

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2023

Course: Agriculture and Food microbiology

Program: B.Sc. Microbiology

Course Code: HSMB 2007

Semester : IV

Duration: 03 hrs.

Max. Marks: 100

Instructions:

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
1		1.5	CO3
2	Bacterial cultures have been preserved for months at room temperature on agar slants which contain a) 5% NaCl b) 1% NaCl c) 2% NaCl d) 4% NaCl	1.5	CO1
3	Which of the following method is used for a viable count of a culture? a) Direct microscopic count b) Plate-count method c) Membrane-filter count d) Plate-count method and membrane-filter count	1.5	CO3
4	What happens when fats get spoilt?	1.5	CO3
5are code of good practices that comprise the fundamental principles, procedures and means needed for safe food production. 1. GMP 2. PRP 3. HACCP 4. None of these	1.5	CO3
6	Name two food borne viruses.	1.5	CO4
7	What ensures asepsis in a laminar flow?	1.5	CO4
8	Which alga can be used a single cell protein? a) Chlorella b) Polysiphonia c) Ulothrix d) Spirogyra	1.5	CO3
9	Which of the following microbial control methods does not actually kill microbes or inhibit their growth but instead removes them physically from samples? a. filtration b. desiccation c. lyophilization d. nonionizing radiation	1.5	CO3

10	Name an antimicrobial substance present in milk.	1.5	CO3
11	Nitrogen supply in paddy fields is due to a cyanobacterium.....(genus and species); which is present in leaves of(host).	1.5	CO1
12	<i>Agrobacterium tumefaciens</i> containsplasmid and while <i>Agrobacterium rhizogenes</i> containsplasmid. A) T-DNA, T-DNA B) Ti plasmid, Ti plasmid C) Ti plasmid, Ri plasmid D) D) ColE1 plasmid, ColE1 plasmid	1.5	CO1
13	Insecticidal viruses are found singly or clustered in a) Inclusion bodies b) Occlusion bodies c) Polyhedrons d) None of the above	1.5	CO2
14	Microbial activity of ecosystem can be monitored using : a. Microprobes b. Stable isotope probing c. Functional genomics d. d. All of the above	1.5	CO2
15	Pasteurization is the heat treatment designed to kill a. All types of microorganism b. Spore forming c. Both d. None	1.5	CO2
16is responsible for drought tolerance in plants.	1.5	CO4
17	Name a herbicide tolerant plant and an insecticide tolerant plant.	1.5	CO3
18	Name a genetically modified food where <i>Agrobacterium</i> technology has been applied.	1.5	CO4
19	Name two gram positive and one gram negative soil bacteria.	1.5	CO1
20	What happens to bacteria in a food when the water activity is changed from 0.998 to 0.945?	1.5	CO3
Section B (4Qx5M=20 Marks)			
1	Define water activity. How does water activity govern food safety and storage?	5	CO2
2	What kinds of microbes would you expect to find in the following foods? Differentiate between types of microbes in fresh and stale food. Give reasons for your predictions. i) Fish and sea products ii) egg iii) breads iv) cereals	5	CO1

3	What are some commercialized biocontrol agents. Elucidate their mechanism of action.	5	CO4
4	What are PGPRs? How do they promote plant growth?	5	CO3
Section C (2Qx15M=30 Marks)			
1	<p>In villages, people often consume raw milk for its rich flavor and benefits. In one such hypothetical situation, raw milk was consumed by few people who developed abdominal pain, weight loss, pain, fever and night sweats. The other set of people who consumed same milk developed diarrhea . Based on this answer the following questions:</p> <p>a) What could be the two serious diseases and what are its likely causatives? (3)</p> <p>b) How is milk treated to avoid these and many other dieases? (4)</p> <p>c) What are other microbes causing spoilage of milk? (2)</p> <p>d) Why is this method of choice for preservation of milk? (2)</p> <p>e) What are some methods for enumerating microbes in milk? (5)</p>	15	CO4
2	<p>An anaerobic digester was constructed below ground and a part of it is visible above ground which collects biogas. However, due to being made quite long back some corrosion happened. Based on this information; and the figure below</p>  <p>(i) Identify the type of digester and explain its operation. (5)</p> <p>(ii) Compare merits and demerits of different types of digestors (5).</p> <p>(iii) Mention/Enlist the optimum conditions for efficient operation of anaerobic digestors. (5)</p>	15	CO2
Section D (2Qx10M=20 Marks)			
1.	What are biofertilizers? Write their mechanism of action and modes of application. Also mention what kinds of nutrients do they supply.	10	CO2
2	Discuss various types of canning methods and types of spoilage of canned food products with examples	10	CO3