



UNIVERSITY OF NORTH BENGAL
B.Sc. Honours Part-II Examination, 2020

MICROBIOLOGY

PAPER-IV

Time Allotted: 2 Hours

Full Marks: 35

The figures in the margin indicate full marks.

1. Answer the following questions: 1×11 = 11
- (a) Name one semi-synthetic antibiotic.
 - (b) What is doubling time?
 - (c) Name one heterolactic fermenter.
 - (d) Define interferon.
 - (e) What is allosteric enzyme?
 - (f) What are compatible solutes?
 - (g) Name one gaseous sterilising agent.
 - (h) What are cardinal temperatures?
 - (i) Name the terminal electron acceptor in an aerobic respiration.
 - (j) What is meant by 'turnover number' of an enzyme?
 - (k) Define phenol coefficient.
2. Answer any **one** of the following questions: 16×1= 16
- (a) Why do some organisms produce antibiotics? Describe the mode of action that characterizes a β -lactam antibiotics. Why are these antibiotics generally more effective against Gram-positive bacteria than against Gram-negative bacteria? 2+6+2+6
 - (b) Classify microorganisms on the basis of temperature requirements. Describe various methods in which anaerobes may be cultured. What is appertization and pasteurization? Describe how do radiations harm microorganisms. Briefly describe the phenol coefficient test. 3+4+1+1
+4+3
 - (c) Illustrate the Glycolytic pathway. What do you mean by amphibolic pathway? Give an example. What is the net yield of ATP during aerobic and anaerobic respirations? Name the four enzyme complexes involved in ETC. What do you mean by oxidative phosphorylation? 8+1+1+1+
1+2+2

(d) How does competitive inhibition differ from allosteric inhibition? Describe the role of temperature, pH and substrate in an enzyme activity. How does a hyperthermophile differ from psychrophiles? 4+6+6

3. Answer any *one* of the following questions: 8×1= 8

(a) Briefly describe the heterolactic-acid fermentation. 8

(b) Write a brief note on allosteric modulation. 8

(c) Describe various methods of measurement of cell number. 8

(d) Discuss the physicochemical properties of an enzyme. Derive Michaelis-Menten equation. 3+5

(e) Schematically describe the β -oxidation of fatty acid. 8

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