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OF SCIENCE AND TECHNOLOGY**

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QUALIFICATION : BACHELOR OF ENVIRONMENTAL HEALTH SCIENCES	
QUALIFICATION CODE: 08BOHS	LEVEL: 5
COURSE: MICROBIOLOGY AND PARASITOLOGY	COURSE CODE: MAP512S
DATE: JANUARY 2024	SESSION: 1
DURATION: 3 HOUR	MARKS: 100

SUPPLEMENTARY/SECOND OPPORTUNITY: 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. Non-Programmable Calculator

ATTACHEMENTS

1. None

This paper consists of 6 pages including this front page

QUESTION 1: MULTIPLE CHOICE 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	It is a science of classifying life according to shared characteristics	
1.2	Lives and reproduces only in the absence of oxygen	
1.3	Transfer of harmful microorganisms or their microscopic stages (eggs, larvae) from one source to another	
1.4	Lives in the presence of oxygen and without oxygen (can live in both environments)	
1.5	Reducing the number of pathogenic microorganisms to the point where they no longer cause diseases.	
1.6	Heat treatment that kills endospores of <i>Clostridium botulinum</i> the causative agent of botulism, in canned food.	
1.7	Those bacteria that is capable of causing illness in persons consuming the food.	
1.8	The process of treating and handling food to stop or slow down spoilage and thus allow to prolong the shelf life of food.	
1.9	An agent that inhibits the growth of bacteria, but does not necessarily kill them.	
1.10	Organisms that can be transmitted to susceptible hosts and cause disease	

- A. Anaerobic
- B. Facultative anaerobes
- C. Cross-contamination
- D. Disinfection
- E. Bacteriostatic Agent
- F. Taxonomy
- G. Food preservation
- H. Commercial Sterilization
- I. Infectious agent
- J. Foodborne pathogens

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	Unlike Eukaryotic cell, prokaryotic cell is a cell lacking nucleus.	
2.2	A single cell (microorganism) can reproduce without interaction of other organism.	
2.3	Some Archaea halophiles which are known to live in survive or live in extreme acid conditions i.e. pH < 2.0	
2.4	Diplococci - Cells divide in one plane and remain attached predominately in pairs, e.g. pneumococci.	
2.5	Alexander Fleming discovered the first antibiotic known as Penicillin which belongs to the <i>Penicillium</i> genus by accident.	
2.6	Viruses cannot reproduce outside a host cell and cannot metabolize on their own.	
2.7	Zoonotic Diseases is an infectious disease that is transmitted between species from animals to humans (or from humans to animals).	
2.8	The germ theory of disease suggested that it was the unclean, unhealthy air that was causing disease.	
2.9	Microorganisms that grow at low refrigeration temperatures are also known as mesophilic.	
2.10	'Parasites' are organisms that derive nourishment and protection from other living organisms known as 'hosts'.	

QUESTION 3 MULTIPLE CHOICE QUESTIONS**[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 Which of the following individuals is credited for definitively refuting the theory of spontaneous generation using broth in swan-neck flask?

- (A) Aristotle
- (B) Jan Baptista van Helmont
- (C) John Needham
- (D) Louis Pasteur

3.2 Which of the following developed a set of postulates for determining whether a particular disease is caused by a particular pathogen?

- (A) John Snow
- (B) Robert Koch
- (C) Joseph Lister
- (D) Louis Pasteur

3.3 Which of the following terms refers to a prokaryotic cell that is rod shaped?

- (A) Cocci
- (B) Comma forms
- (C) Bacilli
- (D) Pleomorphic forms
- (E) Spirochaetes

3.4 The Rapid bacterial growth phase in the microbial growth curve is known as;

- (A) Log phase
- (B) Lag phase
- (C) Stationary phase
- (D) Death phase
- (E) None of the above

3.5 Salt and sugar preserve foods because they;

- (A) Make the sour and sweet at the same time
- (B) Produce a hypotonic environment
- (C) Deplete all the nutrients
- (D) Produce a hypertonic environment
- (E) Make them acid.

3.6 The germ theory of disease states that:

- (A) Microorganisms can spontaneously arise in debilitated hosts
- (B) Microorganisms that invade other organisms can cause disease in those organisms
- (C) Microorganisms do not cause infectious diseases
- (D) Not all microorganisms are harmful
- (E) Malaria is caused by bad air

3.7 The word Decontamination means;

- (A) Removing toxins
- (B) Sterilization
- (C) Cleaning with water
- (D) Killing microorganisms
- (E) Bactericide.

3.8 An example of a malaria specie is?

- (A) Entamoeba histolytica
- (B) Giardia lamblia
- (C) Plasmodium falciparum
- (D) Amoebae
- (E) None of the above

3.9 Microorganisms are useful in different industrial use including the following;

- (A) Production of medicinal products
- (B) Food production
- (C) Pollution cleanup
- (D) All of the above

3.10 The pasteurization process does which of the following in milk?

- (A) It kills all microbes.
- (B) It kills microbial pathogens that might be present in milk.
- (C) It inactivates viruses
- (D) It kills all bacterial spores

(E) It sterilizes milk.

SECTION B: SHORT/LONG ANSWER QUESTIONS

[70 MARKS]

Please answer ALL of the questions in this section.

QUESTION 4

[20 MARKS]

- 4.1 There are activities (characteristics) which make organisms (living organisms) different from non-living things. Explain 5 characteristics of living organisms [10]
- 4.2 What is Spontaneous generation? Give example. [2]
- 4.3 What is the difference between the Ectoparasites and Endoparasites? [3]
- 4.4 Outline the 5 Virus life cycle (lytic cycle). [5]

QUESTION 5

[10 MARKS]

- 5.1 What is the definition of fermentation? [2]
- 5.2 What is probiotics? [2]
- 5.3 Explain the 3 benefits of fermentation in food. [6]

QUESTION 6

[10 MARKS]

- 6.1 To control microbial growth, one would apply different physical methods depending on the product or material in question. Briefly discuss "Heat" as a physical method that can be used to control microbial growth. [10]
- 6.2 What is food contamination? [2]
- 6.3 Briefly discuss 4 different types of food contamination [8]
- 6.4 Define Ecosystem and explain its 2 main components. [4]
- 6.5 Briefly, explain 3 different types of symbiosis? [6]
- 6.6 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