

Chattogram Veterinary and Animal Sciences University

Department of Microbiology and Veterinary Public Health

MS in Microbiology; January-June Semester, 2022

Subject: Industrial Microbiology, Course code: IMS-601

Total Marks: 40; Time: 2 hours

(Figures in the right margin indicate full marks. Answer any four questions)

- 1 a) Define industrial microbiology. Write down the scope and prospects of industrial microbiology. 3
- b) Tabulate different metabolites, vitamins, and antibiotics producing specific organisms with their commercial applications. 5
- c) What are the minor elements and co-factors that you consider during the formulation of the fermentation media? 2
- 2 a) Write down the raw materials used for the production of butanol and ethanol. Mention the specific application of these chemicals in the context of Bangladesh. 4
- b) Suppose you are appointed as a microbiologist at the BLRI and you are working with HPAIV. Which level of BSC will you choose and briefly describe the infrastructure as well as laboratory facilities of these BSC? 4
- c) Classify antifoaming agents with examples. 2
- 3 a) What is an inoculum? Briefly describe the parameters that should be maintained for bioreactor design and ensure optimum conditions for microbes. 4
- b) Briefly describe the nutritive value and therapeutic importance of fermented foods. 3
- c) Write down the difference between microfiltration, ultrafiltration, and reverse osmosis. 3
- 4 a) Define biosafety. List the microbial enzymes with their specific roles in the leather industry. 3
- b) Briefly describe, Why is screening an interdisciplinary task? 3
- c) What is wort? Explain the beer production and fermentation process. 4
- 5 a) Define HEPA filter. What are the criteria you will follow for patenting your newly discovered product or technology? 4
- b) Write down the following short notes: 3+3
 - I. Manufacturing of antibiotics
 - II. Probiotics

Chattogram Veterinary and Animal Sciences University
MS in Microbiology Final Examination
January – June Semester 2022
Course title: **Food Microbiology**
Course Code: FMB-601
Full Marks- 40, Time- 2 Hours

Answer any **four** questions; Figures in the right margin indicate full marks

1. a) Write down the spoilage of egg caused by bacteria. 2.5
b) Describe off odor and off taste of meat under aerobic condition. 2.5
c) Write down the causes of spoilage of heated canned food & give a short description of T.A spoilage and flat sour spoilage 5

2. a) Describe the growth, pathogenicity, toxins associated and conditions necessary for outbreak of Enteropathogenic *Escherichia coli*. 5
2.5
b) What is food borne disease? Classify food borne disease with example. 2.5
c) What are the basic differences between bacterial food intoxication and food infection?

3. a) Which factors affect the heat resistance of microorganisms and how? 2.5
5
b) Enlist five chemical preservatives with maximum tolerance, organism affected and their uses. 2.5
c) Briefly describe the preservation of food using drying method.

4. a) Define Good Manufacturing Practice (GMP). 1-3
b) Write down the principles of developing and operating a HACCP program. 5-7

5. Write short note on any four - 2.5×4=10
 - i) Contamination and preservation of fish
 - ii) Inhibitory substance (antimicrobial constituents) of food
 - iii) Microbial Enzymes
 - iv) Flavor change of milk due to spoilage
 - v) Wine

Chattogram Veterinary and Animal Sciences University
MS in Microbiology Final Examination
January - June Semester, 2022
Course Title: Mycology and Microbiology of Atypical Bacteria
Course Code: MMA 601
Total Marks: 40 Time: 2 hours

Figures in the right margin indicate full marks. Answer any four questions.

1. List the dermatophytes which commonly affect dogs, cattle, horses, and chickens. Describe the microscopic appearance of the macroconidia of important *Microsporum* species and *Trichophyton mentagrophytes*. Give an overview of the asexual spores produced by fungi of veterinary importance. 2+4+4
2. Identify the key features of *Cryptococcus neoformans* and *Malassezia pachydermatis*. Write down the laboratory procedures employed for the diagnosis of *Candida albicans* from clinical specimens. Describe the colonial morphology of *Aspergillus fumigatus*, *A. niger* and *A. flavus* on Sabouraud dextrose agar. 3+4+3
3. Name the algae and cyanobacteria implicated infrequently in opportunistic infections or intoxications of domestic animals. Briefly describe the microscopic morphology of different dimorphic fungi. Summarize the diagnostic tests used for the identification of dimorphic fungi. 2+5+3
4. Enumerate the genera of zygomycetes which include species of veterinary importance. Write down the morphological features of members of *Mucorales* which produce sporangia on standard fungal media. State the characteristics of mycotoxins and enumerate the traditional and emerging analytical methods for the detection and quantification of mycotoxins. 2+4+4
5. Name the major groups of antifungal drugs along with examples. Make a flowchart outlining the possible consequences of infection with *Ehrlichia canis*. Give a summary of the laboratory diagnostic procedures for the detection of chlamydial infections. 3+3+4

Chattogram Veterinary and Animal Sciences University

MS in Microbiology

Subject: Advanced General Virology

Course code AGV 601

January- June Semester 2021

Total mark: 40

Hours: 2 hours

(Figures in the right margin indicate full marks. Answer any four questions)

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| 1 | a | Justify virus is unique characteristics in the world. Justify the statement | 5.0 |
| | b | Mention 5 Nobel laureate scientists in the field of virology | 5.0 |
| 2 | a | Explain dsDNA virus replication strategy | 10.0 |
| 3 | a | Explain virus inactivation and purification methods | 10.0 |
| 4 | a | What are different groups of antiviral drug? Explain with their mechanism of action | 10.0 |
| 5 | a | What is interferon? How does it inhibits viral replication? | 6.0 |
| | b | Explain the outcome of virus and cell interaction | 4.0 |

Chattogram Veterinary and Animal Sciences University

MS in Microbiology Final Examination

January – June Semester, 2022

Course title: Advanced General Bacteriology

Course Code: AGB-601

Full marks: 40; Time: 2 hours

Answer any 4 (FOUR) Questions.

1. Classify bacteria on the basis of morphological variations. What do you mean by Cyanobacteria? Do they have any potential to cause harm to livestock health? How does movement of nutrients take place from surrounding media to the cell membrane of bacteria? 10
2. What are the pathways of respiratory catabolism in bacteria? Write down their salient features. For glucose metabolism, why respiratory catabolism is more energy-producing compared with fermentation? What do you mean by a terminal electron acceptor and why a suitable terminal electron is required for a respiratory catabolism pathway? What can be produced if bacteria use nitrate and sulfate as terminal electron acceptors? 10
3. With a typical diagram explain synchronous and nonsynchronous growth of bacteria in liquid media. Describe the role of temperature on growth of bacteria. 10
4. What are the basic components of an operon? What is mutagen and how does radiation work as a mutagen on bacteria? Differentiate the replication process of lytic phage from that of temperate phage? What is phage induction and how can it be done? 10
5. Differentiate between mutation and genetic recombination. How R factor is transmitted from one bacterium to another? Write down the basic properties of restriction enzymes type II used in recombinant DNA technology. 10