertion * Inversion |
| 1. Theory of selection | * Natural * Artificial |
| 1. Breeding tools include but not limited to: | * Selection * Breeding |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem-solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Anatomy and physiology
* Livestock production

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Applied qualitative and quantitative genetic knowledge as per work procedure   2. Managed effects of mutations and chromosomal aberrations as per work requirement.   3. Applied theory of selection knowledge as per work requirement   4. Applied animal breeding tools knowledge as per work requirement   5. Applied breeding systems and methods as per work procedure   6. Managed factors influencing post-natal growth and development as per work requirement   7. Prepared report on breeding records as per livestock production manual   8. Disseminated report on breeding records as per livestock production manual |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

## APPLY KNOWLEDGE OF FARM STRUCTURES AND MECHANIZATION

**UNIT CODE: 0811 441 09A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician in order to apply knowledge of farm structures and mechanization. It involves applying knowledge of farm structures, farm power, and knowledge of farm mechanization.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of farm structures | * 1. Farm planning is conducted as per work requirement   2. ***Construction materials*** are assembled as per work requirement   3. Livestock ***Housing structures*** are managed as per work requirement   4. Livestock restraining structures are maintained as per work requirement   5. Dips and spray races are managed as per work requirement |
| 1. Apply knowledge on farm power | 2.1 ***Farm power*** knowledge is applied as per work requirement  2.2 Farm power is selected as work requirement  2.3 Tractor/animal power operations is managed as per work requirement |
| 1. Apply knowledge of farm mechanization | 3.1 Farm mechanization knowledge is applied as per work requirement  3.2 Challenges of farm mechanization are managed as per work requirement  3.4 Farm ***machinery and equipment*** are assembled as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| **Variable** | **Range** | |
| --- | --- | --- |
| 1. Construction material include but not limited to | * Timber * Stone * Metal * Iron sheets * Sand * Ballast * Cement * Nails |  |
| 1. Livestock housing structures include but not limited to | * Zero grazing unit * Piggery * Rabbitry * Poultry unit |  |
| 1. Types of farm power include but not limited to | * animal power * solar power * tractor power * human power |  |
| 1. Farm machinery and equipment | * Silage chopper * Chaff cutter * Hay Bailing machine * Knapsack sprayer |  |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Communication skills
* Animal handling skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Ecology and environmental sciences
* Soil science
* Companion and draught animal production

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Conducted farm planning as per work requirement  1.2 Assembled construction materials as per work requirement  1.3 Managed livestock housing structures as per work requirement  1.4 Maintained livestock restraining structures as per work requirement   * 1. Managed dips and spray races as per work requirement   1.7 Applied farm power knowledge as per work requirement  1.8 Farm power is selected as work requirement  1.9 Managed tractor/animal power operations as per work requirement  1.10 Farm mechanization knowledge is applied as per work requirement  1.11 Managed challenges of farm mechanization as per work requirement  1.12 Assembled farm machinery and equipment as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF ANIMAL NUTRITION IN ANIMAL FEEDING

**UNIT CODE:0811 441 10A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge of animal nutrition in animal feeding. It involves applying principles of nutrition, knowledge of types of digestive systems, animal feed requirements, and formulate animal feed.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of principles of nutrition | * 1. Composition of feeds knowledge is applied as per work procedure   2. ***Types of feed*** knowledge is applied as per livestock production manual.   3. Functions of ***feed components*** knowledge are applied as per livestock production manual |
| 1. Apply knowledge of types of digestive systems | * 1. Ruminant and non-ruminant digestive systems knowledge is applied as per work requirements   2. Factors that affect digestibility of feed are managed as per work requirement   3. Factors affecting bioavailability of feed are managed as per work requirement |
| 1. Apply knowledge of animal feed requirements | * 1. Feed intake is evaluated as per work requirement   2. Factors affecting animal feed requirements are managed as per work requirement   3. Feed conversion efficiency is evaluated as per work requirement |
| 1. Formulate animal feed | * 1. Principles of ration formulation are applied as per livestock production manual   2. Ration ***formulation techniques*** are applied as per livestock production manual   3. Feed presentation knowledge is applied as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Range** | |
| 1. Types of feed includes but is not limited to | * Pastures * Forages * Concentrates | |
| 1. Feed components include but are not limited to | * Proteins * Carbohydrates * Vitamins * Lipids * Minerals * Water | |
| 1. Ruminants includes but is not limited to: | * Cattle * Sheep * Goats | |
| 1. Non-ruminants include but are not limited to: | * Pigs * Poultry * Donkeys * Camels |  |
| 1. Formulation techniques include but are not limited to: | * Pearson’s square * Trial and error * Algebraic * Linear programming * Least Cost formulation |  |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Numeracy skills
* Health & safety skills
* Weighing skills
* Animal handling skills
* Feed mixing skills
* Data handling skills
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Animal anatomy & physiology
* Animal production systems
* Biochemistry
* Hazard Analysis Critical Control Point (HACCP) process
* Toxicology

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied composition of feeds knowledge as per work procedure  1.2 Applied types of feed knowledge as per livestock production manual.  1.3 Applied functions of feed components knowledge as per livestock production manual  1.4 Applied ruminant and non-ruminant digestive systems knowledge as per work requirement  1.5 Managed factors that affect digestibility of feed as per work requirement  1.6 Managed factors affecting bioavailability of feed as per work requirement  1.7 Evaluated feed intake as per work requirement  1.8 Managed factors affecting animal feed requirements as per work requirement  1.9 Evaluated feed conversion efficiency as per work requirement  1.10 Applied principles of ration formulation as per livestock production manual  1.11 Applied ration formulation techniques as per livestock production manual  1.12 Applied feed presentation knowledge as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF BASIC GENERAL PATHOLOGY

**UNIT CODE: 0811 441 11A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to apply knowledge of basic general pathology. It involves applying principles of pathology, knowledge of cell injury, inflammation, tissue healing and repair, hemodynamic disorder, cellular adaptation and neoplasia.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Apply principles of pathology | * 1. General pathology knowledge is applied as per work requirement.   2. ***Pathological classes*** knowledge is applied as per work requirement   3. Pathological terminologies knowledge is applied as per work procedure |
| 1. Apply knowledge of cell injury | * 1. Cell injury knowledge is applied as per work requirement   2. Cause of cell injury is managed as per work procedure   2.3 Cell injury is managed as per work procedure |
| 1. Apply knowledge of tissue inflammation | * 1. Inflammation knowledge is applied as per work requirement   2. Inflammation classification knowledge is applied as per work requirement   3.3 Inflammation is managed as per work requirement |
| 1. Apply knowledge of tissue healing and repair | * 1. Wound healing by first intention knowledge is applied as per work requirement   2. Wound healing by second intention knowledge is applied as per work requirement   3. Factors affecting wound healing are managed as per work procedure |
| 5 Apply knowledge of hemodynamic disorders | * 1. Hyperemia and congestion are managed as per work requirement   2. Hemorrhage is managed as per work requirement   3. Thrombosis and embolism are managed as per work requirement   4. Oedema is managed as per work requirement   5. Infarction is managed as per work requirement   6. Shock is managed as per work requirement |
| 6 Apply knowledge of cellular adaptations | 6.1 Cellular adaptations knowledge is applied as per work requirement  6.2 Cellular adaptations causes are managed as per work requirement  6.3 Differentiation disturbance is managed as per work requirement |
| 7 Apply knowledge of neoplasia | * 1. **Neoplasia** knowledge is applied as per work requirement   2. Causes of neoplasia are managed as per work requirement   7.3 Neoplasms are managed as per work requirement |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| Pathological classes may include but are not limited to: | * Anatomical pathology * Clinical pathology * Forensic pathology * Histopathology * Surgical pathology * Dermatopathology |
| Neoplasia may include but not limited to: | * Carcinoma * Sarcoma * Adenoma * Lymphoma |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Basic knowledge of pathology
* Pathological terminologies
* Neoplasia
* Inflammation
* Tissue healing and repair

**Required skills**

The individual needs to demonstrate the following skills:

* Evaluations skills
* Critical thinking
* Surgical skills
* Animal handling
* Communication skills

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:  1.1 Applied cell injury knowledge as per work requirement  1.2 Applied inflammation knowledge as per work requirement  1.3 Managed inflammation as per work requirement  1.4 Applied wound healing by first intention knowledge as per work requirement  1.5 Applied wound healing by second intention knowledge as per work requirement  1.6 Managed hyperemia and congestion as per work requirement  1.7 Managed hemorrhage as per work requirement  1.8 Managed thrombosis and embolism as per work requirement  1.9 Managed oedema as per work requirement  1.10 Managed infarction as per work requirement  1.11 Managed shock as per work requirement  1.12 Applied cellular adaptations knowledge as per work requirement  1.13 Applied neoplasia knowledge as per work requirement   * 1. anaged causes of neoplasia as per work requirement |
| 1. Resource implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment   * 1. Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## APPLY KNOWLEDGE OF ANIMAL WELFARE, ETHICS AND LAW

**UNIT CODE: 0811 441 12A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by a veterinary technician in order to handle animals humanely. It involves applying knowledge of animal welfare, applying veterinary ethics and livestock development policies.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of animal welfare | * 1. General ***principles of animal welfare*** are applied as per OIE animal welfare standards.   2. Animals during transport are handled as per prevention of cruelty to animals act CAP 360   3. Animals during slaughter are handled as per prevention of cruelty to animals act   4. Animals during sports are handled as per prevention of cruelty to animals act   5. ***Draught animals*** are handled as per OIE animal welfare standards |
| 1. Apply veterinary ethics | * 1. Veterinary ethics are applied as per code of ethics.   2. Veterinary services are applied as per work requirement   3. Kenyan’s Vision 2030 is applied as per work requirement |
| 1. Applying livestock development policies | 3.1 Animal welfare policies are applied as per work requirement  3.2 Animal health and production legislation is applied as per the Kenyan constitution.  3.3 Institutions mandated with livestock policy development are identified as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Principles of animal welfare | * Freedom from hunger and thirst * Freedom from pain, injury and disease * Freedom from fear and distress * Freedom from discomfort * Freedom to express normal behaviour |
| 1. Extension services include but not limited to | * Field days * Farm visits * Livestock exhibit shows * Field demonstrations * Farmer field schools |
| 1. Draught animals include but not limited to | * Horses * donkeys * mules * camels * llamas |
| 1. Policies include but not limited to | * Kenya veterinary policy * National livestock policy |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Training skills
* Animal husbandry
* Animal handling
* Data handling
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Animal health
* Animal behaviour
* Animal anatomy and physiology
* Environment protection laws and regulations
* Waste management and disposal methods
* Farm structures

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied general principles of animal welfare as per OIE animal welfare standards.  1.2 Handled animals during transport as per prevention of cruelty to animals act CAP 360  1.3 Handled animals during slaughter as per prevention of cruelty to animals act  1.4 Handled animals during sports as per prevention of cruelty to animals act  1.5 Handled draught animals as per OIE animal welfare standards  1.6 Applied veterinary ethics as per code of ethics.  1.7 Applied veterinary services as per work requirement  1.8 Applied animal welfare policies as per work requirement  1.9 Applied animal health and production legislation as per n the Kenyan constitution. |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF BASIC EPIDEMIOLOGY

**UNIT CODE: 0841 441 13A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by animal health technician in order to apply knowledge of basic principles of epidemiology. It involves applying principles epidemiology, knowledge of disease occurrence, carrying out disease surveillance, developing and applying disease prevention programme.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** | **PERFORMANCE CRITERIA** |
| 1. Apply principles of epidemiology | 1.1 Distribution and determinants of disease knowledge is applied as per work requirement   * 1. Descriptive, analytic and clinical epidemiology knowledge is applied as per the principles of basic epidemiology   1.3 Measures of association are applied as per work procedure |
| 1. Apply knowledge of disease occurrence | 2.1 ***Determinants of diseases*** are managed as per work requirement  2.2 Measures of disease occurrence are applied as per work requirement.  2.3 Disease transmission and agent’s factors in disease transmission are managed as per work procedure.  2.4 Factors of maintenance of infections are managed as per work procedure.  2.5 Factors influencing disease patterns are managed as per work requirement |
| 1. Carry out disease surveillance | 3.1 ***Study designs*** knowledge is applied as per work procedure  3.2 Disease monitoring and surveillance is conducted as per work procedure  ***3.3*** Disease surveillance datais collected as per work procedure |
| 1. Develop and apply disease prevention programme | ***4.1 Disease prevention programs*** are developedas per work requirement  ***4.2 Notifiable diseases*** are identified as per work procedure  4.3 Notifiable diseases are reported as per work procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| * 1. Determinants of disease | * Primary determinants * Secondary determinants * Intrinsic determinants * Extrinsic determinants |
| * 1. Study designs | * Incidence studies * Incidence cases * Prevalence studies. * Prevalence cases |
| * 1. Sources of surveillance data | * Department of veterinary services in the Ministry of Livestock Development * Veterinary investigative Laboratories * Private veterinary practitioners/animal health service provides * Non-governmental organizations involved in livestock activities * Livestock research organizations such as the International Livestock Research Institute (ILRI) |
| * 1. Disease prevention programmes | * Vaccinations * Quarantine * Tick control, vector control * Surveillance and reporting * Adequate nutrition * Good husbandry management practices |
| * 1. Notifiable diseases include but not limited to | * East Coast Fever * Rabies, anthrax * Rift Valley Fever * Rinderpest * Newcastle disease * Trypanasomiasis |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Training skills
* Data handling
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Disease control
* Parasitology
* Animal diseases
* Waste management and disposal methods

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| * + 1. Critical Aspects of Competency | * 1. Applied distribution and determinants of disease knowledge as per work requirement   2. Applied descriptive, analytic and clinical epidemiology knowledge as per the principles of basic epidemiology   3. Applied measures of association as per work procedure   4. Managed determinants of diseases as per work requirement   5. Applied measures of disease occurrence as per work requirement.   6. Managed disease transmission and agent’s factors in disease transmission as per work procedure.   7. Managed factors of maintenance of infections as per work procedure.   8. Managed factors influencing disease patterns as per work requirement   9. Applied study designsknowledge as per work procedure   10. Conducted disease monitoring and surveillance as per work procedure   11. Collected disease surveillance dataas per work procedure   12. Developed disease prevention programsas per work requirement   13. Identified notifiable diseases as per work procedure   14. Reported notifiable diseases as per work procedure |
| * + 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| * + 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence   + - Oral questions |
| * + 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| * + 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF ZOONOSES AND ONE HEALTH CONCEPT

**UNIT CODE: 0841 441 14A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by a veterinary technician in order to apply knowledge on zoonoses and one health concept. It involves applying knowledge of zoonoses, diagnosing zoonoses in animals, treating zoonoses in animals, preventing the incidence of zoonoses, controlling the spread of zoonoses and applying knowledge of one health.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of zoonosis | * 1. ***Zoonoses*** are classified as per WHO guidelines.   2. ***Zoonoses*** ***transmission*** is managed as per work requirement   1.3 Zoonotic risk to humans is managed as per work procedure. |
| 1. Diagnose zoonosis in animals | 2.1 Clinical findings are identified as per work procedure  2.2 ***Laboratory samples*** are collected and analyzed as per work procedure  2.3 Postmortem examination is carried out as per work procedure |
| 1. Prevent and treat zoonosis in animals | 3.1 Intervention is identified as per diagnosis  3.2 Treatment is carried out as per VMD guidelines.  3.3 ***Biosecurity measures*** are applied as per requirement.  3.4 vaccination programs are carried out as per veterinary vaccination guidelines |
| 1. Apply knowledge of one health | 4.1 One healthconcept is applied as per WHO guidelines  4.2 Components of One health triad are managed as per WHO guidelines.  4.3 One health principles are applied as per work requirement. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Zoonoses include but not limited to | * Rabies * Anthrax * Brucellosis * Listeriosis * Dermatophytosis * Rift valley fever * Toxoplasmosis |
| 1. Modes of transmission include but not limited to | * Direct contact * Inoculation * Aerosol * Ingestion |
| 1. Laboratory samples include but not limited to | * Blood * Tissue * Serum * Milk |
| 1. Biosecurity measures | * cleaning and sanitizing * disinfection and sterililization * isolation * quarantine * testing and slaughter |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Training skills
* Animal husbandry
* Animal handling

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Animal health
* Animal behaviour
* Animal anatomy and physiology
* Environment protection laws and regulations
* Waste management and disposal methods

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Classified zoonosesas per WHO guidelines.  1.2 Managed zoonoses transmission as per work requirement  1.3 Managed zoonotic risk to humans as per work procedure.  1.4 Identified clinical findings as per work procedure  1.5 Collected and analyzed laboratory samples as per work procedure  1.6 Applied biosecurity measures as per requirement.  1.7 Carried out vaccination programs as per veterinary vaccination guidelines  1.8 Applied one healthconcept as per WHO guidelines |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF IMMUNOLOGY IN ANIMAL VACCINATION

**UNIT CODE: 0841 441 15A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply

knowledge of immunology in animal vaccination. It involves applying knowledge of

immunology, knowledge of serology in disease diagnosis, and applying knowledge of vaccines and immunization.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1.Apply knowledge of immunology | 1.1 Immunological principles are applied as per work requirement  1.2 Immunity knowledge is applied as per work requirement  1.3 Immunology knowledge is applied as per requirement |
| * 1. 2. Apply knowledge of serology in disease diagnosis | 2.1 Serological principles are applied as per work procedure  2.2 ***Serological tests*** are conducted as per work procedure  2.3 Serology knowledge is applied as per work requirement |
| 3. Apply knowledge of vaccinology and immunization | 3.1 Vaccinology principles are applied as per work requirement  3.2 Adjuvants knowledge in vaccines is applied as per work requirement  3.3 **V*accines*** are managed as per work procedure |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1.Serological tests may include but are not limited to: | * ELISA * PCR * CFT |
| 2.Types of vaccines may include but are not limited to: | * Live * Killed * Attenuated * Toxoids * Antisera |
| 3.Veterinary vaccines may include but are not limited to: | * Rabies * LSD * FMD * RVF * NCD * Fowl Pox * Fowl Typhoid * ASF |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Training skills
* Animal husbandry
* Animal handling

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Animal physiology
* Animal anatomy
* Animal welfare, ethics and Law
* VMD guidelines
* Veterinary Surgeons and paraprofessionals Act

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1.Critical aspects of competency | 1.1 Applied immunological principles as per work requirement  1.2 Applied immunity knowledge as per work requirement  1.3 Applied immunology knowledge as per requirement  1.4 Applied serological principles as per work procedure  1.5 Conducted serological tests as per work procedure  1.6 Applied serology knowledge as per work requirement  1.7 Applied vaccinology principles as per work requirement  1.8 Applied adjuvants knowledge in vaccines as per work requirement  1.9 Managed vaccines are as per work procedure |
| * 1. 2. Resource implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| * 1. 3. Methods of assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 4.Context of assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## APPLY KNOWLEDGE OF RUMINANT LIVESTOCK PRODUCTION SYSTEMS

**UNIT CODE: 0811 441 16A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician in order to apply knowledge of livestock production systems for ruminants. It involves managing ruminant production systems, carrying out routine ruminant practices and determining the economic implications of keeping ruminants.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Manage ruminant production systems | 1.1 ***Ruminant production systems*** are managed as per livestock production manual.  1.2 Ruminant structures are managed as per the livestock production manual.  1.3 Ruminant production systems knowledge in animal health is applied as per livestock production manual. |
| 1. Carry out routine ruminant practices | 2.1 Ruminants are fed as per livestock production manual.  2.2 Ruminants health practices are managed as per work procedure  2.3 **R*uminant records*** are documented as per livestock production manual |
| 1. Determine economic implications of ruminant keeping | 3.1 Ruminant production opportunities in Kenya are applied as per work requirement  3.2 Ruminant production constraints are managed as per work requirement  `3.3 Ruminant roles in the economy knowledge is applied as per work requirement. |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Ruminants production systems may include but are not limited to: | * Extensive * Intensive * Semi-intensive |
| 1. Ruminants may include but are not limited to: | * Cattle * Sheep * Goat * Camel |
| 1. Ruminants records may include but are not limited to: | * Breeding records * Feeding records * Health records * Production records |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Computer skills
* Data handling
* Animal husbandry
* Animal handling

**Required knowledge**

* The individual needs to demonstrate knowledge of:
* Traits of economic importance
* Animal health
* Animal behaviour
* Animal anatomy and physiology
* Animal registration procedure
* Environment protection laws and regulations
* Waste management and disposal methods
* Farm structures

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:  1.1 Managed ruminant production systems as per livestock production manual.  1.2 Managed ruminant structures as per the livestock production manual.  1.3 Applied ruminant production systems knowledge in animal health as per livestock production manual.  1.4 Fed ruminants as per livestock production manual.  1.5 Managed ruminants health practices as per work procedure  1.6 Documented ruminant records as per livestock production manual |
| 1. Resource implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## APPLY KNOWLEDGE OF NON RUMINANT LIVESTOCK PRODUCTION SYSTEMS

**UNIT CODE: 0811 441 17A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician in order to apply knowledge of livestock production systems for non-ruminants. It involves managing non ruminants production systems, carrying out various routine practices on non-ruminants and determining the economic implications of keeping non ruminants.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Manage non ruminant production systems | 1.1 **Non r*uminant production systems*** are managed as per livestock production manual.  1.2 Non ruminant structures are managed as per the livestock production manual.  1.3 Non ruminant production systems knowledge in animal health is applied as per livestock production manual. |
| 1. Carry out routine non ruminant practices | 2.1 Non ruminants are fed as per livestock production manual.  2.2 Non ruminants health practices are managed as per work procedure  2.3 **Non r*uminant records*** are documented as per livestock production manual |
| 1. Determine economic implications of ruminant keeping | 3.1 Non ruminant production opportunities in Kenya are applied as per work requirement  3.2 Non ruminant production constraints are managed as per work requirement  `3.3 Non ruminant roles in the economy knowledge is applied as per work requirement. |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1.Non ruminants may include but are not limited to: | * Poultry * Pigs * Rabbits * Donkeys * Cats * Dogs |
| 2.Non ruminants records may include but are not limited to: | * Breeding records * Feeding records * Health records * Production records |
| 3.Non ruminant production system may include but are not limited to: | * Intensive * Extensive |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Computer skills
* Data handling
* Animal husbandry
* Animal handling

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Traits of economic importance
* Animal health
* Animal behaviour
* Animal anatomy and physiology
* Animal registration procedure
* Environment protection laws and regulations
* Waste management and disposal methods
* Farm structures

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:  1.1 Managed non ruminant production systems as per livestock production manual.  1.2 Managed non ruminant structures as per the livestock production manual.  1.3 Applied non ruminant production systems knowledge in animal health as per livestock production manual.  1.4 Fed non ruminants as per livestock production manual.  1.5 Managed non ruminants health practices as per work procedure  1.6 Documented non ruminant records as per livestock production manual |
| 1. Resource implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## MANAGE COMPANION AND DRAUGHT ANIMALS

**UNIT CODE: 0811 441 18A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to manage companion and draught animals. It involves managing companion and draught animals, managing companion and draught animals housing & feeding and applying knowledge of camel production.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are **assessable** statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Manage companion and draught animals | * 1. ***Companion animal*** is managed as per work requirement   2. ***Draught animal*** *is* managed as per work requirement   3. Socio-economic effect of companion animal is managed as per work procedure   4. Socio-economic effect of draught animal is managed as per work procedure |
| 1. Manage housing & feeding of companion and draught animals | * 1. Draught animal housing is managed as per work requirement   2. Draught animals feeding is managed as per livestock production manual   3. Companion animal housing is managed as per work requirement   4. Companion animal feeding is managed as per livestock production manual |
| 1. Apply knowledge of camel production | 3.1 Camel geographical distribution knowledge is applied as per work requirement  3.2 Camel handling is conducted as per work requirement  3.3 Camel management is carried out as per livestock production manual. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variables** | **Range**  **May include but is not limited to:** |
| 1. Companion animals may include but are not limited to: | * Dogs * Cats * Horses |
| 1. Draught animals may include but are not limited to: | * Donkeys * Water Buffalo * Camels |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Animal handling skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Farm structures & mechanization
* Animal welfare, law & ethics
* Animal feeding & nutrition

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Managed draught animal housing as per work requirement  1.2 Managed draught animals feeding as per livestock production manual  1.3 Managed companion animal housing as per work requirement  1.4 Managed companion animal feeding as per livestock production manual  1.5 Carried out camel management as per livestock production manual. |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  4..1 Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

## APPLY KNOWLEDGE OF HIV/AIDS

**UNIT CODE: 0913 441 19A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge on HIV & AIDS. It involves applying concepts of HIV& AIDS, knowledge of human sexuality, common STIs and knowledge of prevention, control and management of HIV & AIDS and STI.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| * + - 1. Apply concepts of HIV& AIDS | 1.1 Socioeconomic impacts of HIV&AIDS knowledge is applied as per work place requirement  1.2 HIV/AIDS epidemiology knowledge is applied as per work place requirement  1.3 HIV &AIDS infection phases knowledge is applied as per work procedure |
| * + - 1. Apply knowledge of human sexuality | 2.1 Reasons for engaging in sex are determined as per work requirement  2.2 Consequences of irresponsible sex are identified as per work requirement  2.3 Sexual myths, beliefs and attitudes are identified based on work procedure |
| * + - 1. Apply knowledge of common STIs | 3.1 ***Common STIs*** knowledge is applied as per work requirement  3.2 HIV&AIDS and STIs relationship is applied as per work place requirement   * 1. STIs treatment in controlling HIV/AIDS is applied as per work requirement |
| 4, Apply knowledge of prevention, control and management of HIV & AIDS and STI | 4.1 HIV/AIDS ***Preventive and control measures*** are applied as per work place requirement.  4.2 HIV/AIDS and STIs testing is applied as per work procedure.  4.3 HIV &AIDS sensitization is conducted as per work requirement. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. STIs | 1.1 Gonorrhea  1.2 Syphilis  1.3 Herpes zoster  1.4 Genital warts  1.5 Trichomoniasis   * 1. Chlamydia |
| 1. Preventive and control measures | 2.1 Use of condoms  2.2 Abstinence  2.3 Faithfulness  2.4 ARV use |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

Required skills

The individual needs to demonstrate the following skills:

• Numeracy skills

• Health & safety skills

• Interpersonal skills

Required knowledge

The individual needs to demonstrate knowledge of:

• Rural sociology

• anatomy and physiology

• Pharmacology

• Microbiology

• Immunology and vaccines

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied HIV &AIDS infection phases knowledge as per work procedure  1.2 Identified consequences of irresponsible sex as per work requirement  1.3 Identified sexual myths, beliefs and attitudes based on work procedure  1.4 Applied common STIs knowledge as per work requirement  1.5 Applied HIV/AIDSpreventive and control measures as per work place requirement.  1.6 Applied HIV/AIDS and STIs testing knowledge as per work procedure.  1.7 Conducted HIV &AIDS sensitization as per work requirement. |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF RURAL SOCIOLOGY

**UNIT CODE: 0314 441 20A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge of rural sociology. It involves applying concepts of rural sociology, knowledge of rural communities and social systems, gender relation and social constructions, culture and agricultural extension, and cross cutting issues

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply concepts of rural sociology | * 1. Rural sociology concept is applied as per work place requirement   2. Functionalism of rural sociology is determined as per job procedure   1.3 Branches of rural sociology are determined as per job procedure |
| 1. Apply knowledge of rural communities and social systems | 2.1 Social systems knowledge is applied as per work requirement  2.2 Social grouping knowledge is applied as per work requirement  2.3 Rural social change knowledge is applied as per work requirement |
| 1. Apply knowledge of gender relation and social constructions | 3.1 Gender relations concept is applied as per work place requirement  3.2 Gender concepts role is applied as per work place requirement  3.3 Social construction of gender knowledge is applied as per work place requirement |
| 1. Apply knowledge of culture and agricultural extension | 4.1 Cultural factors influencing animal health extension are managed as per work requirement  4.2 Culture role in extension is applied as per work requirement  4.3 Social factors affecting animal health are managed as per work requirement |
| 1. Apply knowledge of cross cutting issues | 5.1 Effects of alcohol on society are managed as per work requirement  5.2 ***Drug and substance*** abuse knowledge is applied as per work place requirement  5.3 Effects of drug abuse on individuals, families and community are managed as per work requirement  5.4 Social problems knowledge as a result of drug abuse is applied as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Concepts include | * Functionalism * Marxism * Feminism * Interactionism * Post modernism |
| 2. Social institutions | * Families * Religion * Educational * Economic * Political |
| 3.drug and substance may include but not limited to | * Bhang * Coccaine * Heroine * Miraa and muguka * Caffein |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Numeracy skills
* Interpersonal skills
* Communication skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Religious education

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied rural sociology concept as per work place requirement  1.2 Determined functionalism of rural sociology as per job procedure  1.4 Applied social systems knowledge as per work requirement  1.5 Applied social grouping knowledge as per work requirement  1.6 Applied rural social change knowledge as per work requirement  1.7 Applied gender relations concept as per work place requirement  1.9 Applied social construction of gender knowledge as per work place requirement  1.10 Managed cultural factors influencing animal health extension as per work requirement  1.11 Applied culture role in extension as per work requirement  1.12 Managed social factors affecting animal health as per work requirement  1.13 Managed effects of alcohol on society as per work requirement  1.14 Applied drug and substance abuse knowledge as per work place requirement  1.15 Managed effects of drug abuse on individuals, families and community as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF BOTANY AND ZOOLOGY

**UNIT CODE: 0511 441 21A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge of botany and zoology in animal health and production. It involves applying knowledge of botany and zoology, plant morphology and plant and animal classification.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge botany and zoology | * 1. Basic concept of botany and zoology is applied as per work requirement   2. Cell division stages knowledge is applied as per job requirement   3. Plant organization knowledge is applied as per work requirement |
| 1. Apply knowledge of plant morphology | 2.1 Leaf structure knowledge is applied as per work requirement  2.2 Flower structure knowledge is applied as per work requirement  2.3 Fruits and seeds formation knowledge is applied as per work requirement |
| 1. Apply knowledge of plant and animal classification in animal production | * 1. Plant classification knowledge is applied as per work procedure   2. Animal classification knowledge is applied as per work procedure   3. Hierarchical groupings knowledge in animals and plants is applied as per job requirement   4. ***Phyla of veterinary importance*** are identified as per job requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Phyla of veterinary importance | * 1. Chordata   2. Nematoda   3. Platyhelminthes   4. Arthropoda   5. Mollusca |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Numeracy skills
* Health & safety skills
* Interpersonal skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* anatomy and physiology
* Pharmacology
* Microbiology
* Parasitology

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1.1 Applied basic concept of botany and zoology as per work requirement  1.2 Applied cell division stages knowledge as per job requirement  1.3 Applied plant organization knowledge as per work requirement  1.4 Applied leaf structure knowledge as per work requirement  1.5 Applied flower structure knowledge as per work requirement  1.6 Applied fruits and seeds formation knowledge as per work requirement  1.7 Applied plant classification knowledge as per work procedure  1.8 Applied animal classification knowledge as per work procedure  1.9 Applied hierarchical groupings knowledge in animals and plants as per as per job requirement  1.10 Identified phyla of veterinary importance as per job requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF AGRIBUSINESS MANAGEMENT

**UNIT CODE: 0811 441 22A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge of agribusiness. It involves applying knowledge of agribusiness, applying farm planning and budgeting, evaluating farm records and accounting cycle, preparing trial balance, income statement, maintaining farm inventory, and determining cost estimation and tendering knowledge.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of agribusiness | 1.1 Agribusiness knowledge in livestock enterprises is applied as per work place requirement  1.2 Economic principles of agribusiness in animal production are applied as per work requirement  1.3 ***Factors of production*** are applied as per work requirement  1.4 ***Risks in production*** are managed as per work place procedure |
| 1. Apply knowledge of farm planning and budgeting | 2.1 Land, labour and capital resources are planned as per work place requirement  2.2 Farm budgeting is carried out as per work place requirement  2.3 Steps in farm planning are applied as per work requirement |
| 1. Evaluate farm records and accounting cycle | 3.1 Types of farm records are identified and applied in accordance with job requirement.  3.2 Steps in accounting cycle are identified and applied in accordance with job requirement  3.3 Major accounts are determined and applied as per work requirement  3.4 Journal entry is carried out as per work requirement |
| 1. Prepare trial balance, income statement | * 1. Trial balance is prepared as per work requirement   2. Income statement is prepared as per work requirement   3. Balance sheet is prepared as per work requirement |
| 1. Maintain farm inventory | * 1. Types of ***farm inventories*** are identified and applied in accordance with job requirement.   2. Farm valuation is carried out as per work requirement   3. Importance of farm inventory and valuation is sdetermined and applied as per work requirement |
| 1. Determine cost estimation and tendering knowledge | * 1. Cost estimation is carried out as per work requirement   2. Types of farm contracts are identified and applied as per workplace procedure   6.3 Importance of farm tendering is determined and applied as per workplace procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Factors of production include but not limited to | * Land * Labor * Capital |
| 1. Risks in production include but not limited to | * Market risk * Financial risk * Human risk * Management risk |
| 1. Farm inventories may include but not limited to: | * Livestock inventory * Farm equipment * Farm inputs * Farm machinery * Farm output |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Numeracy skills
* Interpersonal skills
* Organizational skills
* Book keeping skills
* Writing skills
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Farm Accounting
* Farm business management

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Applied agribusiness knowledge in livestock enterprises as per work place requirement  1.2 Applied economic principles of agribusiness in animal production as per work requirement  1.3 Applied factors of production as per work requirement  1.4 Managed risks in production as per work place procedure  1.5 Planned land, labour and capital resources as per work place requirement  1.6 Carried out farm budgeting as per work place requirement  1.7 Applied steps in farm planning as per work requirement  1.8 Identified and applied types of farm records are in accordance with job requirement.  1.10 Determined and applied major accounts as per work requirement  1.11 Carried out journal entry as per work requirement  1.12 Prepared trial balance as per work requirement  1.13 Prepared income statement as per work requirement  1.14 Prepared balance sheet as per work requirement  1.15 Identified and applied types of farm inventories in accordance with job requirement.  1.16 Carried out farm valuation as per work requirement  1.17 Carried out cost estimation as per work requirement  1.18 Identified and applied types of farm contracts as per workplace procedure |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLYING KNOWLEDGE OF MARKETING AND VALUE ADDITION OF ANIMAL PRODUCTS

**UNIT CODE: 0811 441 23A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge of marketing and value addition of animal products. It involves applying knowledge of marketing and value addition of animal products, analyzing agricultural marketing information systems, identifying principles of value addition of animal products, maintaining farm inventory and determine cost estimation and tendering.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of marketing and value addition of animal products | * 1. Marketing structures are applied as per work requirement   2. Characteristics of ***animal products*** that affect their marketing are managed as per work requirement   3. Value addition knowledge of animal products is applied as per work requirement |
| 1. Analyze agricultural marketing information systems | * 1. Group marketing approaches are applied as per work requirement   2. Livestock value chains are analyzed as per work procedure   3. Measures of improvement of ***AMIS*** are applied as per work requirement |
| 1. Identify principles of value addition of animal products | 3.1 Value addition principles of animal products are applied as per work requirement  3.2 Principles of handling animal products are applied as per work requirement  3.3 Knowledge on grading, packaging and processing of animal products is applied as per work requirement |
| 1. Maintain farm inventory | * 1. Types of farm inventories are identified and applied as per work requirement   4.2 Farm valuation is carried out as per work requirement  4.3 Importance of farm inventory and valuation is identified and applied as per work requirement |
| 1. Determine cost estimation and tendering | * 1. Cost estimation is carried out as per work requirement   2. Types of farm contracts are identified and applied as per work requirement   3. Importance of farm tendering are determined and applied as per job requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Factors of production include but not limited to | * Land * Labour * Capital |
| 1. Risks in production include but not limited to | * Market risk * Financial risk * Human risk * Management risk |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Numeracy skills
* Interpersonal skills
* Organizational skills
* Book keeping skills
* Writing skills
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Farm Accounting
* Farm business management

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1.1 Applied value addition knowledge of animal products as per work requirement  1.2 Applied group marketing approaches as per work requirement  1.3 Analyzed livestock value chains as per work procedure  1.4 Applied measures of improvement of AMIS as per work requirement  1.5 Applied value addition principles of animal products as per work requirement  1.6 Applied principles of handling animal products as per work requirement  1.7 Applied knowledge on grading, packaging and processing of animal products as per work requirement  1.8 Identified and applied types of farm inventories as work requirement  1.9 Carried out farm valuation as per work requirement  1.10 Identified and applied importance of farm inventory and valuation as per work requirement  1.11 Carried out cost estimation as per work requirement  1.12 Identified and applied types of farm contracts as per work requirement  1.13 Determined and applied importance of farm tendering as per job requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Written tests   4. Third party report   5. Portfolio of evidence   6. Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF ECOLOGY AND ENVIRONMENTAL SCIENCE

**UNIT CODE: 0521 441 24A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to apply knowledge of ecology. It involves applying knowledge of community in ecology, ecosystem in animal health, energy flow in an ecosystem, nutrient cycling in an ecosystem, plant ecology in an ecosystem, principles of ecosystem in the environment, knowledge of environmental health and management, and knowledge of sustainable environmental management

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each element.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Apply knowledge of community in ecology | * 1. **Association** between organism is identified as per work procedure   2. Dryland plants adaptation is identified as per work requirement   1.3 Animal adaptation to dryland conditions is identified as per work requirement |
| 1. Apply knowledge of ecosystem in animal health | * 1. Ecosystem knowledge is applied as per work requirement   2. Biotic knowledge is applied as per work requirement   3. Abiotic knowledge is applied as per work requirement |
| 1. Apply knowledge of energy flow in an ecosystem | * 1. Energy flow terminologies are applied as per work requirement   2. Ecological pyramids knowledge in an ecosystem is applied as per work requirement   3. Energy flow knowledge is applied as per work requirement   4. Ecological efficiencies of transfer of energies in an ecosystem is applied as per work requirement   3.5 Biological production in energy flow is applied as per work procedure |
| 1. Apply knowledge of nutrient cycling in an ecosystem | * 1. Watercycle in ecosystem is determined and applied as per workplace procedure   2. Nitrogen cycle knowledge in ecosystem is applied as per work requirement   4.3 Carbon and Phosphorus cycle knowledge is applied as per work requirement |
| 1. Apply knowledge of plant ecology in an ecosystem | 5.1 Forms of plant growth are identified and applied as per work procedure  5.2 Plant communities are determined and classified as per work procedure  5.3 Stages of retrogression are identified and applied as per work procedure  5.4 Ecoclimatic and agro-ecological zones are identified and applied in accordance to work place requirement |
| 1. Apply principles ecosystem in the environment | 6.1 Destructive activities of animals in an ecosystem are determined and managed as per work requirement  6.2 Beneficial activities of animals in an ecosystem are determined and applied as per work requirement  6.3 Effects of man activities in an ecosystem are determined and managed as per workplace procedure. |
| 1. Apply knowledge of environmental health and management | 7.1 Terminologies in environmental health and management are determined and applied as per work policy  7.2 Environmental pollution is determined and managed as per NEMA guidelines  7.3 Biodegradable and non-biodegradable items used in farming are identified and applied as per work requirement |
| 1. Apply knowledge of sustainable environmental management | 8.1 Causes of climate change are managed as per work requirement  8.2 Effects of climate change are managed as per work requirement  8.3 Mitigation of climate change are applied as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Associations include | * Parasitism * Mutualism * Symbiosis * Commensalism |
| 1. Plant communities | * Monocotyledons * Dicotyledons * Bryophytes * Pterydophytes |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Numeracy skills
* Health & safety skills
* Interpersonal skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* anatomy and physiology
* Pharmacology
* Microbiology
* Parasitology

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | * 1. Identified association between organism as per work procedure   2. Identified dryland plants adaptation as per work requirement   3. Identified animal adaptation to dryland conditions as per work requirement   4. Applied ecosystem knowledge as per work requirement   5. Applied biotic and abiotic knowledge as per work requirement   6. Applied energy flow terminologies as per work requirement   7. Applied ecological pyramids knowledge in an ecosystem as per work requirement   8. Applied energy flow knowledge as per work requirement   9. Applie ecological efficiencies of transfer of energies in an ecosystem as per work requirement   10. Applied biological production in energy flow as per work procedure   11. Determined and applied water cycle in ecosystem as per workplace procedure   12. Applied nitrogen cycle knowledge in ecosystem as per work requirement   13. Applied carbon and Phosphorus cycle knowledge as per work requirement   14. Identified and applied forms of plant growth as per work procedure   15. Determined and classified plant communities as per work procedure   16. Identified and applied stages of retrogression as per work procedure   17. Determined and managed destructive activities of animals in an ecosystem as per work requirement   18. Determined and applied beneficial activities of animals in an ecosystem as per work requirement   19. Determined and managed effects of man activities in an ecosystem as per workplace procedure.   20. Determined and applied terminologies in environmental health and management as per work policy   21. Determined and managed environmental pollution as per NEMA guidelines   22. Identified and applied biodegradable and non-biodegradable items used in farming as per work requirement   23. Managed causes of climate change as per work requirement   24. Managed effects of climate change as per work requirement   25. Applied mitigation of climate change as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended |

## APPLY KNOWLEDGE OF PASTURE AND FODDER PRODUCTION

**UNIT CODE: 0811 441 25A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by a animal health technician in order to apply knowledge of pasture and fodder production. It involves classification, establishment and conservation of pasture and fodder.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Classify pasture and fodder | * 1. ***Pastures*** are identified according to ***agro ecological zones***   2. Classes of forage plants are identified and applied as per job requirement   3. Factors for selecting forage species are applied as per work requirement |
| 1. Establish pasture and fodder | * 1. Method of pasture establishment is applied as per work requirement   2. Seeding methods and rates are applied as per work requirement   3. Methods of weed control and management are applied as per work requirement   4. Methods of natural pasture management are applied as per work requirement   5. ***Grazing systems*** are applied as per work requirement |
| 1. Conserve pasture and fodder | * 1. Methods of forage conservation are applied as per work requirement   2. Silage and hay making is performed as per work procedure   3. Emerging trends in pasture establishment and conservation are identified as per work procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| **Variable** | **Range** | |
| --- | --- | --- |
| 1. Pastures include but not limited to | * Rhodes grass * Brachiaria * Napier grass * Guatemala grass * Kikuyu grass * Sudan grass * Lucerne * Desmodium * Calliandra * White clover |  |
| 1. Agro ecological zones include but not limited to | * Upper Highland * Upper Midland * Lower highland * Lower midland |  |
| 1. Grazing systems include but not limited to | * Zero grazing * Herding * Rotational grazing * Paddocking |  |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Communication skills
* Seedbed preparation

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Ecology and environmental sciences
* Farm structure
* Botany and zoology
* Soil science

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified pastures are identified according to agro ecological zones   2. Identified and applied classes of forage plants as per job requirement   3. Applied factors for selecting forage species as per work requirement   4. Applied method of pasture establishment as per work requirement   5. Applied seeding methods and rates are applied as per work requirement   6. Applied methods of weed control and management are applied as per work requirement   7. Methods of natural pasture management as per work requirement   8. Applied grazing systems as per work requirement   9. Applied methods of forage conservation as per work requirement   10. Performed silage and hay making as per work procedure   11. Identified emerging trends in pasture establishment and conservation as per work procedure |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## APPLY KNOWLEDGE OF BIOSTATISTICS AND COMPUTER APPLICATION

**UNIT CODE: 0542 441 26A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by an animal health technician to apply knowledge biostatistics and computer applications. It involves applying concept of statistical population and samples, knowledge of descriptive statistics, probability, normal distribution curves and computer applications.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Apply concept of statistical population and samples | 1.1 Types of population are identified and applied according to the workplace requirements.  1.2 Sampling methods knowledge is applied as per work procedure  1.3 Variables knowledge in sampling is applied as per work requirement  1.4 Methods of data collection are applied as per work requirement |
| 1. Apply knowledge of descriptive statistics | * 1. Descriptive statistics are applied as per work requirement   2. Measures of central tendencies are applied as per work requirement   2.3Dispersion measure knowledge is applied as per work requirement |
| 1. Apply knowledge of probability | 3.1 Types of probabilities are identified and applied according to the workplace requirements.  3.2 Probability terminologies knowledge is applied as per work procedure  3.3 Statistical probabilities are computed as per work requirement |
| 1. Apply knowledge of normal distribution | * 1. Normal distribution terminologies knowledge is applied as per work requirement   2. Normal distribution curves are drawn as per work procedure   3. Statistical normal distribution curve variables are calculated as per work procedure |
| 1. Apply computer application | * 1. Computer hardware is applied as per job requirements.   2. Computer software is applied as per work requirements.   3. Computer application knowledge is applied as per job requirement |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sampling methods include but not limited to: | * Stratified * Random * Snowbowling * Convenient |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* ICT skills
* Critical thinking skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Basic mathematics

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:   * 1. Identified and applied types of population according to the workplace requirements.   2. Applied sampling methods knowledge as per work procedure   3. Applied variables knowledge in sampling as per work requirement   4. Applied methods of data collection as per work requirement   5. Applied descriptive statistics as per work requirement   6. Applied measures of central tendencies as per work requirement   7. Applied dispersion measure knowledge as per work requirement   8. Identified and applied types of probabilities according to the workplace requirements.   9. Computed statistical probabilities as per work requirement   10. Drew normal distribution curves as per work procedure   11. Applied computer application knowledge as per job requirement   12. Operated computer devices as per workplace policies and regulations.   13. Solved tasks using the office suite as per workplace policies and regulations. |
| 1. Resource implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## APPLY KNOWLEDGE OF APICULTURE AND AQUACULTURE

**UNIT CODE: 0831 441 27A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by a animal health technician to apply knowledge of apiculture and aquaculture. It involves selecting and establishing an apiary site,

preparing hive equipment, monitoring and managing swarming, rearing queen bees, performing apiary maintenance, conducting bee feeding, preparing and maintaining bee records, carrying out harvesting, grading, processing, packaging, and marketing, selecting and establishing fish pond, monitoring and managing fish health, conducting fish feeding and rearing fingerlings.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Select and establish Apiary site | * 1. Apiary site is selected based required standards   2. Apiary is set up as per work requirement   3. Type of hive is identified and setup according to the work requirements.   4. Species is selected based on ecological zone |
| 1. Prepare hive equipment | * 1. Type of colony to be used is identified as per work requirement   2. Hive equipment are identified as per work requirement   3. Hive equipment are assembled as per workplace requirement |
| 1. Monitor and manage swarming | * 1. Colonies in swarm mood are identified as per work requirement   2. Swarm prevention method is applied as per workplace requirement   3. Swarm bees is captured as per work requirement |
| 1. Rear queen bee | * 1. Method of queen rearing is selected as per work requirement   2. Parent colony for queen rearing is selected as per work requirement   3. Queen rearing equipment are prepared as per work requirement   4. Queen rearing program is implemented as job requirement   5. Queen is prepared for transport as per work procedure |
| 1. Perform apiary maintenance | * 1. Apiary is maintained during the dearth period as per work requirement   2. Apiary is maintained during pre-season as per work requirement   3. Apiary is maintained during main season as per work requirement   4. Apiary is maintained during post season as per work requirement |
| 1. Conduct bee feeding | * 1. Feed ration is prepared as per work procedure   2. Feeding method is selected as per work requirement   3. Bee is fed based on nutritional need and purpose of production |
| 1. Prepare and maintain bee record | * 1. Bee records are prepared as per work requirement   2. Inventory of apiary and equipment is prepared as per work requirement   3. Work schedule is planned as per workplace policy |
| 1. Carry out harvesting, grading, processing, packaging and marketing | * 1. Honey is harvested as per work requirement   2. Beeswax, propolis and honey are processed graded and packaged   3. Pollen, royal jelly and bee venom are harvested as per work requirement |
| 1. Select and establish fish pond | * 1. Fish pond site is selected based on standard   2. Pond size is determined as work requirement   3. Equipment is selected and pond set up as per work requirement   4. Fish species is selected as per work requirement   5. Stocking rate, water temperature, and oxygen quality is determined as per work procedure   6. Fingerlings are obtained and transported to new pond as per work procedure   7. Specific environmental need is determined as per work requirement |
| 1. Monitor and manage fish health | * 1. Feeding habit is assessed as per work requirement   2. Reproduction behaviour is monitored as per work requirement   3. Diseases and parasites are managed as per work requirement |
| 1. Conduct fish feeding | * 1. Feeding method is selected as per work requirement   2. Feeding ration is prepared is prepare as per requirement   3. Fish feeding is conducted based on nutritional need, age and purpose of production   4. Changes in feeding rate is identified as per work requirement |
| 1. Rear fingerlings | * 1. Method of rearing is identified and selected as per work requirement   2. Species of choice is selected as per work requirement   3. Fingerlings are prepared for transportation as per procedure   4. Feeding regime is established as per work requirement   5. Fingerlings are harvested and processed for marketing as per work procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| **Variable** | **Range** | |
| --- | --- | --- |
| 1. Bee species include but not limited to | * *Apis mellifera yemenitica* * *Apis mellifera scutellata* * *Apis mellifera littorea* * *Apis mellifera monticolla* * Hybrid species (of A.m. littorea and monticolla |  |
| 1. Personal Protection Equipment and Apparel include but not limited to | Bee gloves   * Veils * Bee suit * Gum boots * Aprons |  |
| 1. Diseases include but not limited to | * Bee paralysis virus * Sacbrood virus * Deformed wing virus * Slow bee paralysis virus * Tobacco ringspot virus * Colony collapse disorder * Stonebrood * Chalk brood * Nosema * PESTS (small hive beetles SHB, tracheal mite, wax moths, mice, toad/ frogs, ants, humans, varroa mites, lizard, birds, honey badger, wax moth, pirate wasp, bee louse |  |
| 1. Equipment include but not limited to | * Bee brush * Catcher box * Bee propolis trap collector * Honey warmer * Clearer board * Double sieve * Refractometer * Uncapping tray * Wax melter * Dip tank/ vat * Roller/ mold * Hives (log, top bar, box, pot, langstroth) | |
| 1. Tools include but not limited to | * Hammer * Pliers * Cutting tools * Uncapping knife * Comb cutter |  |
| 1. Fresh water species include but not limited to | * Nile perch * Common carp * Nile tilapia * Black bass * Omena | |
| 1. Personal Protection Equipment and Apparel include but not limited to | * Gloves * Gum boots * Aprons | |
| 1. Diseases include but not limited to | * Viral esocid * Lymphosarcoma * Lymph virus * Common mouth rot, tail rot * Colunaris * Swim bladder infection * Environmental dropsy | |
| 1. Tools include but not limited to | * Digging tool * Leveling tool * Desilting tool * Net and traps (fingerling seine, fingerling suspension net, gillnet seine) * Screens on water control * Harvesting bag net * Analysis kit | |
| 1. Equipment include but not limited to | * Pond liner * Pond filter * Pond plant * Pond pump and fish elevator * Fish grader | |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Location of site
* Assess and select species of choice
* Prepare substitutes and supplements feed
* Handling of queen, drone, worker and young bees
* Detect disease
* Treat disease
* Harvest
* Handling of fingerlings

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Pharmacokinetics
* Pharmacodynamics
* Animal nutrition
* Types of diseases
* Anatomy and physiology
* Ecology and environmental sciences
* Farm structure

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified the site based on required standards   2. Identified different species as per work requirement   3. Identified importance of beekeeping/aquaculture   4. Identified tools, equipment and supplies as per work requirement   5. Monitored, manage activities and health at the hive/pond as per work requirement   6. Disposed of diseased colonies and ponds as per work procedure   7. Identified feeding pattern as per work requirement   8. Identified different processing and packaging of products as per work procedure   9. Prepared balanced feed as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## CONDUCT ANIMAL HEALTH EXTENSION SERVICES

**UNIT CODE: 0811 441 28A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician in order to conduct animal health extension services. It involves organizing extension services, conducting extension services and evaluation of extension services.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Organize extension services | * 1. ***Extension service*** is established as per farmer’s need   1.2Resources are identified as per work requirement  1.3 Extension service program is prepared as per workplace policy |
| 1. Conduct extension services | 2.1 Rules of engagement are described in accordance with the livestock extension manual  2.2 Relevant technologies are disseminated based on the livestock extension manual  2.3 Audience is engaged as per workplace policy |
| 1. Evaluate extension services | 3.1 Extension service monitoring and evaluation tool is disseminated as per work policy  3.2 Challenge is identified, reported and rectified as per work procedure.  3.3 Extension opportunity is identified as per work policy |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Extension service include but not limited to | * Field days * Farm visits * Livestock exhibit shows * Field demonstrations * Farmer field schools |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Training skills
* Animal husbandry
* Animal handling
* Data handling
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Traits of economic importance
* Animal health
* Animal behavior
* Animal anatomy and physiology
* Animal registration procedure
* Environment protection laws and regulations
* Waste management and disposal methods
* Farm structures

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Established extension service based on farmer’s need  1.2 Prepared extension service program is as per workplace policy  1..3 Determined rules of engagement in accordance with the livestock extension manual  1.4 Disseminated relevant technologies are based on the livestock extension manual  1.5 Disseminated extension service monitoring and evaluation tool as per work policy |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

# CORE UNITS OF COMPETENCY

## MANAGE PARASITIC DISEASES

**UNIT CODE: 0841 451 29A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to manage parasitic diseases. It involves managing protozoal diseases, rickettsial diseases and mange.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Manage protozoal diseases | 1.1 ***Tools and equipment*** are identified and assembled as per work requirement  1.2 ***PPEs*** are donned as per work requirement.  1.3 ***Protozoal disease*** is diagnosed as per work procedure  1.4 Protozoal disease is treated as per VMD guidelines.  1.5 Protozoal disease is prevented and controlled as per work procedure |
| 1. Manage rickettsial diseases | 2.1***Tools and equipment*** are identified and assembled as per work requirement.  2.2 ***PPEs*** are donned as per work requirement.  2.3 ***Rickettsial disease*** is diagnosed as per work procedure  2.4 Rickettsial disease is treated as per VMD guidelines  2.5 Rickettsial disease is prevented and controlled as per work procedure |
| 1. Manage livestock helminthosis | 3.1***Tools and equipment*** are identified and assembled as per work requirement  3.2 ***PPEs*** are donned as per work requirement.  *3.3* ***Helminthosis*** is diagnosed as per work procedure  3.4 Helminthosis is treated as per VMD guidelines  3.5 Helminthosis is prevented and controlled as per work procedure |
| 1. Manage livestock mange | 4.1 ***Tools and equipment*** are identified and assembled as per work requirement  4.2 ***PPEs*** are donned as per work requirement.  4.3 Mange is diagnosed as per work procedure  4.4 Mange is treated as per VMD guidelines  4.5Mange is prevented and controlled as per work requirement. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| **Variable** | **Range** | |
| --- | --- | --- |
| 1. Parasitic diseases include but not limited to | * + Haemonchosis   + Ostertagiasis   + Fascioliasis   + Trychostrongylosis   + East Coast Fever   + Trypanosomiasis   + Babesiosis   + Anaplasmosis   + Ascariasis | |
| 1. Drugs/chemicals include but not limited to | * + Acaricides   + Anthelmintics   + Antiprotozoals   + Antibiotics   + Antiinflammatories   + Copper Sulphate | |
| 1. Control measures include but not limited to | * + Spraying   + Dipping   + Drenching   + Dusting   + Pour on | |
| 1. Personal Protection Equipment and Apparel include but not limited to | * + Gloves   + Overall   + Dustcoats   + Gum boots   + Face masks |  |
| 1. Tools, equipment, materials, and supplies | * + Thermometer   + Stethoscope   + Microscope   + Syringes & Needles   + Drenching gun   + Scalpel blades   + Surgical spirit   + Swabs |  |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Surgical skills
* Animal handling skills
* Communication skills
* Interpersonal skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Parasitology
* Pharmacology
* Anatomy and physiology
* Animal welfare and ethics
* Veterinary surgeon and paraprofessionals Act

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  ***ls and equipment*** are identified and assembled as per work requirement  1.1Donned PPEs as per work requirement.  1.2Diagnosed protozoal disease as per work procedure  1.3 Treated protozoal disease as per VMD guidelines.  1.4 Prevented and controlled protozoal disease as per work procedure  1.5 Diagnosed rickettsial disease as per work procedure  1.6 Treated Rickettsial disease as per VMD guidelines  1.7 Prevented and controlled rickettsial disease as per work procedure  1.8 Diagnosed helminthosis as per work procedure  1.9 Treated helminthosis is as per VMD guidelines  1.10 Prevented and controlled helminthosis is as per work procedure  1.11 Diagnosed mange as per work procedure  1.12 Treated mange as per VMD guidelines  1.13 Prevented and controlled mange as per work requirement. |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## MANAGE MICROBIAL DISEASES

**UNIT CODE: 0841 451 30A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to manage Microbial diseases. It involves managing bacterial, viral and fungal livestock diseases.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Manage bacterial diseases | * 1. ***Tools and equipment*** are identified and assembled as per work procedure   2. ***PPEs*** are donned as per work requirement.   3. ***Bacterial disease*** is diagnosed as per work procedure   4. Bacterial disease is treated as per VMD guidelines   5. Bacterial disease is prevented and controlled as per work requirement |
| 1. Manage viral diseases | 2.1 ***Tools and equipment*** are identified and assembled as per work procedure  2.2 PPEs are donned as per work requirement.  2.3 ***Viral disease*** is diagnosed as per work procedure  2.4 Viral disease is managed as per VMD guidelines  2.5 Viral disease is prevented and controlled as per work requirement. |
| 1. Manage fungal diseases | 3.1 ***Tools and equipment*** are identified and assembled as per work procedure  3.2 ***PPEs*** are donned as per work requirement.  3.3 ***Fungal disease*** is diagnosed as per work procedure  3.4 Fungal disease is treated as per VMD guidelines  3.5 Fungal disease is prevented and controlled as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Bacterial diseases include but not limited to | * + Anthrax   + Black-quarter   + Brucellosis   + Tuberculosis   + CCPP   + CBPP   + Pasteurellosis |
| 1. Viral diseases include but not limited to | * + Rabies   + Lumpy skin disease   + Rift Valley Fever   + Foot and Mouth Disease   + Swine Influenza   + New Castle Disease   + Infectious Bronchitis   + Fowl pox |
| 1. Fungal diseases include but not limited to | * + Candidiasis   + Aspergillosis   + Dermatophylosis |
| 1. Tools, equipment, materials, and supplies | * + Thermometer   + Stethoscope   + Microscope   + Syringes & Needles   + Automatic Syringes   + Cool boxes   + Scalpel blades   + Surgical spirit |
| 1. Personal Protection Equipment and Apparel include but not limited to | * + Gloves   + Overall   + Dustcoats   + Gum boots   + Face masks |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Surgical skills
* Animal handling skills
* Vaccine handling skills
* Communication skills
* Interpersonal skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Pharmacology
* Immunology and Vaccines
* Anatomy and physiology
* Animal Welfare Ethics and Law
* Veterinary Surgeons and Paraprofessionals Act
* Veterinary Medicines Directorate

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Identified and assembled Tools and equipment as per work procedure   * 1. Donned PPEs are as per work requirement   1.3 Diagnosed bacterial disease as per work procedure  1.4 Treated bacterial disease as per VMD guidelines  1.5Prevented and controlled bacterial disease as per work requirement  1.6 Diagnosed viral disease as per work procedure   * 1. Managed viral disease as per VMD guidelines   2. Prevented and controlled Viral disease as per work requirement.   3. Diagnosed fungal disease as per work procedure   1.10 Treated fungal disease as per VMD guidelines   * 1. Prevented and controlled fungal disease as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 3.Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## MANAGE METABOLIC, NUTRITIONAL AND REPRODUCTIVE DISEASES AND DISORDERS

**UNIT CODE: 0841 451 31A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to manage metabolic, nutritional and reproductive diseases and disorders. It involves identifying, diagnosing, controlling and treating metabolic, nutritional and reproductive diseases.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Manage metabolic diseases | 1.1 ***Tools and equipment*** are identified and assembled as per work requirement  1.2 ***PPEs*** are donned as per work requirement.  1.3 ***Metabolic disease*** is diagnosed as per work procedure  1.4 Metabolic disease is managed as per VMD guidelines  1.5 Metabolic diseases is prevented and controlled metabolic as per work requirement. |
| 1. Manage nutritional disorders | 2.1 Tools and equipment are identified and assembled per work requirement  2.2 PPEs are donned as per work requirement.  ***2.3***  ***Nutritional disease*** is diagnosed as per work procedure  2.4 Nutritional disease is managed as per VMD guidelines  2.5 Nutritional disease prevented and controlled as per work requirement |
| 1. Manage reproductive diseases and disorders | 3.1 Tools and equipment are assembled as per work requirement  3.2 PPEs are donned as per work requirement.  3**.**3 ***Reproductive disease*** is diagnosed as per work procedure  3.4 Reproductive diseases is managed as per VMD guidelines  *3.5*Reproductive disease is prevented and controlled as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Metabolic, nutritional and reproductive diseases and disorders include but not limited to | * + Milk fever   + Ketosis   + Grass tetany   + Grain overload   + Bloat   + Vitamin E/ Selenium deficiency   + Trichomoniasis   + Brucellosis   + Leptospirosis   + Hardware diseases (TRP) |
| 1. Tools, equipment, materials, and supplies | * + Thermometer   + Stethoscope   + Microscope   + Syringes & Needles   + Drenching gun   + Scalpel blades   + Surgical spirit |
| 1. Personal Protection Equipment and Apparel include but not limited to | * + Gloves   + Overall   + Dustcoats   + Gum boots   + Face masks |
| 1. Drugs/ chemical | * + Laxatives   + Purgatives   + Antibiotics   + Anti-inflammatories |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Surgical skills
* Animal handling skills
* Communication skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Pharmacology
* Anatomy and physiology
* Animal Welfare Ethics and Law
* Veterinary Surgeons and Paraprofessionals Act
* Veterinary Medicines Directorate

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Identified and assembled Tools and equipmentas per work procedure  1.2 Donned PPEsas per work requirement.  1.3 Diagnosed metabolic diseases as per work procedure  1.4 Managed metabolic diseases as per VMD guidelines  1.5 Prevented and controlled metabolic disease as per work requirement.  1.6 Diagnosed nutritional diseases as per work procedure  1.7 Managed nutritional diseases as per VMD guidelines  1.8 Prevented and controlled nutritional disease as per work requirement  1.9 Diagnosed reproductive disease as per work procedure  1.10 Managed reproductive disease as per VMD guidelines  1.11 Prevented and controlled Reproductive disease as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended |

## MANAGE VETERINARY PHARMACEUTICALS AND TOXINS

**UNIT CODE: 0512 451 32A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by an animal health technician to manage veterinary pharmaceuticals and toxins. It involves dispensing and administering veterinary drugs, managing drug toxicities and toxins in animals.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Dispense veterinary drugs | * 1. Tools and equipment are identified and assembled as per work requirement   2. ***PPEs*** are donned as per work requirement.   3. ***Veterinary drug*** is identified based on work procedure   4. Veterinary drug is prescribed as per work procedure   1.5 Veterinary drug is dispensed based on prescription |
| 1. Administer veterinary drugs | * 1. Tools and equipment are identified and assembled as per work requirement   2. PPEs are donned as per work requirement   2.3 Veterinary drug is administered as per dosage rate |
| 1. Manage drug toxicities | 3.1PPEs are donned as per work requirement.  3.2 Tools and equipment are identified and assembled as per work procedure  3.3 Drug toxicity is diagnosed based on work procedure  3.4 Drug toxicity is managed as per VMD guidelines  3.5 Drug toxicity is prevented and controlled as per work requirement |
| 1. Manage toxins in animals | 4.1 Tools and equipment are identified and assembled as per work requirement  4.2 PPEs are donned as per work requirement  4.3 ***Toxin*** is diagnosed based on work procedure  4.4 Toxicity is managed as per VMD guidelines  4.5 Toxicity is prevented and controlled as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Veterinary drug may include but are not limited to: | * + Anaesthetics   + Anti-inflammatory   + Antibiotics   + Anthelmintics   + Antifungal   + Antihistamines   + Antidiuretics |
| 1. Personal Protection Equipment and Apparel may include but are not limited to: | * + Gloves   + Overall   + Dust coats   + Gum boots   + Face masks |
| 1. Toxin may include but are not limited to: | * + Paints   + Poisonous plants   + Pesticides   + Aflatoxins   + Batteries   + Poisonous animals |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills

* Animal handling skills
* Communication skills
* Surgical skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Pharmacokinetics
* Pharmacodynamics
* Drug dosage calculations
* Types of diseases
* Anatomy and physiology

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Assembled tools and equipment as per work procedure  1.2 Donned PPEs as per work requirement.  1.3 Identified veterinary drug based on work procedure   * 1. Prescribed veterinary drug as per work procedure   2. Dispensed Veterinary drug based on prescription   1.7 Administered veterinary drug as per dosage rate  1.8 Diagnosed drug toxicity based on work procedure  1.9 Diagnosed toxin based on work procedure  1.10 Managed toxicity as per VMD guidelines  1.11 Prevented and controlled toxicity as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## MANAGE LIVESTOCK PARASITES

**UNIT CODE: 0841 451 33A**

**UNIT DESCRIPTION**

This unit describes competencies required by animal health technician to apply parasitology in disease control. It involves managing livestock nematodes, livestock trematodes, livestock cestodes and livestock protozoa.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  ***(Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| 1. Manage livestock nematodes | ***1.1 PPEs*** are donned as per work requirements.  ***1.2 Tools and equipment*** are assembled as per work requirement  1.3 ***Livestock nematode*** is identified as per work procedure  1.4 Affected livestock is treated as per VMD guidelines  1.5 Livestock nematode is prevented and controlled as per work requirement |
| 1. Manage livestock trematodes | 2.1 PPEs are donned as per work requirements.  2.2 Tools and equipment are assembled as per the work requirement  2.3 ***Livestock trematode*** is identified as per work procedure  2.4 Affected livestock is treated as per VMD guidelines  2.5 Livestock trematode is prevented and controlled as per work requirement |
| 1. Manage livestock cestodes | 3.1 PPEs are donned as per work requirements.  3.2 Tools and equipment are assembled as per the work requirement  3.3 ***Livestock cestode*** is identified as per work procedure  3.4 Affected livestock is treated as per VMD guidelines  3.5 Livestock cestode is prevented and controlled as per work requirement |
| 1. Manage livestock arthropods | 4.***1*** PPEs are donned as per work requirement.  4.2 Tools and equipment are assembled as per work requirement  4.3 ***Livestock arthropod*** is identified as per work procedure  4.4 Affected livestock is treated as per VMD guidelines  4.5 Livestock arthropod is prevented and controlled as per work requirement |
| 1. Manage livestock protozoa | 5.***1 PPEs*** are donned as per work requirement.  ***5.2 Tools and equipment*** are assembled as per work requirement  5.3 ***Livestock protozoon*** is identified as per work procedure  5.4 Affected livestock is treated as per VMD guidelines  5.5 Livestock protozoon is prevented and controlled as per work requirement |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPEs may include but not limited to: | * Gloves * Overall * Dust coats * Gum boots * Face masks |
| 1. Tools and equipment may include but not limited to: | * Microscope * Centrifuge * Microscope slides * Forceps * Magnifying glass * Incubator * Refrigerator * Autoclave * Hot air oven * Cover slips * McMaster Chamber |
| 1. Livestock nematodes include but not limited to: | * Ascarids * Haemonchus * Ostertagia * Trychostrongylus * Cooperia * Trichuris * Oesophagostomum * Bunnostomum |
| 1. Livestock trematodes include but not limited to: | * Fasciola * Paraphistosomes * Schistosomes |
| 1. Livestock cestodes include but not limited to: | * Taenia * Ecchinococcus * Hymenolepis |
| 1. Livestock arthropods include but not limited to: | * Insects * Arachnids * Myriapods * Crustaceans |
| 1. Livestock protozoon include but not limited to | * Theileria * Eimeria * Trypanosomes * Anaplasma * Toxoplasma |
| 1. Samples may include but are not limited to: | * + Urine   + Stool   + Blood   + Swabs   + Sputum   + Aspirates and Biopsies |

**Required Knowledge**

* Veterinary parasitology
* General laboratory practices
* Safety procedures and PPEs
* Standard procedures
* Set regulation and code of ethics
* Sample collection
* Microscopy
* Laboratory waste management

**Skills Required**

* Analytical
* Technical
* Communication
* Troubleshooting
* Sample handling
* Critical thinking
* Problem solving
* Management
* Reporting
* Interpretation
* Computer

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1.1 Donned PPEs as per work requirements.  1.2 Assembled Tools and equipment as per work procedure  1.3 Identified Livestock nematode as per work procedure  1.4 Treated affected livestock as per VMD guidelines  1.5 Prevented and controlled livestock nematode as per work requirement  1.6 Identified livestock trematode as per work procedure  1.7 Treated affected livestock as per VMD guidelines  1.8 Prevented and controlled livestock trematode as per work requirement  1.9 Identified livestock cestode as per work procedure  1.10 Prevented and controlled livestock cestode as per work requirement  1.11 Identified livestock arthropod as per work procedure  1.12 Prevented and controlled livestock arthropodas per work requirement  1.13 Identified livestock protozoon as per work procedure  1.14 Prevented and controlled livestock protozoon as per work requirement |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## APPLY ANIMAL HEALTH SKILLS

**UNIT CODE: 0841 441 34A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by animal health technician to be able to apply animal health skills at workplace. It involves carrying out animal identification, dehorning, hoof trimming, tail docking, poultry debeaking, performing teeth clipping, conducting animal grooming, performing animal castration and carrying out wool shearing

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out animal identification | 1.1 ***Tools and equipment*** are assembled as per work requirement   * 1. ***PPEs*** are donned as per work requirement   2. Animal ***identification mark*** is applied as per work procedure |
| 1. Carry out dehorning | 2.1 Tools and equipment are assembled as per work requirement  2.2 PPEs are donned as per work requirement  2.3 Dehorning procedure is carried out as per work requirement |
| 1. Carry out hoof trimming | 3.1 Tools and equipment are assembled as per work requirement  3.2 PPEs are donned as per work requirement  3.3 Hoof trimming is carried out as per work procedure |
| 1. Carry out tail docking | 4.1 Tools and equipment are assembled as per work requirement  4.2 PPEs are donned as per work requirement  4.3 Tail docking is carried out as per work procedure |
| 1. Perform poultry debeaking | 5.1 Tools and equipment are assembled as per work requirement  5.2 PPEs are donned as per work requirement  5.3 Poultry debeaking is carried out as per work procedure |
| 1. Perform teeth clipping | 6.1 Tools and equipment are assembled as per work requirement  6.2 PPEs are donned as per work requirement  6.3 Teeth clipping is carried out as per work procedure |
| 1. Conduct animal grooming | 7.1 Tools and equipment are assembled as per work requirement  7.2 PPEs are donned as per work requirement  7.3 Animal grooming is carried out as per work procedure |
| 1. Perform closed castration | 8.1 Tools and equipment are assembled as per work requirement  8.2 PPEs are donned as per work requirement  8.3 Closed castration is carried out as per work procedure |
| 1. Carry out wool shearing | 9.1 Tools and equipment are assembled as per work requirement  9.2 PPEs are donned as per work requirement  9.3 Wool shearing is carried out as per work procedure |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| Variable | Range |
| 1. Tools and equipment include but not limited to: | * Animal identification tools * Eartag applicators * Ear notchers * Milking machines |
| 1. PPEs include but not limited to: | * Disposable gloves * Overall * Gumboot |
| 1. Identification mark include but not limited to: | * Ear tags * Ear notch * Branding * Micro chip |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* communication skills
* Animal handling
* Animal treatment skills
* Livestock equipment handling skills
* Data handling
* Computer skills
* Surgical skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Methods of animal identification
* Animal nutrition
* Record keeping

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Assembled tools and equipment as per work procedure   2. Donned PPEs as per work requirement   3. Applied animal identification mark as per work procedure   4. Carried out dehorning procedure as per work requirement   5. Carried out hoof trimming as per work procedure   6. Carried out tail docking as per work procedure   7. Carried out poultry debeaking as per work procedure   8. Carried out teeth clipping as per work procedure   9. Carried out animal grooming as per work procedure   10. Carried out closed castration as per work procedure   11. Carried out wool shearing as per work procedure |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment  2.3 Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |

## PERFORM LIVESTOCK ROUTINE PRACTICES

**UNIT CODE: 0811 451 35A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required by animal health technician to be able to perform livestock routine practices. It involves carrying out animal feeding, milking and maintaining farm hygiene.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes, which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements, which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out animal feeding | * 1. Animal to be fed is identified based on nutritional requirement.   2. ***PPEs*** are donned as per work requirement   3. ***Tools and equipment*** are assembled and used based on work requirement   4. Animal feeding is carried out as per livestock enterprise’s needs. |
| 1. Carry out animal milking | 2.1Animal to be milked is identified based on species  2.2 PPEs are donned as per work requirement  2.3 Tools and equipment are assembled and used based on work requirement.  2.4 Animal milking is carried out as per work procedure. |
| 1. Maintain farm hygiene | 3.1 Farm structure and equipment is identified  3.2 PPEs are donned as per work requirement.  3.3 Tools, equipment and chemicals are assembled and used based on work requirement  3.4 Cleaning is carried out as per work procedure |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| **1.** PPEs include but not limited to | * Apron * Overall * Gloves * Gumboots * Face mask |
| 1. Tools and equipment include but not limited to: | * Milking machine * Milking buckets * Milking salve * Teat dips * CMT KIT * Disinfectants * Cleaning brushes * Cleaning towel |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* communication skills
* Animal handling
* Milking skills
* Livestock equipment handling skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Methods of animal identification
* Animal nutrition
* Record keeping

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified animal to be fed based on nutritional requirement.   2. Donned PPEs as per work requirement   3. Assembled tools and equipment and used them based on work procedure   4. Carried out animal feeding as per livestock enterprise’s needs.   5. Carried out animal milking as per work procedure   6. Carried out cleaning as per work procedure |
| 1. Resource Implications | The following resources must be provided:  2.1 Appropriately simulated environment where assessment can take place  2.2 Access to relevant work environment   * 1. Resources relevant to the proposed activities or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Context of Assessment | Competency may be assessed in a:  Workplace or simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. |