

KNT/KW/16/5067

Bachelor of Science (B.Sc.) Semester—I (C.B.S.) Examination

BIO-TECHNOLOGY

(Microbiology)

Compulsory Paper—1

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw diagrams and give examples wherever necessary.

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| 1. (a) Describe the contribution of Louis Pasteur. | 2½ |
| (b) Draw a well labelled ray diagram of fluorescent microscope. | 2½ |
| (c) Give the procedure of gram staining. | 2½ |
| (d) Explain the numerical aperture and its importance in compound microscope. | 2½ |

OR

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| (e) Give the contributions of Robert Koch. | 2½ |
| (f) Give the principle and applications of dark-field microscopy. | 2½ |
| (g) Describe the principle and procedure of endospore staining. | 2½ |
| (h) Explain the working of oil-immersion objective with the help of suitable ray-diagram and give its significance. | 2½ |
| 2. Explain the structure of cell wall of gram negative bacteria. | 10 |

OR

Describe the detailed structure of endospore. Explain the basis of its resistance to physical and chemical agents. 10

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| 3. Explain the lytic cycle of viral multiplication. | 10 |
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OR

Describe the general characteristics of viruses. Explain the helical symmetry of virus. 10

4. (a) Describe the basic nutritional requirements of microorganisms. 5
(b) Classify the organisms on the basis of carbon and energy sources. 5

OR

- (c) Define and explain the importance of selective and differential media giving suitable examples. 5
(d) Explain the ingredients used for the preparation of nutrient agar. 5
5. Solve any **TEN** of the following :
- (i) Who is called the father of immunology ? 1
 - (ii) Give any two limitations of electron microscopy. 1
 - (iii) What are neutral stains ? 1
 - (iv) Name the different arrangements in Cocci. 1
 - (v) Give two differences of capsule and slime layer. 1
 - (vi) What are conjugative plasmids ? 1
 - (vii) Give any two differences between bacterial and archaeal cell membrane. 1
 - (viii) Classify the viruses on the basis of nucleic acids. 1
 - (ix) Name any two symmetries of viruses with one example of each. 1
 - (x) Give the use of Agar in microbiological media. 1
 - (xi) Give the significance of synthetic media. 1
 - (xii) Give two examples of enriched media. 1