

2020

**BIOCHEMISTRY — GENERAL**

**Paper : DSE-A-2**

**(Basic Microbiology)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Day 1**

1. Answer (*any five*) : 2×5
- (a) What is the function of flagella?
  - (b) What are the major differences between prokaryotes and eukaryotes?
  - (c) Write down two applications of micro-organisms in food industry.
  - (d) Give two examples of obligate intracellular parasites.
  - (e) Differentiate asexual and sexual reproduction in fungi.
  - (f) Write down two major general characteristic feature of amoeba.
  - (g) What are extremophiles?
  - (h) What do you mean by germ theory of disease?
  - (i) What is the full form of HIV? What disease does the virus cause?
  - (j) What are mycotoxins?
2. Answer (*any two*) questions :
- (a) (i) Draw the basic structure of T<sub>4</sub> bacteriophage and label it.
  - (ii) Mention the differences between archae-bacteria and eubacteria. 3+2
  - (b) (i) Briefly mention the economic importance of fungi in agriculture.
  - (ii) Define the terms : lysogeny and lytic. 3+2
  - (c) (i) Describe Whittaker five kingdom concept with a schematic representation.
  - (ii) What do you mean by spontaneous generation? 3+2
  - (d) (i) Mention the name of two economically important bacteria.
  - (ii) Briefly describe the characteristic features of fungal cell wall. 2+3

**Please Turn Over**

3. Answer (*any three*) questions :

- (a) (i) Write down the contribution of the following scientists in the field of microbiology.  
Louis Pasteur  
Edward Jenner  
Robert Koch
- (ii) What are prions? How do they cause diseases?
- (iii) How lactic acid and alcohol is produced in industry using micro-organisms?  
(1+1+1)+(1+1)+(2½+2½)
- (b) (i) Describe Koch's postulates for germ theory of disease.
- (ii) Briefly describe the cell wall of gram-positive bacteria.
- (iii) What is meant by obligate parasite? Give example.
- (iv) Mention the contribution of Elie Metchnikoff in the field of medical microbiology. 3+3+2+2
- (c) (i) Briefly describe the life cycle of a λ-phage.
- (ii) Describe how fungi are involved in biodeterioration with special reference to paper and textile industry.
- (iii) Differentiate between lytic and lysogenic cycle of viruses. 3+(2+2)+3
- (d) (i) Mention the different kinds of pigments found in algae.
- (ii) How micro-organisms synthesize amino acid and vinegar?
- (iii) Describe briefly process of sexual reproduction in fungi. 2+(2+2)+4
- (e) (i) Name four foods that are produced by microbial fermentation. Briefly describe the role of micro-organisms in each case.
- (ii) What is heterokaryosis? (2+2+2+2)+2
- (f) (i) What are the different steps of virus infection and replication?
- (ii) Briefly describe Carl Woese's three kingdom classification.
- (iii) What is mycology? Mention two significant contributions of eminent mycologists in this field.
- (iv) What is eyespot food reserve? 3+2+(1+2)+2
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