

B.Sc. Part-I Semester-I Examination

MICROBIOLOGY

Fundamentals of Microbiology and Microbial Physiology

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) Theory of spontaneous generation is called as _____.

(ii) Mycoplasmas are deficient in _____.

(iii) Bacterial flagella is made up of _____ protein.

(iv) _____ is used as solidifying agent in nutrient media.

(B) Choose the correct alternatives :

(i) Chemical composition of synthetic media is _____.

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(a) known

(b) unknown

(c) Both

(d) None of the above

(ii) _____ is not found in prokaryotes.

(a) Ribosomes

(b) Mitochondria

(c) Mesosomes

(d) Nucleoid

(iii) Auxanography is a technique for _____.

(a) Growth measurement

(b) Nutritional requirement determination

(c) Culture preservation

(d) Isolation of pure culture

(iv) _____ is an example of Acid fast bacteria.

(a) *E.coli*

(b) *S.aureus*

(c) *Mycobacterium tuberculosis*

(d) *Clostridium tetani*

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(C) Define in **one** sentence :

(i) Thermophiles

(ii) Capsule

(iii) Mordant

(iv) Pure culture

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2. Describe the following :

(a) Father of Microbiology

4

(b) Koch's postulates

4

(c) Environmental Microbiology

4

OR

- (d) Contribution of Robert Koch in relation to pure culture concept 4
- (e) Genetic Engineering and its application 4
- (f) Contribution of John Tyndall in solving controversy over spontaneous generation. 4
3. Draw ray diagram of :
- (a) Fluorescent microscope 4
- (b) Phase contrast microscope 4
- (c) Transmission electron microscope 4
- OR**
- Describe the following staining techniques :
- (d) Acid fast staining 4
- (e) Gram staining 4
- (f) Endospore staining 4
4. Explain the following :
- (a) Characteristics of viruses 4
- (b) Numerical taxonomy 4
- (c) Characteristics of Rickettsia 4
- OR**
- (d) Intuitive method of classification 4
- (e) Characteristics of Mycoplasma 4
- (f) Characteristics of Tenericutes 4
5. Describe the following in brief :
- (a) Cell wall of Gram negative bacteria 4
- (b) Bacterial Ribosomes 4
- (c) Pilli 4
- OR**
- (d) Draw well labelled diagram of Flagella of Gram negative bacteria 4
- (e) Structure of Endospore 4
- (f) Typical bacterial cell. 4
6. Describe in detail any three methods used for preservation of pure cultures. 12
- OR**
- Describe in detail nutritional classification of micro-organisms. 12
7. Describe in detail typical bacterial growth curve. 12
- OR**
- Describe in detail physical conditions required for the growth of bacteria. 12