BA-1603220001010500 Seat No. _____

B. Sc. (Sem. I) (W.E.F. 2019) Examination

March - 2021

BI-105 : Bioinformatics
(Basics in Microbiology)

(New Course)

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Attempt any five questions.
(2) The right side figure indicates total marks of the question.

1 Answer The following questions :

(a) Attempt the following (all compulsory) **4**
(1) Mycology is the study of _____
(2) Who discovered penicillin ?
(3) Full name of E.coli.
(4) Palmella stage is observed in _____.

(b) Give different arrangement of flagella. **2**

(c) Discuss Sexual life cycle of Penicillium. **3**

(d) Explain Whittaker's five-kingdom concept with their limitations. **5**

2 Answer The following questions :

(a) Attempt the following : (all compulsory) **4**
(1) Pasteurization of milk is done at _____ °C for 30 min.
(2) How to write scientific name of organism ?
(3) _____is father of microbiology.
(4) Cell wall constitutes of fungi is _____.

(b) Discuss Haeckel's three Kingdom Concept. **2**

(c) Describe the cell wall of Gram-Positive Bacteria. **3**

(d) Write a note on the asexual and sexual life cycle of Chlamydomonas. **5**

3 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) Scanning electron microscopy (SEM) is best used to study _____.

(2) Which type of microscope reveals the finest detail of internal cellular structure ?

(3) What is the magnification of eyepiece ?

(4) Infectious RNA particles without a protein coat are called as _____.

(b) Explain Phase contrast microscopy. **2**

(c) What is Numerical taxonomy ? **3**

(d) Discuss Genetic relatedness. **5**

4 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) Living, unstained cells and organisms can be observed best using which type of microscopy ?

(2) The viruses that live as parasites on bacteria are _____.

(3) Teichoic acid is found in the walls of Gram-positive bacteria. (True/False)

(4) Which type of microscope reveals the finest detail of internal cellular structure ?

(b) Explain Fluorescence microscopy. **2**

(c) What is Resolution ? **3**

(d) Discuss lytic and lysogenic life cycle of Bacteriophage. **5**

5 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) Discontinuous heating is called _____

(2) The condition required for autoclave _____ °C and _____ psi above atmospheric pressure for _____ minutes.

(3) Chocolate agar is used as _____ media.

(4) Sun light is _____ kind of sterilizing agent.

(b) What are Transport media ? **2**

(c) Discuss Radiation as sterilizing agent. **3**

(d) Define growth. Explain different phases of the bacterial growth curve. **5**

6 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) _____ °C is the temperature of liquid nitrogen.

(2) Nichrome loop wire is used in which of the following techniques ?

(3) Which of the following is used as a solidifying agent for media ?

(4) Colony formation can be observed in liquid media broth. (True/False)

(b) Give composition and use of nutrient agar and broth. **2**

(c) Discuss Temperature as physical sterilizing agent. **3**

(d) Define Sterilization. Explain principle and different techniques used for sterilization. **5**

7 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) Hepatitis is the disease of _____.

(2) As antibiotic is a _____ metabolite.

(3) Bacterial resistance to antibiotics is transmitted by _____.

(4) Full form of MDR.

(b) Differentiate between exotoxin and endotoxin. **2**

(c) Explain the use of Microbes in various industrial applications. **3**

(d) Explain symptoms, causative agent, diagnosis and prevention of Leprosy. **5**

8 Answer the following questions :

(a) Attempt the following (**all** compulsory) **4**

(1) Do not start antibiotics without clinical evidence of bacterial infection. (True/False)

(2) Zone of inhibition is observed in tube-dilution method. (True/False)

(3) What is the chemical nature of endotoxins ?

(4) Exotoxins are heat-labile in nature. (True/False)

(b) Discuss Damage to the cell membrane by antibiotics. **2**

(c) Discuss applications of microbes' agriculture and space. **3**

(d) Explain different modes of action of antibiotics. Explain the inhibition of cell wall in detail. **5**

9 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) Bioremediation uses microorganisms' natural capacities to break materials down. (True or False)

(2) Which virus is used as Biopesticides ?

(3) Aspergillus niger is used generally for the production of _____.

(4) The most commonly used microorganism is alcohol fermentation is _____.

(b) Write advantages and disadvantages of Biopesticides. **2**

(c) Explain Pasteurization of milk. **3**

(d) Discuss in detail Food Preservation Techniques. **5**

10 Answer the following questions :

(a) Attempt the following : (**all** compulsory) **4**

(1) _____ remediation is a term utilized within various fields meaning "on site" and refers to an event's location.

(2) Pasteurization of milk - high-temperature short time (HTST) for ____ °C for ___ seconds.

(3) Bioremediation uses microorganisms' natural capacities to break materials down. (True/False)

(4) Secondary metabolites are by-products of metabolism that are not important to microbe function. (True/False)

(b) Advantage and disadvantage of Biofertilizers. **2**

(c) Explain insitu and exsitu bioremediation. **3**

(d) Explain the fermentation process of ethanol. **5**