

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034****M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY****FIRST SEMESTER – APRIL 2023****PBT1MC03 – APPLIED MICROBIOLOGY**

Date: 03-05-2023

Dept. No. 

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

**SECTION A****Answer ALL the questions**

| <b>SECTION A</b>                                      |  |                        |     |
|---|--|------------------------|-----|
| <b>Answer ALL the questions</b>                       |  |                        |     |
| <b>1</b>  | <b>Choose the best option</b>  | <b>(5 x 1 = 5)</b>     |     |
| a)  | Fresh air contains approximately _____ percent carbon dioxide by volume<br>a) 0.01                      b) 2                      c) 5                      d) 0.03  | K1                     | CO1 |
| b)  | The major component of the biofilm are<br>a) Cytoplasm of bacteria                      b) Extracellular polymeric substances<br>c) Muramic acid                      d) Sterol  | K1                     | CO1 |
| c)  | Hyperthermophilic organisms that grow in highly acidic (pH2) habitats belong to the two groups<br>a) Cyanobacteria and Diatoms                      b) Liverworts and Yeasts<br>c) Protists and Moss                      d) Eubacteria and Archaea                  | K1                     | CO1 |
| d)  | Which of the following describes the coronavirus structure?<br>a) Club shaped glycoprotein spikes protrude through a lipid bilayer<br>b) An icosahedral structure with an envelope<br>c) An icosahedral large pleomorphic virus<br>d) Large regimented barrel shaped | K1                     | CO1 |
| e)  | Which of the following is not true about High pressure liquid chromatography<br>a) It requires high pressure for the separation of the species<br>b) There is no need to vaporise the samples<br>c) It is performed in columns<br>d) It has high sensitivity         | K1                     | CO1 |
| <b>2</b>  | <b>Answer in one or two sentences</b>  | <b>(5 x 1 = 5)</b>     |     |
| a)  | What is leghemoglobin?   | K2                     | CO1 |
| b)  | Outline the role of phytoplankton in the food chain.   | K2                     | CO1 |
| c)  | What is the purpose of bioaugmentation?  | K2                     | CO1 |
| d)  | What is meant by first line regimen?   | K2                     | CO1 |
| e)  | Differentiate primary and secondary metabolites.   | K2                     | CO1 |
| <b>SECTION B</b>                                      |  |                        |     |
| <b>Answer any THREE of the following in 500 words</b> |  | <b>(3 x 10 = 30)</b>   |     |
| 3   | Interpret biorational pesticides of microbial origin.  | K3                     | CO2 |
| 4   | Sketch the types of water borne diseases.  | K3                     | CO2 |
| 5   | Illustrate the methods that could be employed to obtain pure culture from a mixed growth.  | K3                     | CO2 |
| 6   | Outline the three phases of dengue fever.  | K3                     | CO2 |
| 7   | Review the development and application of LAMP in identifying pathogens  | K3                     | CO2 |
| <b>SECTION C</b>                                      |  |                        |     |
| <b>Answer any TWO of the following in 500 words</b>   |  | <b>(2 x 12.5 = 25)</b> |     |
| 8   | Distinguish biological cycling of inorganic nutrients and metals in soil and their role in soil biogeochemistry  | K4                     | CO3 |

|  |  |                      |     |
|--|--|----------------------|-----|
| 9  | Explain the different kinds of categories of a biosafety cabinet   | K4                   | CO3 |
| 10   | Discuss on Optical Tweezers.   | K4                   | CO3 |
| 11   | Discuss the application of nanoparticles in identifying pathogens.   | K4                   | CO3 |
| <b>SECTION D</b>                                     |  |                      |     |
| <b>Answer any ONE of the following in 1000 words</b> |  | <b>(1 x 15 = 15)</b> |     |
| 12   | Biological Nitrogen Fixation (2)<br>Symbiotic Nitrogen Fixation (2.5)<br>Nitrogen Fixation by Lightning (2.5)<br>Blue-Green Algae (Cyanobacteria) (2)<br>Biofertilizer for micronutrient (2)<br>Plant growth promote Rhizobacteria (2)<br>Composting (2) | K5                   | CO4 |
| 13   | Describe secondary water treatment methods.  | K5                   | CO4 |
| <b>SECTION E</b>                                     |  |                      |     |
| <b>Answer any ONE of the following in 1000 words</b> |  | <b>(1 x 20 = 20)</b> |     |
| 14   | Explain bioremediation using plants.   | K6                   | CO5 |
| 15   | Compile the various mechanism by which antibiotics act upon a bacterial cell   | K6                   | CO5 |

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