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QUALIFICATION: **BACHALOR OF ENVIRONMENTAL HEALTH SCIENCES**	
QUALIFICATION CODE: **08BOH**	LEVEL: **5**
COURSE: **MICROBIOLOGY AND PARASITOLOGY**	COURSE CODE: **MAP 512S**
DATE: **JANUARY 2025**	SESSION: **1**
DURATION: **3 HOURS**	MARKS: **100**

SECOND OPPORTUNITY: EXAMINATION QUESTION PAPER

EXAMINER: **DR. RENATUS PETER SHILANGALE**

MODERATOR: **DR. LARAI AKU-AKAI**

INSTRUCTIONS

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

PERMISSIBLE MATERIALS

1. None

ATTACHEMENTS

1. None

This paper consists of 7 pages including this front page

SECTION A: MATCHING, MULTIPLE CHOICE AND TRUE / FALSE [30 MARKS]

QUESTION 1: MATCHING QUESTIONS [10 MARKS]

Evaluate the statements in each numbered section and select the most appropriate answer or phrase from the given possibilities. Fill in the appropriate letter next to the number of the correct statement/phrase on your ANSWER SHEET.

1.1	Disease caused by pathogenic organisms or toxins transmitted to humans by food. [1]	
1.2	Substances that can unintentionally enter food during its production or marketing. [1]	
1.3	Lives and reproduces only in the presence of oxygen. [1]	
1.4	Microorganisms that are used in food microbiology to signal microbiological problems that could impact on the quality, process, hygiene or safety of food. [1]	
1.5	The process where food deteriorates to the point that it is not edible to humans or its quality of edibility becomes reduced. [1]	
1.6	An agent that inhibits the growth of bacteria, but does not necessarily kill them. [1]	
1.7	The entry and development or multiplication of infectious agents in the body of humans or other animals. [1]	
1.8	Removing toxins. [1]	
1.9	Application of combination of food preservation techniques. [1]	
1.10	An agent that kills/destroy certain microorganisms. [1]	

A	Sterilization	I	Infection
B	Foodborne disease	J	Aerobic
C	Decontamination	K	Aseptic techniques
D	Contaminants	L	Bacteriostatic
E	Food preservation	M	Germicide
F	Facultative Anaerobes	N	Indicator microorganisms
G	Asepsis	O	Food spoilage
H	Hurdle technology	P	Stater culture

QUESTION 2: TRUE/FALSE QUESTIONS **[10 MARKS]**

Evaluate the statements and select whether the statement is true or false. Write the word **'True'** or **'False'** next to the corresponding number on your ANSWER SHEET.

2.1	The most fundamental difference between prokaryotes and eukaryotes is the presence of a nuclear membrane in eukaryotes and its absence in prokaryotes. [1]	
2.2	It takes more time to kill a large population of bacteria than it does to kill a small population, because only a fraction of organisms die at any given time interval. [1]	
2.3	The difference in bacteria cell wall structure is a major feature used to classify them into Gram positive and Gram Negative bacteria. [1]	
2.4	Some Archaea halophiles which are known to live in survive or live in extreme acid conditions i.e. pH < 2.0 . [1]	
2.5	Organisms that obtain their energy from preformed organic or inorganic molecules are called photosynthetic autotrophs. [1]	
2.6	With the Zoonotic infection, the human disease must resemble the disease caused in the animal host. [1]	
2.7	Diplococci - Cells divide in one plane and remain attached predominately in pairs, e.g. pneumococci. [1]	
2.8	Microorganisms that grow at low refrigeration temperatures are also known as Psychotropic. [1]	
2.9	Viruses can reproduce outside a host cell and cannot metabolize on their own. [1]	
2.10	Ecosystems is communities of organisms and their physical and chemical environments that function as self-regulating units. [1]	

QUESTION 3: MULTIPLE CHOICE **[10 MARKS]**

Evaluate the statements in each numbered section and select the most appropriate answer or phrase from the given possibilities. Write only the appropriate letter next to the question in the ANSWER SHEET provided.

3.1. One of the following below is a typical Genotypic Classification method for classification of microorganisms: **[1]**

(A) Morphological

(B) Biochemical factors

(C) Antigenic factors (Serological)

(D) Staining

(E) DNA hybridazation

3.2. The oxygen in the air is lethal to: [1]

(A) Obligate thermophiles

(B) Photosynthetic microbes

(C) Microaerophilic microbes

(D) Obligate anaerobes

(E) None of the above

3.3. The process of making an object free from living organisms including bacterial and fungal spores and viruses is known as: [1]

(A) Pasteurization

(B) Antisepsis

(C) Disinfection

(D) Sterilization

(E) All of the above

3.4. Thermal death time is: [1]

(A) Time required to kill specific number of cells at a given temperature

(B) Temperature that kills all cells in a given time

(C) Time and temperature needed to kill all cells

(D) Time required to kill all the microorganisms in ten minutes

(E) All of the above.

3.5 Which of the following is the reason jams and dried meats often do not require refrigeration to prevent spoilage? [1]

(A) Low pH

(B) Toxic alkaline chemicals

(C) Naturally occurring antibiotics

(D) Low water activity

(E) None of the above

3.6. Types of fermentation based on the end product formed are: [1]

(A) Lactic acid fermentation

(B) Alcohol Fermentation

(C) Acetic acid Fermentation

(D) Butyric acid Fermentation

(E) All of the above

3.7 Environmental microbiology is field of science that extends to different fields of microbiology including: [1]

(A) Aero microbiology

(B) Soil Microbiology

(C) Food safety

(D) Water quality

(E) All of the above

3.8 The phase of no growth in microbial growth curve is known as: [1]

(A) Log phase

(B) Stationary phase

(C) Lag phase

(D) Death phase

(E) None of the above

3.9 A parasite that lives inside its host is called: [1]

(A) Ectoparasite

(B) Definitive Host

(C) Zoonosis

(D) Endoparasite

(E) None of the above

3.10. One of the following is not a parasitic infection: **[1]**

(A) Amebiasis

(B) Malaria

(C) Cryptosporidiosis

(D) Giardiasis

(E) None of the above

SECTION B: SHORT/LONG ANSWER QUESTIONS [70 MARKS]

Please answer ALL of the questions in this section.

QUESTION 4 [10 MARKS]

4.1. Define the term Taxonomy. [1]

4.2. What are the three (3) basic modes of actions which physical and chemical methods use to control microbial growth? [3]

4.3. To control microbial growth, one would apply physical or chemical methods. Briefly discuss two (2) physical methods that can be used to control microbial growth. [6]

QUESTION 5 [10 MARKS]

5.1. What is a Parasite? [2]

5.2 Briefly explain different factors that may affect the control of microbial growth. [8]

QUESTION 6 [10 MARKS]

6.1 Bacteria exist in different shapes (morphology). Mention the four major shapes of bacteria. [4]

6.2 All organisms need energy in order to survive. What are the three (3) ways which most bacteria use to get energy? [6]

QUESTION 7 **[10 MARKS]**

7.1 What is food contamination? [2]

7.2. Briefly explain four (4) different types of food contamination. [8]

QUESTION 8 **[10 MARKS]**

8.1. What is the difference between probiotics and antibiotics? [2]

8.2. What is Food preservation? [2]

8.3. Briefly, outline ANY three (3) benefits of food preservation. [6]

QUESTION 9 **[10 MARKS]**

9.1. Briefly, explain the two (2) main components of the ecosystem. [4]

9.2. Briefly discuss any three (3) challenges that the world face in the reduction of parasitic disease. [6]

QUESTION 10 **[10 MARKS]**

10. Suppose you went to a village for a house visit and found complaints of foodborne illness among the villagers. What possible ways of food contamination do you suspect and how will you teach the villagers about them? [10]

END OF QUESTION PAPER