KATHMANDU UNIVERSITY
End-Semester Examination
February/March, 2018

Marks scored:

Level : B.Tech.
Year : II

Subject : BIOT 201
Semester: I

Exam Roll No.:

Time: 30 mins.

F.M. : 20

Registration No.:

Date MAR 0 4 2018

SECTION "A"

A. Choose the most appropriate answer. [10×1=10]

1. To determine the resolution 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

2. All of the following apply to the DNA of bacteria except
   [ ] The DNA is concentrated in the nucleoid.
   [ ] The DNA contains histone proteins.
   [ ] The DNA is a single, closed loop.
   [ ] The DNA contains the genetic code

3. An Hfr bacterium is one that contains
   [ ] many unusual plasmids
   [ ] chromosomal material acquired from a recipient cell
   [ ] a plasmid integrated into its chromosome
   [ ] the ability to undergo transduction

4. Bacterial recombinations are an essential feature of the process of
   [ ] photosynthesis [ ] chemiosmosis
   [ ] genetic engineering [ ] anaerobic fermentation

5. All the following human diseases are due to members of the genus *Clostridium* except
   [ ] botulism [ ] tetanus [ ] gangrene [ ] tuberculosis

6. The technical name of the common brewing and baking yeast is
   [ ] *Candida albicans* [ ] *Escherichia coli*
   [ ] *Staphylococcus aureus* [ ] *Saccharomyces cerevisiae*

7. The common edible mushroom is a
   [ ] mass of fungal spores [ ] type of hypha
   [ ] tightly packed mycelium [ ] structure used for producing asexual spores

8. Those diseases that come on rapidly and are accompanied by severe signs and symptoms are described as
   [ ] chronic [ ] opportunistic [ ] acute [ ] asymptomatic

9. The antibody secreted into the cavities of the body, such as the gastrointestinal tract, is
[ ] IgD [ ] IgA [ ] IgG [ ] IgE

10. One of the first steps in wastewater treatment is the
[ ] addition of chlorine [ ] addition of hydrogen sulfide
[ ] removal of particulate matter [ ] addition of air to the water

SECTION "B"

B. Fill in the blanks. [10×1=10]

11. Bacterial cell wall are composed of a carbohydrate known as _____.

12. Fungi with unknown sexual stages are called_____.

13. The time interval between bacterial cell divisions is known as the _____.

14. A medium in which precise amounts of certain components are combined and the names of al components are known is called _____medium

15. _____ occurs when a recipient bacterium takes up a segment of DNA from its surrounding environment.

16. _____ is the process in which all living organisms, including microbial spores, are destroyed.

17. A _____may have a head region in which the nucleic acid is stored, a contractile tail region, a set of tail fibers, and a base plate having tailpins.

18. An example of a virus that contains _____ in its genome is the human immunodeficiency virus.

19. An_____disease refers to a disease present in a human population, but remaining within that population over a relatively long period of time.

20. When a person forms antibodies as a result of an injection of a vaccine, the immunity that develops is said to be_____.

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F.M. : 55

SECTION "C"
(Long answer question)
[4 Q.×7=28]

Attempt any *FOUR* questions:

1. Give an illustrated account of bacterial conjugation with emphasis on Joshua Lederberg and Edward Tatum experiment.

2. What is pure culture? Describe how pure cultures of microorganisms can be obtained.

3. What is bacterial growth curve? Compare and contrast batch and continuous growth curve.

4. What is virulence? Describe the different virulence factors known in bacteria.

   OR

   Describe the nonspecific defensive mechanisms that operate in response to disease.

SECTION "D"
(Short answer questions)

5. Which is the most common antibody molecule in the blood? Give its function. [4]

6. Explain the antimicrobial effects that drying and radiation have on microorganisms. [4]

7. If you start out with a population density of 200 CFU/ml of a bacterium that divides every 20 minutes, what will the population density be at the end of twenty four hours, assuming the cells are in the log phase of growth? [3]

8. Give the location, composition and function of the following bacterial structures. [Any *TWO*] [2×2.5=5]
   a. flagella
   b. peptidoglycan
   c. ribosome

9. Distinguish between: [2×2= 4]
   a. Moist heat sterilization and dry heat sterilization
   b. Selective media and differential media

10. Draw flow diagram for component parts of a fermentation process. [3]

11. Short notes on: [Any *TWO*] [2×2= 4]
    a. Pasteurization
    b. Mycoplasmas
    c. Typhoid