



# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc. DEGREE EXAMINATION – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

**THIRD SEMESTER – APRIL 2023**

**UPB 3502 – MICROBIOLOGY**

Date: 04-05-2023

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

## SECTION A - K1 (CO1)

**Answer ALL the Questions**

**(10 x 1 = 10)**

### 1. Fill in the blanks

- a) Pure culture technique was first introduced by the scientist -----.
- b) Muller Hinton agar is an example for ----- type of medium.
- c) In photosynthesis CO<sub>2</sub> is accepted by the enzyme -----.
- d) β - Galactosidase enzyme is activated by the sugar molecule -----.
- e) Simple, less cost, without any contamination of virus cultivation is done by the method of -----.

### 2. State whether the following statements are TRUE or FALSE

- a) Nutrient agar medium is used for culturing bacteria.
- b) Bacteria show maximum growth during the lag phase.
- c) Alcohol is produced by anaerobic fermentation.
- d) Operon concept does not apply to prokaryotes.
- e) Viruses that affect plants are called phytoviruses.

## SECTION A - K2 (CO1)

**Answer ALL the Questions**  
**10)**

**(10 x 1 =**

### 3. Choose the correct answer

- a) Acid fast staining is used for the identification of  
i) *Diplococcus* ii) *Vibrio* iii) *Clostridium* iv) *Mycobacterium*
- b) Photolithotrophic bacteria utilizes electron source from  
i) H<sub>2</sub>O ii) H<sub>2</sub>S iii) CO<sub>2</sub> iv) Glucose
- c) Amphibolic reaction is referred to  
i) Glycolysis ii) Calvin cycle iii) Krebs' cycle iv) Photophosphorylation
- d) Which one of the following is called the merozygote?  
i) F<sup>+</sup> ii) F<sup>-</sup> iii) Hfr iv) F<sup>c</sup>
- e) Common cold is caused by the virus  
i) Rhinovirus ii) Covid19 iii) Influenza iv) Rhabdovirus

### 4. Answer the following, each in about 50 words

- a) Compare eubacteria and archaeobacteria.
- b) Mention the features of pleomorphic bacteria.
- c) List out the pigments of microbial photosynthesis.
- d) Comment on the prophages.

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|-----------------------------|--|
| e)                          | Cite the applications of bacteriophages.   |
| <b>SECTION B - K3 (CO2)</b> |  |
|                             | <b>Answer any TWO of the following in 500 words (2 x 10 = 20)</b><br><b>Draw diagrams / flowcharts wherever necessary</b>  |
| 5.                          | Explain the special types of staining techniques.  |
| 6.                          | Describe the types of microbes based on its physical conditions' requirements.   |
| 7.                          | Elaborate on the biochemical reactions of anaerobic respiration.   |
| 8.                          | Outline the types of vaccines available against viral diseases.  |
| <b>SECTION C – K4 (CO3)</b> |  |
|                             | <b>Answer any TWO of the following in 500 words (2 x 10 = 20)</b><br><b>Draw diagrams / flowcharts wherever necessary</b>  |
| 9.                          | Chart out the details on six kingdom classification by Carl Woese.   |
| 10.                         | Write short notes on the microbial preservation methods.   |
| 11.                         | Narrate the experimental evidences for transformation and conjugation.   |
| 12.                         | Substantiate on the different methods of virus cultivation.  |
| <b>SECTION D – K5 (CO4)</b> |  |
|                             | <b>Answer any ONE of the following in 1000 words (1 x 20 = 20)</b><br><b>Draw diagrams / flowcharts wherever necessary</b> |
| 13.                         | Compile the methods involved to determine microbial growth.  |
| 14.                         | Evaluate the microbial enzymes on the basis of production and applications.  |
| <b>SECTION E – K6 (CO5)</b> |  |
|                             | <b>Answer any ONE of the following in 1000 words (1 x 20 = 20)</b><br><b>Draw diagrams / flowcharts wherever necessary</b> |
| 15.                         | Construct the events of generalized and specialized transduction.  |
| 16.                         | Summarize the details on the bacterial photosynthesis.   |

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