FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
SCHOOL OF LIFE SICENCES
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER 2019/2020 ACADEMIC SESSION
COURSE: MCB 322 (MYCOLOGY) (EXAM)

Instruction: Answer Five (5) Questions **Time:** 2 ½ Hours

Q1. Write a concise note on the role of fungi in medicine

Q2. For the diseases listed, describe the symptoms, etiological agent(s), diagnostic techniques, pathogen identification, and treatment:

a. Histoplasmosis
b. Coccidioidomycosis
c. Aspergillosis

Q3. Describe how hairs plucked from a patient's head can be used to help identify the etiologic agent of Tinea capitis. What is the choice of antifungal for the treatment?

Q4. Thermal dimorphism is a phenomenon that occurs in many true pathogenic fungi. Define what it is and give three examples of fungi that exhibit this property. What function does this adaptation probably serve in nature and/or in the host?

Q5. List the diseases caused by Candida under the following:

i. Cutaneous candidiasis
ii. Mucocutaneous candidiasis
iii. Systemic candidiasis

Q6. Briefly explain Asexual and Sexual reproduction in fungi.

Q7. Explain the differences between fungi and other microorganisms.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 324 (MICROBIOLOGICAL TECHNIQUES) (3 CREDIT UNITS)

INSTRUCTION: Answer any 4 questions in all, two from each section.

TIME: 2hours 30 min.

SECTION A

1. What is culture media?
   b. with one example each, give the classification of culture media.

2. Define pure cultures.

   b. Enumerate the methods used to derive pure cultures.

3. Write very short note on the following:

   I. Turbidimetric measurements
   II. Gram staining
   III. Citrate utilization test

SECTION B

4. Explain microbiological Assay and types

   b. Explain microbiological techniques

5. a. Explain step by step content a scientific writing

   b. Discuss serology

6. What is a butter solution

   b. How will you adjust a solute to be a base or an acid

	FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA **School of Life Sciences** **Department of Microbiology** **2019/2020 Academic Session** SECOND SEMESTER FINAL EXAMINATION	
	MCB321: General Microbiology II **CREDIT UNIT:** 3	**LEVEL: 300**
	LECTURERS: 1. Prof. Safiya Y. Daniyan 2. 3.	**DATE:** 10TH July, 2021 **Time Allowed:** 2 Hrs

INSTRUCTIONS: Answer ALL questions in SECTION A (in the answer sheet provided) and **ANY ONE QUESTION EACH** from SECTION B and C

SECTION A

1. _____ is the metabolic process by which organic molecules are converted into acids, gases or alcohol in the absence of oxygen or any electron transport chain.
2. *Salmonella spp.* is an example of a _____ foodborne pathogen.
3. Two sampling plans for assessing the microbiological quality and safety of foods are sampling by _____ and by _____.
4. The three most common types of fermentation are _____ fermentation, _____ fermentation and _____ fermentation.
5. _____ are food products produced from milk.
6. The two main stages of fermentation are _____ fermentation and _____ fermentation
7. _____ is any type of close of long-term biological interaction between two different biological organisms
8. The three main types of water treatment are _____, _____and _____ .
9. Two ways of preserving milk include _____ and _____
10. Functionally-defined cells that are able to initiate adaptive immune responses by presenting antigen to T cells are known as _____
11. _____ is a process of growing a biological entity in an artificial medium.
12. Four infectious microorganisms which may be found in water are bacteria, Algae, _____ and _____
13. _____ is a mixture of organic matter, minerals, gases, liquids, and organisms that together support life.
14. The two types of elective culture methods are _____ and _____
15. The _____ is the foremost physical initial barrier to infections.
16. _____ is a biological interaction where one organism attacks, kill or engulfs other organisms (prey).
17. _____ can utilise harmless elements from particular pathogens to prime the immune system, so that if the pathogen is actually encountered, it is met with a stronger secondary ('memory') response and dealt with more quickly
18. The immune system consists of two branches which are the _____ and the _____
19. Water purification stages include the following except:
    (a) Sedimentation tank **(b) Coagulation basin** **(c) Putrification** **(d) Filteration**
20. Inorganic indicators of water quality include:
    (a) Crudeness **(b) Total dissolved solids** **(c) Electrification** **(d) All of the above**
21. Key to the adaptive immune response is the
    (a) Heart **(b) Cytomyte** **(c) Lymphocyte** **(d) Lymph node**
22. Which of the following do not affect microbial behaviour in foods
    (a) Temperature **(b) pH** **(c) Water Activity** **(d) None of the above**
23. The spleen essentially serves as a _____ for the blood.
    (a) Lymph node **(b) Vessle** **(c) Reservoir** **(d) Catalyst**
24. *E. coli* is an example of a
    (a) Bacteria **(b) Fungi** **(c) Infection** **(d) Virus**

25. Industrial fermentation types include:
    (a) Continuous **(b) Fed-Batch** **(c) only (a)** **(d) Both (a) and (b)**
26. Which of the following is not a type of vinegar?
    (a) Herbal **(b) Ceratoid** **(c) Balsamic** **(d) Cider**

27. Which of the following is not found in milk?
    (a) Fats **(b) Vitamins** **(c) Minerals** **(d) None of the above**

28. Which of the following is a technique for detecting form, pattern and arrangement of microbes in the soil?
    (a) Light microscopy **(b) Atomic microscopy** **(c) Soil microscopy** **(d) Soil test**

29. Which of the following is not a type of symbiotic interaction:
    (a) Mutualism **(b) Parasitism** **(c) Bacterialism** **(d) Competition**
30. Commensalism is a negative ecological interaction in which a product of an organism has a negative effect on another **(TRUE or FALSE)**
31. Algal blooms can lead to the death of many species of fish but the algae themselves do not benefit from the death of the fishes. This is an example of Ammensalism **(TRUE or FALSE)**
32. All immune cells originate in the bone marrow **(TRUE or FALSE)**
33. Once activated, T cells differentiate into plasma cells that are capable of secreting antibody molecules into the circulation **(TRUE or FALSE)**
34. Cytokines form an important family of proteins that function as immune mediators **(TRUE or FALSE)**
35. Chemokines are a subset of cytokines **(TRUE or FALSE)**
36. In Aerobic water treatment, organic carbon is converted to CO_2 **(TRUE or FALSE)**
37. Centrifugation helps to supports bacterial spoilage of foods **(TRUE or FALSE)**
38. Introducing microorganisms into skim milk produces sour cream **(TRUE or FALSE)**
39. Actinomycetes are microorganisms found in the soil **(TRUE or FALSE)**
40. Milk contains carbohydrates **(TRUE or FALSE)**

SECTION B

1. (a) Describe how plasmid is transferred in bacteria.

(b) What is the difference between conjugative plasmid and non-conjugative plasmid

2. Explain with illustration, Transformation as mechanism of gene transfer

SECTION C

3. (a) Describe the principle of infectious disease
   (b) Name 4 infectious diseases and their causative agents endemic in Nigeria.

4. (a) Describe cycle of infection and its significance in the control of infectious diseases
   (b) Write short note on characteristics of infectious agents

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 521 (INTRODUCTION TO VIROLOGY) (3 CREDIT UNITS)

INSTRUCTION: Answer question 1 and any other four TIME: 2hours 30 min.

1. a). Define how viruses are different from other biological organisms.
   b). Why do viruses bother to form a particle to contain their genome?
   c). Name any5 infectious viruses and diseases associated with each.

2. a). Discuss classification of viruses on the basis of their mode of transmission
   b). Describe the approach you would employ for the isolation and enumeration of Lambda phage virus from stool sample

3. Write a concise essay on the T-cells mediated immune response to viral infection

4. Discuss the replication of Human Immunodeficiency virus.

5. Discuss the significance of viruses

6. Discuss the shapes of virus and its significance in the field of Virology

7. a). Highlight the strategies adopted in the laboratory for the diagnosis of viral infections.
   b). Distinguish between viroids, virusoids, and prions.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 522 (PETROLEUM MICROBIOLOGY) (2 CREDIT UNITS)

INSTRUCTION: Answer any **three** questions **TIME: 2hours**

1. a) Define microbiologically-influenced corrosion (MIC)
   b) The presence of microorganisms is a prerequisite for microbiologically-influenced corrosion. Discuss.

2. Write short notes on the following:
   i. Rhizofiltration
   ii. Phytostabilization
   iii. Phytoextraction

3. a) Microorganisms helps in degradation of petroleum in soil environment. Discuss the important conditions that can aid or inhibit this important microbial activity.
   b) What are the evidences that support the origin of petroleum from organic matters?

4. a) What are biosurfactants? In a tabular form, highlight three (3) groups of biosurfactants, the organisms that produce them and their applications.

b) Write short notes on the nitrogen compounds in petroleum using relevant structural formulae.

5. a) Discuss the involvement of microorganisms in oil spill in the Niger Delta, Nigeria
b) Enumerate the measures an oil company should take to control oil spill in an aquatic environment

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2019/2020 SESSION
MCB 523 (ENVIRONMENTAL MICRBIOLOGY) (3 CREDITUNITS)

INSTRUCTION: Answer any Five (5) Questions (At least ONE from each section).

TIME: 2hours 30 min.

SECTION A

1. Water sample was brought to Microbiology Departmental Laboratory in FUT Minna for analysis. As a microbiologist, describe how you would use MPN method to analyse the water.

2. Write short note on the following: (a) Indoor air microflora, (b) Outdoor air microflora and (c) Hospital air microflora.

3. (a). Discuss briefly, the existence of microorganisms in air.

(b). Define indicator organisms and give any two examples.

(c). List any five (5) properties of an indicator organism.

SECTION B

4. (a). Mention any four (4) key microorganisms involved in the phases of nitrogen cycle and highlight the roles of each.

(b). State five (5) implications of excessive influx of nitrogen in the environment.

5. Discuss the economic importance of sedimentary cycles.

SECTION C

6. (a). Define pesticide.

(b). List five (5) types of pesticides.

7. (a). What are bio-pesticides?

(b). Catalogue the types of bio-pesticides.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2019/2020 SESSION
MCB 525 (PHARMACEUTICAL MICROBIOLOGY) (2 CREDIT UNITS)
Instruction : Attempt any two (2) Questions in each section

TIME: 2hours

Section A

1. (a) Describe the following terms and give specific example(s) in each case: (i) Chemotherapy, (ii) Antibiotic, (iii) Prophylaxis, (iv) Vaccination, (v) Antiseptic, (vi) Disinfectant, (vii) Preservative, (viii) Antimicrobials, (ix) Selective toxicity, and (x) Pharmaceutical Microbiology

(b) Discuss antibiotics on the basis of their types as well as their actions

(c) Make large diagrams of **Clavulanic acid** and a **Fluoroquinolone.**

2. (a) Explain spoilage, its sources and preservation of pharmaceutical products with examples

(b) Outline Pharmaceutical ingredients susceptible to microbial attack

(c) What are the observable effects of microbial attack on pharmaceutical products?

3. (a) What are plant secondary metabolites and why are they produced?

(b) Give the descriptive features of *Garcinia kola*, *Aframomum melegueta, Chasmanthera dependens* and *Nauclea latifolia* and their medical importance.

SECTION B

4. Study the Table 1 below and aanswer the following questions :

(i) Calculate the mean and standard deviation for the triplicate determinations

(ii) Explain the principle of the susceptibility test used

(iii) Explain the response of *Pseudomonas aeruginosa* to E_1. What can you attribute to this response?

(iv) Differentiate between this susceptibility method and agar dilution method.

Table 1: Antibacterial Activity of Plant Extracts against Some Pathogenic Organisms

	Zones of inhibition (mm)		
Isolates	E_1	E_2	Amoxicillin
	0.00	11.00	18.00
Pseudomonas aeruginosa	0.00	12.00	18.00
	0.00	13.00	19.00
Escherichia coli	15.00	15.00	4.00
	14.00	17.00	5.00
	18.00	14.00	4.00
Klebsiella pneumoniae	22.00	13.00	20.00
	20.00	15.00	21.00
	18.00	12.00	22.00
Staphylococcus aureus	25.00	12.00	0.00
	22.00	14.00	0.00
	24.00	16.00	0.00
Streptococcus pyogenes	19.00	17.00	22.00
	17.00	15.00	21.00
	16.00	18.00	20.00

E_1: N-hexane extract, E_2: Ethylacetate extract

Note: Deviation from mean = (x – x), n = number of population; x = mean of population

$$\text{Standard deviation} = \sqrt{\frac{\Sigma(x-x)^2}{n}}$$

5. Write short notes on the following:
   (a) Plant materials for extraction
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   (c) Discuss the significance of serial exhaustive extraction of plant materials.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 526 (MEDICAL PARASITOLOGY) (3 CREDIT UNITS)

INSTRUCTION: Answer question 1 and any other four (4) TIME: 2hours 30 min.

1a. Highlight four (4) ways through which a parasite inflicts harm to a host.
b. Give one example each of the following: (i) Urogenital flagellate (ii)Lung parasite (iii)Liver parasite (iv) Dog tapeworm (v) Intracellular blood protozoa (vi)African eye worm (vii) Broad fish tapeworm (viii) Blood fluke (ix) Thread worms (x) Whip worms (xi) tapeworm (xii) Erratic parasites.
c. As a 500L Parasitology student, describe how ascariasis is diagnosed in a Microbiology laboratory.

2a. With the aid of a diagram, describe the developmental stages of the order Kinetoplastida. Highlight specific features associated with each stage.
2b. Write short note on the following:
   i. Larva migrans (ii) Backyard TRIAD

3a. As a 500L Parasitology student, highlight useful diagnostic tools used in the identification of the following:

i. Adult filarial worms and Microfilarialworms ii. Various tapeworms

3b. List any two methods of controlling each parasite in the environment:

i. Round worms (ii) Intracellular blood protozoa (iii) Liver fluke.

4. Name the important filarial worms in Nigeria and briefly discuss the filarial worm associated with "River blindness".

5. Describe the general life cycle of the Trematodes.

6. Briefly discuss the Oriental lung fluke.

7. Discuss the host - parasite factors that influence a parasitic infection in a host.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
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DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 522 (PETROLEUM MICROBIOLOGY) (2 CREDIT UNITS)

INSTRUCTION: Answer any **three** questions **TIME: 2hours**

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FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2019/2020 SESSION
MCB 523 (ENVIRONMENTAL MICRBIOLOGY) (3 CREDITUNITS)

INSTRUCTION: Answer any Five (5) Questions (At least ONE from each section).

TIME: 2hours 30 min.

SECTION A

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SECTION B

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FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2019/2020 SESSION
MCB 525 (PHARMACEUTICAL MICROBIOLOGY) (2 CREDIT UNITS)
Instruction : Attempt any two (2) Questions in each section

TIME: 2hours

Section A

4. (a) Describe the following terms and give specific example(s) in each case: (i) Chemotherapy, (ii) Antibiotic, (iii) Prophylaxis, (iv) Vaccination, (v) Antiseptic, (vi) Disinfectant, (vii) Preservative, (viii) Antimicrobials, (ix) Selective toxicity, and (x) Pharmaceutical Microbiology

(b) Discuss antibiotics on the basis of their types as well as their actions

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SECTION B

4. Study the Table 1 below and aanswer the following questions :

(v) Calculate the mean and standard deviation for the triplicate determinations

(vi) Explain the principle of the susceptibility test used

(vii) Explain the response of *Pseudomonas aeruginosa* to E_1. What can you attribute to this response?

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Streptococcus pyogenes	19.00	17.00	22.00
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E_1: N-hexane extract, E_2: Ethylacetate extract

Note: Deviation from mean = (x – x), n = number of population; x = mean of population

$$\text{Standard deviation} = \sqrt{\frac{\Sigma(x-x)^2}{n}}$$

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FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 526 (MEDICAL PARASITOLOGY) (3 CREDIT UNITS)

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	FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA **School of Life Sciences** **Department of Microbiology** **2019/2020 Academic Session** SECOND SEMESTER FINAL EXAMINATION	
	MCB321: General Microbiology II **CREDIT UNIT:** 3	**LEVEL: 300**
	LECTURERS: 1. Prof. Safiya Y. Daniyan 2. 3.	**DATE:** 10TH July, 2021 **Time Allowed:** 2 Hrs

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SECTION A

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SECTION B

5. (a) Describe how plasmid is transferred in bacteria.
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SECTION C

7. (a) Describe the principle of infectious disease
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DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER 2019/2020 ACADEMIC SESSION
COURSE: MCB 322 (MYCOLOGY) (EXAM)

Instruction: Answer Five (5) Questions **Time:** 2 ½ Hours

Q1. Write a concise note on the role of fungi in medicine

Q2. For the diseases listed, describe the symptoms, etiological agent(s), diagnostic techniques, pathogen identification, and treatment:

d. Histoplasmosis
e. Coccidioidomycosis
f. Aspergillosis

Q3. Describe how hairs plucked from a patient's head can be used to help identify the etiologic agent of Tinea capitis. What is the choice of antifungal for the treatment?

Q4. Thermal dimorphism is a phenomenon that occurs in many true pathogenic fungi. Define what it is and give three examples of fungi that exhibit this property. What function does this adaptation probably serve in nature and/or in the host?

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iv. Cutaneous candidiasis
v. Mucocutaneous candidiasis
vi. Systemic candidiasis

Q6. Briefly explain Asexual and Sexual reproduction in fungi.

Q7. Explain the differences between fungi and other microorganisms.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION
MCB 324 (MICROBIOLOGICAL TECHNIQUES) (3 CREDIT UNITS)

INSTRUCTION: Answer any 4 questions in all, two from each section.

TIME: 2hours 30 min.

SECTION A

2. What is culture media?
   b. with one example each, give the classification of culture media.

2. Define pure cultures.

   b. Enumerate the methods used to derive pure cultures.

3. Write very short note on the following:

IV. Turbidimetric measurements
V. Gram staining
VI. Citrate utilization test

SECTION B

4. Explain microbiological Assay and types

   b. Explain microbiological techniques

5. a. Explain step by step content a scientific writing

   b. Discuss serology

6. What is a butter solution

   b. How will you adjust a solute to be a base or an acid