Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
End Semester Examination (ODD Semester) Winter-2022
Shri Shivaji Education Society Amravati's
Science College Congress Nagar Nagpur
B.Sc I Semester I
BIOTECHNOLOGY PAPER – I: MICROBIOLOGY

Time: 3 Hrs. Max. Marks: 50

Note: 1) All questions are compulsory.
2) All questions carry equal marks.

Q.1) (a) Write a note on contributions of Robert Koch in microbiology. 5
(b) Write a note on TEM. 5

OR

Describe in detail about phase contrast microscopy and its application. 10

Q.2) Give a general account on bacterial morphology. 10

OR

Write a short note on endospore structure, its formation and germination. 10

Q.3) a) Describe in detail the characteristics of Halophiles. $2^{1/2}$
b) Give a brief idea on lysogenic cycle. $2^{1/2}$
c) Describe in detail about classification of virus on the basis of nucleic acid along with examples and their importance. $2^{1/2}$
d) Give a general account on morphology of archaea $2^{1/2}$

OR

Write a note on Bergey's manual 10

Q.4) a) What are macronutrients? 5
b) Explain differential media along with examples. 5

OR

c) Explain the natural and synthetic media difference 5
d) Describe Enrichment media. 5

Q.5) Solve any TEN: 1×10
(i) Define numerical aperture. 1
(ii) What is the name of the child bitten by mad wolf on whom Louis Pasteur experimented and discovered Rabies vaccine? 1
(iii) How do we calculate resolving power? 1
(iv) Name any two bacteria classified under spirochetes. 1
(v) Name the rings present in the motor portion of the flagellar structure of gram negative bacteria. 1
(vi) What is the function of slime layer? 1
(vii) Give any two examples of methanogens. 1
(viii) Define thermophiles. 1
(ix) Name any two virus having icosahedral symmetry. 1
(x) Define chemoorganotrophs. 1
(xi) Describe the function of macronutrients carbon and nitrogen. 1
(xii) Define synthetic media. 1

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

BIO-TECHNOLOGY (Microbiology)

Optional Paper—1

Time : Three Hours] [Maximum Marks : 50

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

(2) Draw well labelled diagrams wherever necessary.

1. Discuss the principle, construction and applications of transmission electron Microscope. 10

OR

Give the contribution of Louis Pasteur in the filed of Microbiology. 10

2. (a) Differentiate between gram positive and gram negative cell wall.

(b) Draw a well labelled diagram of typical bacterial cell.

(c) Write a note on structure of an Acid fast cell wall.

(d) Write a note on commonly observed shapes in Bacteria. 4×2½=10

OR

(e) Write a note on F plasmids.

(f) Draw a well labelled diagram of endospore structure.

(g) Write a note on arrangement of bacterial flagella.

(h) Write a note on bacterial capsules. 4×2½=10

3. (a) Explain lysogenic cycle of viral replication. 5

(b) Write a note on viral symmetry. 5

OR

(c) Describe the concept of distinct archaea groups. 5

(d) Write a brief account on Bergey's Manual. 5

4. (a) Define Nutrition. How can bacteria be classified on the basis of Nutritional requirements ? 5

(b) Explain the various components of non-synthetic medium. 5

OR

(c) Explain with one example :

(i) Enrichment Media

(ii) Differential Media. 5

(d) What are Micro-nutrients and Macro-nutrients ? Give its examples. 5

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

BIO-TECHNOLOGY- (Microbiology)

Optional Paper—I

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagram wherever necessary.

1. Discuss in detail contributions of Louis Pasteur in the field of microbiology. 10

OR

Explain in detail principle and applications of phase contrast and fluorescent microscopy. 10

2. Describe in detail cell wall structure of Gram negative bacteria. 10

OR

Give detailed account of endospore structure and its formation. 10

3. Explain in detail various phases of lytic cycle taking the bacteriophage as an example. 10

OR

Write in brief :

(a) Classification of Archaebacteria 5

(b) Bergey's Manual. 5

4. Give basic nutritional Requirements and Classification of micro-organisms on their basis. 10

OR

Write a note on :

(a) Enrichment Media 5

(b) Differential Media. 5

5. Solve any **Ten** : 10

(a) Give any one Koch's postulates.

(b) Give any one characteristic of conjugative plasmid.

(c) Who discovered Gram staining procedure ?

(d) Define refractive index.

(e) Define icosahedral symmetry.

(f) Give any two examples of Gram positive bacteria.

(g) Define lophotrichous flagella.

(h) Define minimal media.

(i) What do you mean by temperate phage ?

(j) Why blood agar is selective as well as differential media ?

(k) Give name of one ds RNA virus.

(l) Define enriched media.