2024

Ethiopian Health Professionals Licensing Examination(EHPLE)

INFORMATION BOOKLET

ENVIRONMENTAL HEALTH

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MINISTRY OF HEALTH-ETHIOPIA
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Message From the State Minister, Ministry of Health -Ethiopia

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Improving healthcare quality is a global priority for sustainable development, with high quality healthcare being a key component of universal health coverage. One strategy to maintain health care standards is through provision of health professional competency assessment. Consequently, in 2019, the Ministry of Health Ethiopia, initiated the Ethiopian Health Professionals Licensing Examination (EHPLE) for undergraduates in seven health disciplines, which has since expanded to include 13 health disciplines.

The main goal of this competency assessment is to identify health professionals with minimal competencies necessary to perform their duties safely and competently, thus enhancing the quality of health care services. This initiative is overseen by a dedicated Health and Health Related Institutions and Professionals' Regulatory Lead Executive Office (LEO), comprising four desks, which plays a pivotal role in strengthening the system and enabling the LEO to conduct the competency exam more extensively and with improved organization and quality.

It is important to note that this competency assessment differs significantly from traditional academic or employment examinations. Hence, this information booklet has been created to address the informational needs of both examinees and teaching faculty regarding the Ethiopian Health Professionals' Licensure Examination. Additionally, it aims to facilitate the assessment process, while promoting transparency and ensuring the sustainability of the program.

The preparation of this guideline involved the collaboration of esteemed experts from various higher education institutions, AAU-IER, the Ministry of Health, JHPIEGO-Ethiopia, Amref/HWIP, Health Professionals' Associations, and the Ministry of Education. Their invaluable contributions are acknowledged with sincere gratitude, alongside appreciation for the Ministry of Health staff for their unwavering commitment and hard work throughout the project.

Acknowledgements

This Information Booklet for Ethiopian Health Professional's Licensing Examinations is a contribution from several educators, researchers, students and concerned individuals with a genuine interest to propel Ethiopia's medical and health sciences education forward.

The Ministry of Health is grateful for the contribution of many individuals and institutions in realizing this endeavor. Among these are Professional Associations, Student Association, Higher Education Institutions (both public and private), JHPIEGO-Ethiopia, AMREF/HWIP, MOE (Ethernet), UNFPA, AAU-IER and all HHRIPR LEOs staff.

Acronyms and Abbreviations

EHPLE	Ethiopian Health Professionals Licensing Examination
ETA	Educational and Training Authority
HEIs	Higher Education Institutions
HHrIPR-LEO	Health and Health-related Institutions and Professionals Regulatory Lead Executive Office
HSTP-II	Health Sector Transformational Plan-II
MCQ	Multiple Choice Question
MoH	Ministry of Health
WHO	World Health Organization

Purpose of the Information Booklet

The Ethiopian Health Professionals' Licensing Examination (EHPLE) Information Booklet serves as a comprehensive guide for those individuals seeking information about the exam. It typically outlines basic information for candidate registration, exam development and administration processes and procedures, result notification, and the licensing process. It also includes information on the exam framework, i.e., the exam domain, sub-domain, content, process, and task, with sample exam items specific to each profession.

The publication of this Booklet is crucial for the following reasons:

- Clarity and guidance: It provides clear information about the exam by ensuring candidates understand the necessary information to prepare them.
- Accessibility: It serves as a readily accessible resource for individuals pursuing to take the exam, consolidating essential information in one document and facilitating easy access to necessary details. It also helps other stakeholders who might be interested in such resources.
- Transparency: It promotes transparency in the examination process and fosters trust among stakeholders about the exam.

In summary, the publication of this Booklet is essential for creating a transparent, standardized, and accessible framework that guides candidates through the EHPLE process.

Contents

Definition of terms

- **Domain:** a broad category or area of knowledge or skills of a profession
- **Sub-domain:** a subset of a broader domain that focuses on knowledge or skills related to the overarching domain
- **Content:** a more specific subcategory, which is a breakdown of the sub-domain
- **Task:** the responsibility, knowledge, skill, and attitude of a junior undergraduate professional in an actual work environment
- **Process:** a systematic sequence of steps or actions designed to achieve a specific outcome
- **Learning outcome**: a clear and measurable statement that describes what the examinee is expected to know or be able to do
- **Relative emphasis:** the proportional importance or weight assigned to different content areas or categories within the assessment
- **Item:** a particular multiple-choice question
- **Item developer:** a subject matter expert responsible for writing test items or questions that make up the examination
- **Item reviewer:** a subject matter expert responsible for reviewing and refining the test items or questions that make up the examination
- **Standard setting:** a process of determining a cut-off point or passing score for an exam
- **Item difficulty index:** a statistical measure that indicates the proportion of examinees who answered a particular test item correctly
- **Discrimination index:** a statistical measure that evaluates how well a particular test item differentiates between high-performing and low-performing examinees
- **Admission paper:** a printout paper generated by the system after completing registration that contains the examinee's photo, QR code, and necessary information

1. Introduction

1.1. Background

Competency assessment is one of the strategies for controlling the standard of healthcare services provided in healthcare facilities. The World Health Organization (WHO) recommends all healthcare professionals to have necessary competencies. In Ethiopia, the Health Sector Transformational Plan-II (HSTP-II) states competency assessment of all graduates before joining the health workforce as one of the strategic initiatives.

The Ministry of Health (MoH) launched the Ethiopian Health Professionals Licensing Examination (EHPLE) for undergraduates in 2019. The Health and Health-related Institutions and Professionals Regulatory Lead Executive Office (HHrIPR-LEO) of the Ministry of Health was given a mission to implement the ministry's objective to achieve competency-related goals. It has the responsibility to ensure that the EHPLE meets technical, professional, and legal standards, and to protect the health, safety, and welfare of the public by assessing candidates' abilities to practice competently.

Currently, the exam is given for 13 health professions (Medicine, Nursing, Public Health, Pharmacy, Medical Laboratory Science, Anesthesia, Midwifery, Dental Medicine, Medical Radiology Technology, Environmental Health, Psychiatric Nursing, Pediatric and Child Health Nursing, and Emergency and Critical Care Nursing). Since its introduction until February 2024, a total of 166293 examinees took the exam in 14 rounds.

1.2. The Rationale of EHPLE

One of the critical functions of the MoH is to guarantee the efficiency, quality, and equity of healthcare delivery and to protect the public from any undesirable consequences in healthcare delivery practices. As professionals' competence is a significant determinant of the quality of health, evaluation of health professionals' competence has now been given due attention. The licensing examination for health professionals serves as a crucial step to ensure that individuals entering the field meet specific competency standards. The sole aim of the competency assessment is to safeguard public health by verifying that health professionals have the minimal basic knowledge, attitude, and skill required to provide safe and effective care.

Licensing exams act as a preventive measure, ensuring that only competent professionals join the health workforce, which, in turn, contributes to reducing the occurrence of medical errors and enhancing overall patient safety. By setting standards through examinations, regulatory bodies strive to minimize the risk of medical errors caused by incompetence.

2. Key processes of EHPLE

EHPLE involves several key processes to ensure the quality and reliability of the examination.

2.1. Registration of candidates

EHPLE has a mandatory online registration system for both new and repeat candidates, which can be found at www.hple.moh.gov.et

Please note these important notes during registration.

New Test Takers:

- The list of eligible candidates from governmental and private Higher Education Institutions (HEIs) will be sent from Ministry of Education (MoE) to MoH and uploaded to the online registration system by MoH.
- Once the name of the candidate is uploaded to the system and registration has opened for the current exam round, the candidate must register at **www.hple.moh.gov.et** by uploading the necessary documents listed below.
  - ✓ a scanned original or temporary degree
  - ✓ a scanned government-issued ID, passport, driving license, or any other legal ID
  - ✓ a passport-size photo of the candidate
  - ✓ For international candidates:
    - Equivalence document from ETA
    - Completing an externship attachment according to assignment by the regulatory body
    - Externship attachment completion letter

Repeat Test Takers:

- Since the information about re-exam candidates already exists in the system, the candidate should register by directly going to **www.hple.moh.gov.et**. There is no need for re-exam candidates to upload their documents.

Both new and repeat candidates:

- After completing the registration, the candidate must download and print the admission paper by logging into his/her account using his/her email address and password
- The candidate can change the exam center by logging into his/her account only during the registration period
- Once an examinee has selected his/her exam center during the registration period, an application for center change will not be allowed

2.2. Task Analysis

The first step of exam development involves conducting a comprehensive task analysis study, which identifies the tasks, knowledge, skills, and abilities required from a junior undergraduate professional in the specific profession. The analysis is typically done through surveys, interviews, or observations of practitioners in the actual work environment, as well as through the Delphi method with subject matter experts.

2.3. Exam Blueprint

Based on the task analysis findings, a test blueprint is created that outlines the content areas to be covered in the examination and the weight or emphasis given to each area. This ensures that the exam reflects the key competencies and knowledge needed for competent practice in that specific profession. Blueprint or test specification is the matrix or chart that shows the number and type of test questions represented across the topics in the content area, consistent with the learning outcome and relative weight of the test given to each content area. The blueprint also identifies the percentage weighting of cognitive dimensions as the level of competence tested in each knowledge domain.

Key components of a blueprint are:

- Domain
- Sub-domain
- Content
- Task
- Process
- Learning outcome
- Assessment methods
- Assessment tools/instrument (test format)
- Relative emphasis (in percentage)

2.4. Item Development

The items are developed following specific guidelines to ensure clarity, relevance, and fairness. Subject matter experts with experience in the field are selected from HEIs to develop test questions (items) that align with the test blueprint. The exam questions will focus mainly on “knows how” according to the competency level of the Miller's pyramid. The items are produced in a secure location on designated computers that are free from internet connectivity. The items are scenario-based and constructed with stem, lead-in, and four options/alternatives. All items will have a single-best-answer type of Multiple Choice Question (MCQ) that addresses the learning outcome defined in each content area. Standard text books, updated guidelines, and standards are used as reference materials.

2.5. Item Review

Once developed, the items undergo a rigorous review process by item reviewers. The main purpose of the exam review process is to evaluate content relevance, technical accuracy, clarity, and sensitivity related to culture and religion. More experienced subject matter experts as well as psychometric experts will do the review to ensure the items meet psychometric standards. Subject matter experts shall review the items to confirm that they are accurate, clearly stated, and correctly keyed using the checklist. Psychometric experts shall reviews the items to ensure that

they are not technically flawed. They also work on editorial review to check grammar, punctuation, and spelling errors. This helps ensure the reliability and validity of the items.

2.6. Standard setting method

The standard setting or cut-off point of the EHPLE is determined using the Modified-Angoff method, which is one of the most widely used and legally defensible standard setting approaches to set a cut-off point for high-stake competency examinations.

The method involves a panel of subject matter experts who evaluate each test question and then estimate the probability that a minimally competent examinee would answer each test item correctly. The average of the experts' predictions for a test question becomes its predicted difficulty. The average of the predicted difficulty values across all items on a test is the recommended cut-off point. This point indicates the minimum level of knowledge and skill required to pass.

2.7. Exam Administration

The EHPLE is administered following established protocols and guidelines. Proper test administration procedures, appropriate security measures, and appropriate consideration for test-takers who need special support will be applied during exam administration at exam centers. The exam is administered in selected HEIs nationally, where candidates can choose based on their convenience at the time of registration. The exam schedule will be posted ahead of time on the MOH website and official Facebook page. Examinees who have a valid admission paper are eligible to sit for the exam. The mode of exam administration is computer-based testing.

CAUTIONS

Candidates are allowed

- Attend the orientation session in order to sit for the exam
- Arrive at the exam center on time
- Bring a legal ID and admission paper
- Complete the exam within the allotted time frame

➢ Candidates are **NOT** allowed

- To bring reference materials, blank paper, or notes into the exam center
- To smoke, eat, or drink in the exam room
- To bring mobile phones, tablets, smart watches, camera devices, eyeglasses, calculators or any type of electronic device into the exam center
- To bring their personal belongings to the exam center
- To bring weapons and sharp materials into the exam center
- To give or receive assistance to or from other candidates during the examination

2.8. Scoring and post exam analysis

Once the exam is completed, the scoring process begins. The exam scoring process involves computerized scoring using software.

Post-exam analysis is the process of analyzing examinees' responses to individual test items in order to assess the quality of the items and the exam as a whole. This phase helps to identify any poorly performing items that may need revision or removal from the exam. The item difficulty index, discrimination index, and reliability coefficient are elements of exam analysis.

2.9. Result notification and appeal management

After scoring and analysis, individual score reports are generated and provided to examinees through the website *www.hple.moh.gov.et*. After result notification, examinees can submit their appeal through phone or email within 10 working days after result notification.

2.10. Licensing

The list of examinees who passed the exam will be sent to regional and city administration regulatory bodies. A license is obtained from the regional/zonal health bodies where he/she permanently lives.

Requirements for professional licensing are:

- Passing the EHPLE
- Original or temporary degree
- Educational documents (10th and 12th certificates)
- Medical certificate
- Government issued ID
- Additional prerequisites based on the requirements of regional regulatory bodies

3. Exam Framework

Key professional roles (domains)

- Healthy and safe environment (59.5%)
- Health promotion and disease prevention (19%)
- Environmental health law and regulatory affair (4.5%)
- Leadership and management (6.0%)
- Professionalism (4.5%)
- Scholar (6.5%)

Key role 1: Healthy and safe environment (59.5%)

Description: This domain encompasses the professional roles of environmental health professionals in promoting conditions that safeguard human health in workplace and community settings. The delivery of this service requires the application of integrated knowledge on assessment, problem identification, action planning, intervention, and monitoring and evaluation. In order to declare competence in this domain, candidate shall possess essential high order knowledge on the following sub areas with the respective exam emphasis indicated in brackets?

- Water and sanitation (19.5%)
- Waste management (16.0%)
- Ecology and pollution management (8.5%)
- Safe working and living environment (10.5%)
- Environmental toxicology and risk assessment (5.0%)

Key role 2: Health promotion and disease prevention (19%)

Description: This domain encompasses the professional roles of environmental health professionals in promoting health and preventing disease in workplace and community settings. The delivery of this service requires the application of integrated knowledge on epidemiology, communicable disease control, health education, vector control, disaster prevention and prepardiness, and food hygiene and safety. In order to declare competence in this domain candidate shall possess essential high order knowledge on the following sub areas.

- Community diagnosis (9.0%)
- Community and environmental interventions (10.0%)

Key role 3: Environmental health law and regulatory affair (4.5%)

Description: This domain encompasses the professional roles of environmental health professionals in developing, implementing, and enforcing laws and regulations related to health institutions and institutions that have a direct or indirect impact on community health, including schools, prison, industries, hotels, and refugee camps. The delivery of this service requires the application of integrated knowledge on environmental health ethics, food hygiene and safety, occupational health, and environmental impact assessment. In order to declare competence in this domain candidate shall possess essential high order knowledge on inspection, problem

identification, feedback provision and taking appropriate regulatory measures across different settings.

Key role 4: Leadership and management (6.0%)
Description: This domain encompasses the professional roles of environmental health professionals in leading team, contributing as an effective member of healthcare team, and managing healthcare systems. The delivery of this service requires the application of integrated knowledge on principles of effective leadership, management and healthcare ethics. In order to declare competence in this domain candidate shall possess essential high order knowledge on planning, controlling, organizing, leading, and executing healthcare resources and activities.

Key role 5: Professionalism (4.5%)
Description: This domain encompasses the professional attributes of environmental health professionals in adhering to ethical standards, maintaining integrity, and upholding a high level of competence in all aspects of environmental health practice. In order to declare competence in this domain candidate shall possess essential high order knowledge on principles of health care ethics, effective communication, accountability, excellence, compassion and respect in professional practice.

Key role 6: Scholar (6.5%)
Description: This domain encompasses the professional roles of environmental health professionals in generating and utilizing scientific health care data in healthcare system and community setting. The delivery of this service requires the application of integrated knowledge on research methods, biostatistics, epidemiology, and research ethics. In order to declare competence in this domain candidate shall possess essential high order knowledge on problem identification, data collection, analysis and interpretation of data, and dissemination of reports.
The below table further breaks down the key roles

Domain 1: Healthy and safe environment	
Sub-domain 1.1: Water and sanitation	
Content	**Tasks**
Sanitation systems and technologies	Assess sanitation systems and technologies
	Propose/develop appropriate sanitation systems and technologies (Including during emergencies)
	Evaluate/monitor the performance of sanitation system
Content	**Tasks**
Water supply and quality management	Investigate drinking water supply sources in the community
	Perform sanitary survey of drinking water
	Collect and analyze water samples and interpret the result
	Propose/develop water treatment technologies
	Prepare chlorine stock solution and determine dose for water treatment
	Monitor and evaluate the performance of water supply system
Sub-domain 1.2: Waste management	
Content	**Tasks**
Wastewater management	Assess sources of wastewater and quantify wastewater generation rate
	Collect and analyze wastewater samples and interpret the result
	Investigate wastewater management processes (From generation to disposal)
	Propose wastewater treatment technologies
	Monitor/evaluate the efficiency of wastewater treatment technologies

Solid and hazardous waste management	Assess source, characteristics and generation rate of solid and hazardous waste
	Promote solid waste diversion (reduce, reuse, recycle and recovery) methods
	Develop appropriate solid waste collection and transportation system
	Develop appropriate solid and hazardous waste treatment and disposal method
	Evaluate solid and hazardous waste management system performance
Sub-domain 1.3: Ecology and pollution management	
Content	**Tasks**
	Assess climate vulnerability of environmental health services
	Assess and determine environmental pollution (air, water, soil, noise) and its health consequences
	Assess ecosystem health
	Propose appropriate pollution control methods
Sub-domain 1.4: Safe working and living environment	
Content	**Tasks**
Residential and institutional health	Assess residential and institutional (School, prison, health facilities, recreational areas) health status
	Propose healthy residential and institutional planning (Including urban land use planning)
	Promote healthy residential and institutional environment
Occupational health	Conduct occupational risk assessment
	Plan and implement occupational hazards prevention and control methods
	Evaluate occupational safety measures
Sub-domain 1.5: Environmental toxicology and risk assessment	
Content	**Tasks**
	Assess sources of environmental toxicants and determine its concentration
	Conduct environmental risk assessment
	Propose risk management options of environmental toxicants

Domain 2: Health promotion and disease prevention	
Sub-domain 2.1: Community and environmental diagnosis	
Content	**Tasks**
Surveillance and outbreak investigation	Conduct surveillance (disease and vector) including climate sensitive health problems
	Perform outbreak investigation
Food safety and quality assessment	Investigate major food safety hazards
	Conduct Hazard analysis and critical control point (HACCP)
	Determine food quality
Disaster preparedness	Conduct disaster risk assessment
Sub-domain 2.2: Community and environmental interventions	
Content	**Tasks**
Outbreak management	Manage disease outbreaks
	Apply environmental cleaning and disinfection methods
Vector borne disease control	Propose/apply appropriate vector control methods (Including insecticide selection and dosage preparation)
	Monitor/evaluate the performance of vector control methods
Food Safety and quality Management	Assure food safety and quality
Disaster management	Prepare for disaster management and respond accordingly
Hygiene promotion	Provide WASH promotion (Water quality, sanitation, child feeding hygiene, menstrual hygiene, personal hygiene and hand washing) using IEC/BCC methods and material

Domain 3: Environmental health law and regulatory affair
Tasks
Conduct inspection of health and other institutions
Conduct environmental and social impact assessment (ESIA)
Enforce environmental health law and regulations (Including providing professional witnesses)

Domain 4: Leadership and management
Tasks
Develop strategic and operational plan
Apply principles and functions of management and leadership
Apply resource management principles
Apply principles of health care financing and healthcare systems
Develop program monitoring and evaluation

Domain 5: Professionalism	
Sub-domain	**Tasks**
Professional ethics	Apply professional practice with due responsibility
Principles of professionalism	Maintain professional integrity (Including professional competency)
Communication and collaboration	Apply ethical communication with clients and community

Domain 6: Scholar
Tasks
Identify types research and set objectives
Select study method (Study design, sample size determination, sampling technique..)
Develop tools and collect data (Data collection method and instruments, data collection procedures, variables…)
Conduct data analysis, interpretation and dissemination

Sample Questions

1. A community water source is contaminated with various types of impurities in the form of solid matters, microorganisms, minerals, algae, gases, and plant dyes. An environmental health expert is interested to determine impurities in suspended form for the purpose of remedial action.

   What are the most likely impurities in this case scenario?

   (A) Microorganisms in the water
   (B) Dead plant in the water
   (C) Minerals in the water
   (D) Gases in the water

Answer Key: The answer is **A**
Explanation: Microorganisms in water. Microorganisms and dead plants in water are suspended impurities while others are dissolved impurities. Though decomposed dead plants may cause odor and taste problem in water, microorganisms are the most harmful to humans when compared with dead plants.

2. An environmental health expert had conducted a sanitary survey and a bacteriological analysis of untreated water supply system. Based on the finding, the number of indicator bacteria was in C class range whereas the sanitary inspection risk score was 6. The expert has planned to improve the water quality problem in the community.

   What is the most appropriate remedial action priority in this case?

   (A) No action required
   (B) Low action priority
   (C) Higher action priority
   (D) Urgent action priority

Answer Key: The answer is **C**
Explanation: Decision for action depends on the indicator bacteria class and sanitary inspection risk score. In this case scenario, the C class *E. coli* result and the sanitary inspection risk score value of 6, which is in 6-8 range indicates higher action priority is required.

		Sanitary inspection risk score (susceptibility of supply to contamination from human and animal faeces)			
		0–2	3-5	6-8	9-10
E. coli classification	A				
	B				
	C				
	D				
		Low risk: no action required	Intermediate risk: low action priority	High risk: higher action priority	Very high risk: urgent action required

3. A small village water supplier used a pipeline to deliver water from a household storage tank to taps. During sanitary survey, experts observed that the pipe was corroded due to higher alkalinity of water.

   What is the most likely type of pipes used in this case scenario?
   (A) Polyvinyl chloride (C) Copper
   (B) Galvanized iron (D) Lead

Answer Key: The Answer is **B**
Explanation: Galvanized iron pipes corrode if the water supplied is highly acidic or alkaline. On the other hand, polyvinyl chloride (option A) and copper pipes (option C) are preferred for water supply network because these materials are neither toxic nor corrode. Lead pipes (option D) are not recommended for water supply since lead is highly toxic.

4. An environmental health officer, who works in the municipality, has planned to disinfect a newly constructed well that contains 22,000 liters of water with a chlorine dose of 50 ppm using 5 percent chlorine sodium hypochlorite (liquid form).

What is the required volume of chlorine sodium hypochlorite in this case?
(A) 2.2 liters (C) 220 liters
(B) 22 liters (D) 2200 liters

Answer Key: The answer is **B**
Explanation: Mostly chlorine is available either in liquid or powder form. In this case, the chlorine is in liquid form. This solution is obtained by using liquid formulation formula, which proper to determine the required liquid volume as:

$$Volume\ of\ sodium\ hhh\text{hypochlorite}\ required\ (L) = \frac{Volume\ of\ water\ to\ be\ treated\ (L) \times Chlorine\ dosage\ (ppm)}{Strength\ of\ chlorine\ solution\ (ppm)}$$

Since strength of the sodium hypochlorite is given in percent, it should be changed into ppm. Parts per million (ppm), can be calculated by multiplying % available chlorine with 10,000 as 100x10,000 =1,000,000. Therefore, the strength of the sodium hypochlorite is 5 x 10,000 = 50,000. Thus

$$Volume\ of\ \text{sodium hypochlorite}\ \ required\ (L) = \frac{22{,}000\ L\ x\ 50\ ppm}{50{,}000\ ppm} = 22\ L$$

5. A municipality has planned to promote recycling and reuse of wastewater. According to the plan, the wastewater generated from various sources can be reused for different purposes including for irrigation, construction and underground water recharge.

   What is the most likely factor that affects the diversification of reuse in this case?

   (A) Wastewater quantity
   (B) Wastewater source quality
   (C) Wastewater collection method
   (D) Wastewater treatment method

Answer key: The Answer is **B**

Explanation: Wastewater source quality (option B) is the most important factor that indicates wastewater composition and properties used to identify feasible wastewater collection (option C) and treatment methods (option D) for recycling and reuse. Moreover, quality (e.g. biodegradability, hazardous/non-hazardous properties) determines the quantity of municipal wastewater (option A) that can be recycled or reused.

6. A waste to energy facility was designed and planned to generate 80 mega watts energy in a city. However, the facility generates just 20 mega watts electric powers, which is very low as compared to the planned energy to be generated. It seems that there is high waste generation rate that is not sorted by type in the area and/or waste that is used as a source.

   What is the most likely cause for the low production of energy in this scenario?

   (A) Uncertainty of supply
   (B) Unproven technology
   (C) High waste generation rate
   (D) Lack of proper waste separation

Answer Key: The Answer is **D**

Explanation: In this scenario the city planned and designed to generate 80 mega watts, but generated 20 mega watts, which is lower than the planned. Lack of proper waste separation (option D) is the most likely cause for the low production of energy because of the heterogeneity and low putrescibility of wastes. On the other hand, the other options (A, B, & C) cannot be the answers. Though the uncertainty of the supply affects the amount of energy generated, in this scenario supply was not mentioned as an issue since there is high waste generation rate. Similarly, Unproven technology (option B), is not an issue as it is designed to produce 80 mega watt. Likewise, High waste generation (option C) cannot be an obstacle for low energy generation.

7. A river received pollutants mainly from agricultural sources, which are aggravated due to lack of forest and vegetation in the catchment area that enhances the transportation of

agrochemicals and agricultural residues by runoff. The river quality parameters such as siltation, nutrients, pesticides, and organic matters have been exceeding the national environmental limit. Hence, the environmental protection authority has initiated an intervention to tackle the problem.

What is the most appropriate intervention for this scenario?

(A) Treating the river water
(B) Watershed management
(C) Use of organic fertilizers
(D) Household waste management

Answer Key: The Answer is **B**

Explanation: The River is exposed to agricultural and domestic waste sources aggravated by the lack of forest and vegetation in the catchment area. The appropriate intervention for this problem is Watershed management which can decrease the transportation of agrochemicals and agricultural residues by runoff. Preventive strategies should mostly focus on watershed management along with land cover condition, which are another influence of detachment and transport of pollutants. On the other hand, treating the river water (option A) cannot be the answer due to treatment of river is costly, not feasible, the pollution will continue, and is not preventive. The use of organic fertilizers (Option C) increases the pollutants from agricultural sources rather than decreasing. In the same vein, Household waste management (Option D) may not be the priority intervention areas for this scenario because the river are receiving pollutants mainly from agricultural sources, which is aggravated due to lack of forest and vegetation in the catchment area so, household waste management is not the major intervention.

8. An occupational and safety inspector of a city administration received an injury report from a furniture house. As per the investigation findings, the injury was happened while the workers were using circular saw. The inspector has planned to provide safety measure to prevent reoccurrence of such incidents.

   What is the most appropriate safety measure to be taken in this scenario?

   (A) Guarding
   (B) Shift work
   (C) Safety training
   (D) Using appropriate PPE

Answer Key: The Answer is **A**

Explanation: Guarding (Option A) is the most appropriate safety measure and the first priority measure from the available choices. It is part of Engineering control approach, which is enclosure of the hazard work process to reduce employees exposure. Machine guarding is another form of enclosure that prevents workers coming into contact with dangerous parts of machines. The hierarchies of the incident control measures are elimination, substitution by the alternative materials, engineering control, administrative measures, and personal protective equipment (PPE). On the other hand, Shift work (Option B) is not the answer is for this scenario

as it is not prevent the occurrence of incident on workers. Similarly, Safety training (Option C) can decrease the exposure to the hazards but for this scenario it cannot be the answer. Using appropriate PPE (Option D) is the last option and important to decrease hazards exposure, it is not the first priority for this scenario.

9. A home with six family members had one bed room and a sitting room. The bed room was used by the mother and father, whereas the adult members of the family whom one of them was a girl were using the sitting room. The girl faced serious privacy problems. To curb the problem, the family has built a new home with adequate number of rooms and has made the surrounding of the home aesthetically pleasant.

   What is the most likely principle of housing addressed in this case?
   (A) Satisfaction of fundamental psychological needs
   (B) Satisfaction of fundamental physiological needs
   (C) Protection against communicable diseases
   (D) Protection against accidental injuries

The Answer is A.
Explanation: The American Public Health Association (APHA) Committee on the Hygiene of Housing has listed the criteria to be met for the promotion of the physical, mental, and social health. Among those criteria and principles the living house should have adequate space, privacy, and facilities for the individual and arrangement and separation for normal family living. In this scenario, the family has solved the problem of adequate space, privacy, and facilities for the individual and arrangement and separation for normal family living privacy problems and they worked to increase Satisfaction of fundamental psychological needs (Option A). The other options, Satisfaction of fundamental physiological needs (option B), Protection against communicable diseases (C), and Protection against accidental injuries (D) are important and are inherent within the principles of healthful housing, but they cannot be answers in this scenario.

10. A national public health emergency management (PHEM) officer wanted to design appropriate disaster management plan for vulnerable people in Ethiopia. The officer referred to earlier studies and found out that slow onset disaster characterized by shortage of water due to hydrologic disruption was the most common cause of disaster in Ethiopia leading to extended hunger.

    What is the most likely type of disaster explained in this case?
    (A) Earthquake
    (B) Drought
    (C) Famine
    (D) Flooding

Answer Key: The Answer is **B**

Explanation: In this case, the officer wanted to design a management plan for disaster that is characterized by shortage of water due to hydrological disruptions, among the options given, drought is the best answer. Because drought happens when there is lack or insufficient rain for an extended period that severely disturbs the hydrologic cycle in an area. On the other hand, earthquake (option A) is still the common type of disaster in Ethiopia but it doesn't happen as a result of water shortage, rather it is a sudden slippages or movements in a portion of the earth's crust accompanied by a series of vibrations. Famine (option C) is also a common disaster, which is most of the time associated with naturally-occurring crop failure and pestilence and artificially created war or genocide. Moreover, flooding (option D) cannot be The Answer is as it is not a water shortage rather it is a disaster as a result of rapid rain runoff after an excessive rain fall.

11. A new brand of fortified milk for children was already packed into its final container size before the point of import. The authorities at the first port of entry decided to import into the country. However, the second port inspectors requested to take samples of imported foods for test before entry.

    What is the most appropriate test to be performed in this case?

    (A) Physical test
    (B) Microbial test
    (C) Enzymatic test
    (D) Organoleptic test

Answer Key: The Answer is **B**

Explanation: In this case at the second port the authorities want to conduct tests that enable them to identify if there is any contamination of milk from pathogenic microorganisms. This test is used to know the proper sterilization of containers in addition to identifying the presence of microorganisms. So in this case microbial test is a best answer. The other options cannot be The Answer is s. Physical tests (option A) are usually made at the receiving station, in this context at first port and the authorities allowed the fortified milk to import into the country in first port entry which means the product pass the first test. Most of the time the professionals in the first port expected to be conducted a physical test like flavor, and appearance. Enzymatic test (option C) is a test which is use to check the composition of sugar, acid or alcohol in the food. It is specially used for beverages and fruit juice. Finally, organoleptic test (options D) is most commonly conducted in entry of the first port and cannot be second port.

12. A team of consultants conducted an environmental impact assessment on a road project. According to their assessment the team predicted severance of farmland as one of the possible impacts as a result of road projects.

    What is the most likely type of project impact predicted by the team?
    (A) Direct impact
    (B) Indirect impact
    (C) Secondary impact
    (D) Cumulative impact

Answer Key: The Answer is **A**

Explanation: In this context the team predicted that the road project would use a land from farmers that could lead to shortage of farm land. Based on this assumption, The answer is direct impact. Because direct impact is caused by the road itself- that is to say, by road building processes such as land consumption, removal of vegetation, and severance of farmland. Whereas indirect impact (option B) and secondary impact (option C) are usually linked closely with the project, and may have more profound consequences on the environment than direct impacts, they cannot be the best types of project impact predicted by the team. A cumulative impact (option D) in the context of road development might be the de-vegetation and eventual erosion of a roadside pullout. Roadside vegetation is damaged by vehicle and foot traffic, and the soil is left unprotected. Subsequent rainfall causes erosion and siltation of nearby watercourses.

13. An environmental health officer is trying to perform his tasks individually and collectively with due consideration of maintaining a high level of ethical conduct in a routine house to house inspection. The officer always communicates and asks for household heads' point of view and takes it in to account when choosing next course of actions for the households.

    What is the most likely respectful behavior that the Officer is demonstrating?
    (A) Ensuring client privacy
    (B) Respecting clients individuality
    (C) Involving clients in decision making
    (D) Allowing clients to do what they can

Answer Key: The Answer is **C**

Explanation: In this scenario, the environmental health officer has been committed to understand patients' interest with proper communication, and considered their point of view for final decision. This means considerable right was given to clients to accept or reject final decision. This is clearly an act of involving clients in decision making. Therefore choice C is the answer is . On the other hand, other options are less discussed in the scenario, and not directly applied in this scenario.

14. A zonal health department head tries to lead his subordinates in a motivating way and his task orientation affects his leadership styles. The head gives more emphasis to institutional performances than that of the employees, and his style's primary objective is to achieve the organization's goals, and employee needs are not relevant in this process.

    What most is the most appropriate leadership style applied by the head in this scenario?

    (A) Impoverished management
    (B) The country club management
    (C) Middle of the road management
    (D) Production oriented management

Answer Key: The Answer is D

Explanation: Basically, leadership style depends largely on a manager's beliefs, values, and assumptions. How managers approach motivation, decision making, and task orientation affect their leadership styles. In this scenario, though the head tries to lead his subordinates in a motivating way, he gives more priority to institutional performance than that of the employers. His style is, therefore, Production oriented management, which can also be termed as task-oriented manager with a desire to do better in the situation with good leader/member relationships, structured tasks, and either weak or strong position power. The task-oriented style leader experiences pride and satisfaction in task accomplishment of the organization, unlike other relationship-motivated styles. Whereas impoverished management (Option A) is not interested to the task as well as for the employees, the middle of the road management (option C) has half concern for the task and for the employee and the country club management (option B) is more interested for relationships than the task.

15. In a health center's catchment area, malaria persists as endemic disease though bed net has been distributed for the last three years. An environmental health officer planned to conduct an urgent research in order to determine the bed net utilization among households in a certain district so as to act accordingly.

    What is the most appropriate type of research for this scenario?

    (A) Action
    (B) Descriptive
    (C) Explanatory
    (D) Exploratory

The Answer is B:

Explanation: Descriptive study design is concerned with characterizing the amount and distribution of health and disease within population in terms of person, place, and time. In the this scenario, the environmental health officer wants to conduct research to determine the bed net utilization level among households for the purpose of describing the level of bed net utilization. However, choice A is a type of research needed for action in certain program, choice C is a type

of research which studies about the risk factor of disease it is more detail type of research, and choice D is a study idea undertaken when there is little knowledge about the issue.

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