

KATHMANDU UNIVERSITY
End Semester Examination [C]
December, 2024

Marks Scored:

Level : B.Tech.

Year : II

Exam Roll No. :

Time: 30 mins.

Course : BIOT 201

Semester : I

F. M. : 20

Registration No.:

Date :

11 DEC 2024

SECTION "A"

[10Q. × 1 = 10 marks]

Choose and mark [X] encircle the most appropriate option from each set of choices

- To determine the magnification of a microscope system, one must be aware of the
 ocular and objective magnifications
 size of the condenser and diaphragm
 numerical aperture and wavelength of light
 working distance of the microscope
- All of the following apply to the DNA of bacteria except
 Circular DNA is found in the cytoplasm
 DNA has multiple origins of replication
 DNA is single, closed loop
 DNA contains the genetic code
- An Hfr bacterium is one that contains
 many unusual plasmids
 F plasmid that is independent of the chromosomal DNA
 F factor integrated into the bacterial genome
 the ability to undergo transduction
- Bacterial recombination is an essential feature for the process of
 photosynthesis
 chemiosmosis
 genetic engineering
 anaerobic fermentation
- The process of reducing or inhibiting microorganisms on non- living objects.
 Sterilization antiseptics Disinfection sanitization
- Which of the following is used to count the number of viable bacteria present in a sample?
 Turbidimetric measurements Cellular activity counts
 Pour Plate technique Cell mass measurements
- All the following human diseases are due to members of the genus *Clostridium* except
 botulism tetanus gangrene tuberculosis
- The common brewing and baking yeast is
 Candida albicans *Escherichia coli*
 Staphylococcus aureus *Saccharomyces cerevisiae*

9. The antibody that crosses the placental barrier and thereby provides passive immunity to the fetus.
[] IgM [] IgG [] IgA [] IgE
10. Those diseases that come on rapidly and are accompanied by severe signs and symptoms are described as
[] chronic [] opportunistic [] acute [] asymptomatic

SECTION "B"
[10Q. × 1 = 10 marks]

Fill in the blanks with appropriate answer.

11. The rigidity of the cell wall in bacteria is due to _____
12. Flagella are surface appendages in bacteria that help in _____
13. The 70S prokaryotic ribosome consist of _____ subunits.
14. Addition of blood to a culture medium allows the growth of all the hemolytic bacteria is an example of _____ media.
15. _____ are those viruses that replicate within bacteria.
16. If you inoculate 10 bacterial cells in a batch culture with generation time 30 minutes, the final number of bacteria after 4 hours of incubation are _____
17. The enzyme that digests the polysaccharide a type of "intercellular cement" which binds cells together in tissues is called _____
18. The term _____ refers to a kind of micro-organism whose presence in water is evidence of the water polluted with fecal materials.
19. The device meant for introducing air into a fermenter is termed _____.
20. A _____ is an outbreak of disease occurring on the worldwide level.

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SECTION "C"

[4Q. × 7 = 28 marks]

Attempt *ALL* questions.

1. Give an illustrated account of typical gram positive and gram negative bacterial cell wall structure with emphasis on their significance.
2. What is recombination? Explain the mechanism and significance of transformation with diagram.
3. What is growth curve? Explain the growth phases of a batch culture and the continuous culture.
4. What is virulence factor? Explain the different virulence factors known in bacteria.

OR

Describe the different types of non-specific defense responses present in human body.

SECTION "D"

[27 marks]

5. Describe the significance of following media with example.
a. Transport media b. Selective media c. Differential media
6. Illustrate graphically the influence of temperature on growth rate of psychrophile, mesophile, and thermophile.
7. If you diluted 5 mL of a sample with 95 mL of saline water then plate 100 microliter of the diluted sample on plate count agar and find 75 colonies. Calculate the CFU/ mL of the original undiluted sample.
8. What is axenic culture? How do you isolate bacteria explain any method? [3]
9. Give the significance of secondary wastewater treatment. [2]
10. Distinguish between : (*ANY TWO*) [3×3=6]
a. Active and passive immunity
b. Chromosomal and plasmid DNA
c. Lytic cycle and lysogenic cycle
11. Short notes on: (*ANY TWO*) [2×2=4]
a. Binomial nomenclature b. Autoclave c. Bacteriophage

