

**Instructions:** (a) Figure to the right indicates total marks of respective question.  
(b) Draw neat, clean and labeled diagram wherever necessary.

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|-------|--|----|
| 1.(a) | Explain Whatson and Crick model of DNA in detail.                                  | 10 |
| 1.(b) | Explain classification of Carbohydrates in brief.                                  | 04 |
| OR    |  |    |
| 1.(a) | Write an exhaustive note on vitamins and its importance.                           | 10 |
| 1.(b) | Explain protein structure in brief.  | 04 |
| OR    |  |    |
| 2.(a) | Explain Tricarboxylic Acid Cycle in detail.  | 10 |
| 2.(b) | Explain how 38 ATP are gained in TCA .   | 04 |
| OR    |  |    |
| 2.(a) | Explain Embden Meyerhof Pernas pathway of glucose catabolism.                      | 10 |
| 2.(b) | Schematically describe Entner Doudoroff pathway.                                   | 04 |
| OR    |  |    |
| 3.(a) | Define growth and explain normal growth curve of bacteria in closed environment.   | 10 |
| 3.(b) | Write a note on Synchronous growth.  | 04 |
| OR    |  |    |
| 3.(a) | Enlist techniques of measuring bacterial growth and explain any two.               | 10 |
| 3.(b) | Write in brief on physical agents for control of microorganisms in vitro (any two) | 04 |
| OR    |  |    |
| 4.(a) | Describe general properties, Classificatin and functions of proteins.              | 10 |
| 4.(b) | Describe bacterial chlorophyll in brief.   | 04 |
| OR    |  |    |
| 4.(a) | Explain Hexose Monophosphate Shunt.  | 10 |
| 4.(b) | Write note on anaploratic reactions.   | 04 |
| OR    |  |    |
| 5.(a) | Explain phenol coefficient test for evaluation of disinfectants.                   | 10 |
| 5.(b) | Write any four points of an ideal disinfectant.                                    | 04 |
| OR    |  |    |
| 5.(a) | What is lipid? Write on the classifications of lipids in detail.                   | 10 |
| 5.(b) | Explain in brief: Growth factors.  | 04 |