

(b) Give the structure of the following (any *five*) : $5 \times 1 = 5$

(i) α -D-glucose

(ii) Sucrose

(iii) Adenine

(iv) Sterol

(v) Monomeric unit of chitin

(vi) D-deoxyribose.

(c) Match the following :

$5 \times 1 = 5$

A

B

(i) Prokaryotic cell

(a) Translation

(ii) tRNA

(b) Mesosomes

(iii) Isoelectric point

(c) Disaccharides

(iv) Lysosomes

(d) Proteins

(v) Lactose

(e) Hydrolases

2. Write short notes on the following (any *three*) : $5 \times 3 = 15$

(a) Enzyme inhibition

(b) Mitochondria and chloroplast as semiautonomous organelles

(c) Lipid synthesis in smooth ER

(d) ATP as high energy molecule.

3. Compare the following (any *three*) : $5 \times 3 = 15$

(a) Microfilaments, intermediate filaments and microtubules

(b) Primary, secondary and tertiary lysosomes

(c) A-DNA, B-DNA and Z-DNA

(d) Starch, glycogen and chitin.

4. Draw well labelled diagram of the following (any *three*) :

$5 \times 3 = 15$

(a) Ultrastructure of mitochondria

(b) Fluid-Mosaic model

(c) Nuclear pore complex

(d) Ultrastructure of flagella.

5. (a) Explain the structure and functions of plant cell wall.

(b) What is protein denaturation ? Discuss the biological roles of proteins.

(c) Explain in detail the structure and functions of peroxisomes.

$5 \times 3 = 15$

6. Give a detailed account of the following (any *two*) : $7\frac{1}{2} \times 2 = 15$

(a) Role of golgi apparatus as processing, sorting and export centre of proteins.

(b) What are lipids ? Describe in detail the major classes of storage and structural lipids, and their roles in living system.

(c) Different phases in eukaryotic cell cycle and their regulation by cyclin-cdk complex.

(16)

8/12/17

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5571 H

Unique Paper Code : 216101

Name of the Paper : BTHT-101: Biodiversity-1
(Algae and Microbiology)

Name of the Course : B.Sc. (Hons.) Botany

Semester : I

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Section A** and **B** on separate sheets.
3. All parts of question must be attempted together.

Section A

*Attempt **FOUR** questions in all from **Section A** including Question No. 1, which is compulsory.*

1. (a) Fill in the blanks : (1×5=5)

(i) The book entitled "The Structure and Reproduction of the Algae was written by

P.T.O.

- (ii) is an alga that helps in Nitrogen fixation.
- (iii) Thick walled vegetative cells rich in food material are known as
- (iv) Pond silk or water silk is the common name given to the members of
- (v) Trumpet hyphae are found in
- (b) Define **any four** of the following : (1×4=4)
- (i) Eyespot
- (ii) Palmella stage
- (iii) Coenobium
- (iv) Fucosan vesicle
- (v) Nannandrium
- (c) Match the following : (1×5=5)
- | | |
|---|----------------------------------|
| (i) Parasitic alga | (a) <i>Fritschiella</i> |
| (ii) Isomorphic alternation of generation | (b) <i>Polysiphonia</i> |
| (iii) Pit connections | (c) <i>Cephaleuros virescens</i> |
| (iv) Primary protonema | (d) <i>Chara</i> |
| (v) Fucoserratene | (e) <i>Fucus</i> |

2. Write short notes on **any three** of the following : (4×3=12)
- (a) Heterotrichous habit
- (b) *Gongrosira* stage
- (c) Heterocyst
- (d) Cell division in *Oedogonium*
3. Differentiate between **any three** of the following pairs : (4×3=12)
- (a) Zoospore and synzoospore
- (b) Unilocular and plurilocular sporangia
- (c) Nucule and globule
- (d) Carposporophyte and tetrasporophyte
4. Draw well labelled diagrams of **any three** of the following : (4×3=12)
- (a) E.M. of *Chlamydomonas*
- (b) *Volvox* coenobium showing autocolonies
- (c) V.S of female conceptacle of *Fucus*
- (d) *Vaucheria* thallus with reproductive structures

5. (a) Write a note on the economic importance of blue green algae. (4×3=12)
- (b) Write a note on the post fertilization changes in *Coleochaete*.
- (c) Mention the contribution of the following phycologists (any two) :
- (i) F.E. Fritsch
- (ii) G.M. Smith
- (iii) M.O.P. Iyengar

Section B

Attempt **THREE** Questions in all from this section, including Question No. 6 which is compulsory.

6. (a) Define any five of the following : (1×5=5)
- (i) Firmicutes
- (ii) Prototrophs
- (iii) Chemoorganotrophs
- (iv) Proteobacteria
- (v) L-forms
- (vi) Replica plating

- (b) Give characteristic features of the following bacterial forms : (1×5=5)
- (i) *Aquaspirillum magnetotacticum*
- (ii) *Haloquadra walsbyi*
- (iii) *Nanoarchaeum equitans*
- (iv) *Gemmata obscuriglobus*
- (v) *Diplococcus pneumoniae*
- (c) Match the following : (1×3=3)
- | | |
|----------------------------|------------------------|
| (i) <i>Rhizobium</i> | (a) Budding |
| (ii) <i>Hyphomicrobium</i> | (b) Symbiotic bacteria |
| (iii) TMV | (c) RNA virus |
7. Draw well labelled diagrams of any two of the following : (3×2=6)
- (a) E.M. of a bacterial cell
- (b) E.M. of T2 bacteriophage
- (c) Bacterial endospore
- (d) Gram+ve cell wall

8. Write short notes on **any two** of the following : (3×2=6)
- (a) Mycoplasma
 - (b) F-Plasmid
 - (c) Generalised transduction
 - (d) Viroids
9. (a) Do you think Archaea should be separate from Bacteria although both the groups are prokaryotes? (3×2=6)

OR

Give two important functions of Com proteins in the transformation machinery of *Haemophilus influenzae*.

- (b) What are the functions of Braun's lipoproteins and "porins" in the outer membrane of Gram -ve bacterial cell wall?

OR

Why do we consider multiple auxotrophic markers while demonstrating transformation in laboratory? What is the transformation frequency reported for Eubacteria?

[This question paper contains 6 printed pages.]

2017

Your Roll No.....

Sr. No. of Question Paper : 6461

HC

Unique Paper Code : 32161101

Name of the Paper : MICROBIOLOGY AND
PHYCOLOGY

Name of the Course : B.Sc. (Hons.) Botany

Semester : I

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All parts of a question must be attempted together.
3. Illustrate your answers with suitable diagrams wherever necessary.
4. This question paper has **SEVEN** questions.
5. **All** questions carry equal marks.
6. Attempt any **Five** questions in all.
7. Question No. 1 is compulsory.

P.T.O.

1. (a) Name the Genus associated with the following
(any TEN) : (1×10=10)

- (i) Coenobium
- (ii) Gongrosira stage
- (iii) Cap cells
- (iv) Hormogonia
- (v) Amylum stars
- (vi) Rust of Tea
- (vii) Palmella stage
- (viii) Triphasic life-cycle
- (ix) Root nodule
- (x) Crown Gall
- (xi) Citrus canker
- (xii) Leaf Mosaic

(b) Fill in the blanks : (1/2×6=3)

- (i) Cells in *Polysiphonia* thallus are interconnected by _____ .

- (ii) In *Nostoc* filament, the heterocyst is _____ in position.
- (iii) The fruiting body in *Coleochaete* is called _____ .
- (iv) Multiflagellated asexual spore in *Vaucheria* is called _____ .
- (v) Bacterium with flagella present on two opposite poles is called _____ .
- (vi) The sub-units of protein coat in T.M.V are called _____ .

(c) Give contributions of any TWO of the following :
(1×2=2)

- (i) G.M. Smith
- (ii) F.E. Fritsch
- (iii) W.M. Stanley
- (iv) J. Lederberg and E. Tatum

2. (a) Comment on the acellular nature of *Vaucheria*. (5)

(b) Elaborate on the evolutionary trends in *Chlamydomonas* or *Coleochaete*. (5)

(c) Discuss the affinities of Red Algae. (5)

OR

Give a brief account of Baltimore's system of classification.

3. (a) Explain Isomorphic Alternation of Generation, with *Ectocarpus* as an example. (5)

(b) Comment on the use of Bacteria in industry. (5)

(c) With the help of diagrams, explain the post-fertilization changes in *Polysiphonia*. (5)

4. Write short notes on **any THREE** of the following : (5×3=15)

(a) Asexual reproduction in *Volvox*

(b) Thallus organization in *Chara*

(c) Sexual reproduction in *Fucus*

(d) Bacterial Growth curve

5. Give well-labelled diagrams for **any THREE** of the following : (5×3=15)

(a) *Chara*-Detailed structure of a dissected Globule

(b) *Chlamydomonas*- E.M. Cell

(c) *Vaucheria*- Thallus bearing sex organs

(d) T₂ Bacteriophage

6. Differentiate between **any FIVE** of the following :

(a) Hormogonia and Akinetes

(b) Zoospore and Oospore

(c) Unilocular sporangium and Plurilocular sporangium

(d) Macrandrous and Nannandrous

(e) Prions and Virion

(f) Transduction and Transformation (3×5=15)

7. (a) Describe the symptoms, causal organism and control measures of **any ONE** viral disease. (5)

- (b) Elaborate on the role of Algae in Agriculture and Biotechnology. (5)
- (c) Discuss the fine structure and proposed functions of Heterocyst. (5)

OR

Explain Lysogenic Cycle.