KATHMANDU UNIVERSITY
End Semester Examination
June/July, 2023

Marks Scored:

Level : B.Sc.
Year : II
Course : AGBT 202
Semester: II

Exam. Roll No. :
Time: 30 mins.
F.M. : 20

Registration No.:
Date : June-25

SECTION "A"
[20Q. × 0.5 = 10 marks]

Mark [X] in the most appropriate alternative from each set of choices.

1. Gram staining is an example of
   [ ] Acid fast stain [ ] Acid stain
   [ ] Differential stain [ ] Simple stain

2. Cyanobacteria falls under the category
   [ ] Photolithoautotrophy [ ] Photoorganoheterotrophy
   [ ] Chemolithoheterotrophy [ ] Chemoorganoheterotrophy

3. Media that favors the growth of a desired microorganism and inhibit others is known as
   [ ] Enrichment media [ ] Differential media
   [ ] Selective Media [ ] General purpose medium

4. Bacteria that require low levels of oxygen for growth and cannot tolerate atmospheric oxygen level are called
   [ ] Aerobic bacteria [ ] Facultative [ ] Microaerophilic [ ] Anaerobic

5. Compound microscope was discovered by
   [ ] Antony von [ ] Pasteur [ ] Johnsen & Hans [ ] Aristotle

6. Mutant with the inability to grow on medium lacking certain nutrient is called
   [ ] Auxotroph [ ] Resistant [ ] Tolerant [ ] Sensitive

7. Transfer of genes from one cell to another by a bacteriophage is called
   [ ] Conjugation [ ] Transformation [ ] Transduction [ ] Translation

8. Limit of resolution of compound microscope is
   [ ] 0.018 Angstrom [ ] 0.1 mm [ ] 5 mm [ ] 1 mm

9. An example of a free-living Nitrogen fixing bacteria is
   [ ] Azotobacter [ ] Clostridium [ ] Klebsiella [ ] Gluconacetobacter

10. The most widely known phosphorous solubilizing bacteria belongs to
    [ ] Pseudomonas [ ] Rhizopus [ ] Actinomycetes [ ] E.coli

11. Diatomaceous earth is an example of
    [ ] Microbial pesticides [ ] PIPs
    [ ] Botanical pesticides [ ] Biochemical pesticides

12. Average bacterial size falls within the range
    [ ] 0.1- 3 um [ ] 0.5- 2 um [ ] 0.5- 4 um [ ] 0.5- 6 um

13. Endotoxin produced by gram-negative bacteria is present in
    [ ] Peptidoglycan [ ] Lipopolysaccharide
    [ ] Cell membrane [ ] Inner membrane

14. Tetrad structure is often found in
[ ] Pediococcus [ ] Staphylococcus [ ] Sarcina [ ] Streptococcus

15. Which of the following scientist tried to disprove the spontaneous generation theory by passing air through cotton/wool into flasks containing heated broth
[ ] Franz Schulze [ ] H. Schroder and T. Von Dusch
[ ] Lazaro Spallanzani [ ] Theodor Schwann

16. Bacteria with a cluster of polar flagella on one side is called
[ ] Monotrichous [ ] Lophotrichous [ ] Amphitrichous [ ] Peritrichous

17. One of the compounds presents in techoic acid is
[ ] Glucose [ ] Ribitol [ ] Mannose [ ] Ribulose

18. The bacteria used for quality control of heat sterilization equipment is
[ ] *Bacillus stearothermophilus* [ ] *Bacillus subtilis*
[ ] *Bacillus amyloliquefacian* [ ] *Bacillus anthracis*

19. The scientist credited for the development of pure culture techniques is
[ ] Joseph Lister [ ] Louis Pasteur [ ] Ferdinand Cohn [ ] Robert Koch

20. Examples of endomycorrhizal fungi is
[ ] Basidiomycota [ ] Ascomycota [ ] Zygomycetes [ ] Deuteromycota

SECTION "B"

[10Q. × 1 = 10 marks]

Fill in the blanks

21. The process of recombination in which cells are able to take up free DNA released by other bacteria is called _____.

22. One example of zinc solubilizing bacteria is _____.

23. Bacteria that can promote plant growth and can improve plant health are collectively termed as _____.

24. A _____ is a symbiotic association between a green plant and a fungus.

25. The mordant used in gram staining is _____.

26. _____ is high-moisture stored fodder produced by controlled fermentation of agricultural biomass.

27. Rods that are helically curved are called _____.

28. The most common solidifying agent used in the preparation of solid culture media in microbiology is _____.

29. *Bacillus thuringiensis* codes for toxic proteins to manage the attacking larvae of_____.

30. Cell wall constitutes _____% of bacterial biomass.

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25. june-

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F. M. : 55

SECTION "C"
[8 Q. × 3 = 24 marks]

Attempt *ANY THREE* questions.

1. Explain the morphology of a typical bacterium with a well labelled diagram.
2. Explain the techniques for the isolation of pure culture from environmental samples.
3. Define Biofertilizer. Explain the various classes of biofertilizer.
4. Explain the role of microorganism in nitrogen cycle

SECTION "D"

Attempt *ANY SIX* questions. (**Q5 is compulsory**)

5. Define any two terms [3+3=6]
   a. Endospores
   b. Genotype
   c. Commensalism
6. List the various types of staining techniques used in microbiology. Explain any one staining techniques. [5]
7. Explain briefly process of silage production [5]
8. Classify microorganism based on the source of carbon, energy and electron sources. [5]
9. List the various types of microscopes used in microbiology and their application. [5]
10. Explain the process of conjugation in bacteria with a suitable diagram [5]
11. Differentiate between gram-positive and gram-negative bacteria [5]