

1st Semester Examination, 2020

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus.

Answer from all the sections as per direction.

The figures in the right-hand margin indicate marks.

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

GROUP—A
(MODEL SYLLABUS)
(MICROBIOLOGY AND PHYCOLOGY)

(SECTION—I)

1. Fill in the blanks with suitable words : 1 × 8
- (a) Genetic material of t-phage is ———.
 - (b) Viruses are 1st discovered by ———.
 - (c) ——— is the wall-less forms of microorganism.
 - (d) A specialized cell of cyanobacteria which helps in N₂ fixation is ———.
 - (e) ——— algae is used for SCP production.
 - (f) ——— no of flagella is present in *Chlamydomonas*.
 - (g) ——— is the coenocytic algae.
 - (h) Agar agar is extracted from ——— algae.

(SECTION—II)

2. Answer any *eight* of the following in two to three sentences : 1.5 × 8
- (a) What is Viroids ?

- (b) Vaccine
- (c) Fermentation
- (d) Prochloron
- (e) Reserve food in algae
- (f) Colonial algae
- (g) Cell structure of Chara
- (h) Red algae
- (i) Prions
- (j) Role of bacteria

(SECTION—III)

3. Answer any *eight* of the following in about 75 words : 2 × 8

- (a) Economic importance of virus
- (b) Microbial nutrition and metabolism
- (c) Role of bacteria in industry
- (d) PPLO
- (e) General characteristics of prochlorophyceae
- (f) Pigmentation in algae
- (g) Role of algae in the environment
- (h) Brief idea about classification of algae
- (i) Evolutionary significance of *Chara*
- (j) Morphology of red algae

(SECTION—IV)

Answer *all* the following questions in 500 words : 6 × 4

4. Write briefly about the discovery physiochemical and biological characteristics of viruses.

Or

Describe the economic importance of viruses with reference to vaccine production, role in research and medicine.

5. Describe the discovery general characteristics, types and cell structure of bacteria.

Or

Describe the ecology occurrence cell structure and reproduction of cyanobacteria.

6. Discuss the range of thallus organisation in algae.

Or

Describe the structure and reproduction of *Oedogonium*.

7. Describe the life cycle of *Ectocarpus*.

Or

Discuss the morphology and life cycle of Polysiphonia.

GROUP—B
(OLD SYLLABUS)
(MICROBIOLOGY AND PHYCOLOGY)

SECTION—A

1. Answer *all* questions :

2 × 6

- (a) What is lysogeny ?
(b) What are plasmids ?
(c) What are phycobillins ?
(d) What is oogamy ?
(e) Significance of *Chara*
(f) What is Phytoplankton ?

SECTION-B
Answer *all* questions :

12 × 4

2. Give an account of different methods of reproduction in bacteria.

Or

Write notes on :

- (i) TMV
- (ii) Structure of bacteriophage

3. Describe the morphology and life cycle of Nostoc.

Or

Write notes on :

- (i) Economic importance of algae
- (ii) Classification of algae

4. Describe the life cycle of Fucus.

Or

Write notes on :

- (i) Carposporophyte of *Polysiphonia*
- (ii) Sea weeds

5. Describe the morphology and sexual reproduction in *Vaucheria*.

Or

Write notes on :

- (i) Coleochaete
- (ii) Sex organs of *Chara*

1st Semester Examination, 2020**Time : 3 hours****Full Marks : 60**Answer any **one** Group as per your Syllabus.

Answer from all the sections as per direction.

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***GROUP—A
(MODEL SYLLABUS)
(BIOMOLECULES AND CELL BIOLOGY)****GROUP—I**

1. Answer all the following questions : 1 × 8
- (a) pH of pure water is ———.
 - (b) ——— enzyme is 1st purified in crystalline form.
 - (c) The bond present between two amino acid is called ——— bond.
 - (d) Which bond is more stronger among A = T and G ≡ C.
 - (e) ——— discovered the Nucleus.
 - (f) Who proposed the fluid mosaic model ?
 - (g) How many stages are present in cell cycle ?
 - (h) Chloroplast contain ——— DNA.

GROUP—II

2. Answer any *eight* questions of the following in two to three sentences : 1.5 × 8
- (a) Buffers
 - (b) Holoenzyme

- (c) Disaccharides
- (d) Define lipids.
- (e) Isoelectric point
- (f) zDNA
- (g) Endocytosis
- (h) What is passive absorption ?
- (i) Lysosome
- (j) What is microfilament ?

GROUP–III

3. Answer any *eight* of the following within 75 words : 2 × 8

- (a) Free energy
- (b) Activation energy
- (c) Polysaccharides
- (d) Protein denaturation
- (e) t-RNA
- (f) Nuclear lamina
- (g) Property of fatty acids
- (h) Origin of eukaryotic cells
- (i) Endoplasmic reticulum
- (j) Metaphore of meiosis

GROUP–IV

Answer all questions in 500 words : 6 × 4

4. Discuss the bioenergetics and laws of thermodynamics.

Or

Write short notes on :

- (i) Classification of enzyme
- (ii) Structure and function of disaccharides

5. Describe the structure and function of proteins.

Or

Write short notes on :

- (i) Essential fatty acids
- (ii) Structure and types of DNA

6. Describe the different types of membrane transport.

Or

Write short notes on :

- (i) Characteristics of prokaryotic and eukaryotic cells
- (ii) Nuclear pore complex

7. Describe the structure, function and semiautonomous nature of mitochondria and chloroplast.

Or

Write short notes on :

- (i) Cell cycle
- (ii) Role and structure of microtubules

GROUP—B
(OLD SYLLABUS)
(BIOMOLECULES AND CELL BIOLOGY)

SECTION—A

1. Answer all questions :

2 × 6

- (a) What is a buffer ?
- (b) What is a prosthetic group ?
- (c) What is fluid mosaic model ?

(d) What are the functions of nucleolus ?

(e) What is exocytosis ?

(f) What is microfilament ?

SECTION-B

Answer all questions :

12 × 4

2. Give an account of different levels protein structure with diagrams.

Or

Write notes on :

(i) Structure of DNA double helix

(ii) Polysaccharides

3. Discuss the concepts of activation energy and induced-fit theory of enzymes.

Or

Write notes on :

(i) Coupled reactions

(ii) Inhibition of enzymes

4. Explain the relationship between ER, golgi complex, lysosome and plasma membrane with help of a diagram.

Or

Write notes on :

(i) Cell wall

(ii) Mitochondria

5. Describe different stages of mitosis in plants with diagram.

Or

Write notes on :

(i) Microtubules

(ii) Cell cycle

1st Semester Examination, 2020*Time : 3 hours**Full Marks : 60*Answer any **one** Group as per your syllabusAnswer from **all** the Sections as per direction*The figures in the right-hand margin indicate marks**Candidates are required to answer in their own words as far as practicable*

GROUP—A

(MODEL SYLLABUS)**(BIODIVERSITY (Microbes, Algae, Fungi, And Archigoniates))**

SECTION—A

1. Answer *all* questions : 1 × 8
- (a) Who discovered bacteria ?
 - (b) The cell responsible of N₂ fixation in *Nostoc* is known as _____ .
 - (c) Cell wall of fungi is mainly consists of _____ .
 - (d) Lichen is the example of _____ type of association.
 - (e) _____ are called as transition plants.
 - (f) *Sphagnum* is commonly called as _____ .
 - (g) "Sago" is extracted from _____ .
 - (h) Common name of *Equisetum* is _____ .

SECTION—B

2. Answer any *eight* of the following questions within *two* or *three* sentences each : 1 $\frac{1}{2}$ × 8
- (a) Lysogenic cycle
 - (b) Cell structure of *Nostoc*
 - (c) Nutrition in Fungi
 - (d) Mycorrhiza
 - (e) Two economic importance of bryophytes

(Turn Over)

- (f) Alternations of generation
- (g) Rhizophore
- (h) Stele
- (i) Two characteristics of gymnosperm
- (j) *Chlamydomonas*.

SECTION – C

3. Answer any *eight* of the following within 75 words each : 2 × 8
- (a) TMV
 - (b) Ecology of algae.
 - (c) Symbiotic association.
 - (d) Significance of Fungi.
 - (e) Adaptations to land habit.
 - (f) Economic importance of bryophytes.
 - (g) Heterospary.
 - (h) Ecological importance of pteridophytes.
 - (i) Asexual reproduction of Bacteria.
 - (j) Ectomycorrhiza.

SECTION – D

Answer **all** questions : 6 × 4

4. Describe the morphology and life cycle of *oedogonium*.

Or

Describe the range of thallus organization of algae.

5. Discuss the life cycle of *Agaricus*.

Or

Describe the general characteristics range of thallus organization and ecology of true fungi.

6. Describe the unifying features of archegoniates.

(3)

Or

Discuss the anatomy and reproduction of Funaria.

7. What is heterospory ? Describe the heterospory and seed habits in pteridophytes.

Or

Describe the stelon evolution in pteridophytes.

GROUP – B
(OLD SYLLABUS)

(BIODIVERSITY (Microbes, Algae, Fungi, And Archigoniates))

Draw labelled diagram wherever necessary

SECTION – A

2 × 6

1. Answer all questions :

- (a) What is a prophage ?
- (b) Binary fission in bacteria
- (c) What are mycorrhizae ?
- (d) *Sphagnum*
- (e) Coralloid root
- (f) Unifying feature of archegoniate.

SECTION – B

Answer all questions :

12 × 4

2. Describe the lytic life cycle of a T-even phage with diagram.

Or

Write notes on :

- (i) Bacterial endospore
- (ii) Recombination in Bacteria.

3. Give an account of life cycle of *Rhizopus*.

(4)

Or

Write notes on :

- (i) Economic importance of algae
- (ii) Sexual reproduction in algae.

4. Describe the structure of moss sporophyte and explain the spore dispersal mechanism.

Or

Write notes on :

- (i) Land adaptations of bryophytes
- (ii) *Marchantia* archegoniophore.

5. Describe the morphology and reproduction of *Equisetum*.

Or

Write notes on :

- (i) Male cone of *Cycas*
- (ii) Importance of gymnosperms.

Or

(b) Write notes on :

(i) Thallus structure of *Volvox*

(ii) General characteristics of '*Charophyta*'.

2019

(1st Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from both the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(MICROBIOLOGY AND PHYCOLOGY)

SECTION – A

1. Answer all of the following : 2 × 6
- (a) Distinguish between Photoautotrophs and chemoautotrophs.
- (b) In terms of cell wall structure and composition

explain the differences between 'Gram +Ve' and 'Gram - Ve' bacteria.

- (c) What are viroids ?
- (d) What genetic material are found in TMV and bacteriophage ?
- (e) Why members of phaeophyceae are known as 'brown algae' ?
- (f) Write two negative effects of algae with example.

SECTION - B

Answer all questions : 12 x 4

- 2. (a) What is genetic recombination ? Explain transformation in bacteria and add a note on it's significance.

Or

- (b) Write notes on :
 - (i) Economic importance of viruses
 - (ii) Structure of TMV.

- 3. (a) Define algae. Give an account of the range of thallus organisation in algae.

Or

- (b) Write notes on :

- (i) Heterocyst
- (ii) Life cycle of *Nostoc*.

- 4. (a) Write notes on :

- (i) Cystocarp
- (ii) Spermatogonium of *Polysiphonia*
- (iii) Thallus structure of *Polysiphonia*.

Or

- (b) What is alternation of generation ? Describe alternation of generation in *Fucus*.

- 5. (a) With the help of well labelled diagram discuss various types of life cycles found in *Oedogonium*.

2019

(1st Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from both the Sections as per direction

The figures in the right-hand margin indicate marks

*Candidates are required to answer in their own words
as far as practicable*

(BIOMOLECULES AND CELL BIOLOGY)

SECTION – A

1. Answer all questions : 2×6

(a) What is a buffer solution ? Give example.

(b) What is a peptide bond ?

(c) What are the functions of cytoskeleton ?

(Turn Over)

(2)

- (a) What is the role of peroxisomes in a plant cell ?
- (e) Differentiate between B DNA and Z DNA.
- (f) What is a glycosidic bond ?

SECTION - B

Answer all questions : 12 x 4

2. (a) What are carbohydrates ? Give the classification of carbohydrates. Add a note on disaccharides with example.

Or

- (b) Write notes on :
- (i) Structure and function of amino acids
- (ii) Major classes of storage and structural lipids.
3. (a) What are enzymes ? Enlist important properties of enzymes and describe the mode of action of enzymes.

SH BOT 02

(Continued)

SH BOT 02

BA-2,000

(3)

Or

- (b) Describe the structure of ATP and its role as the energy currency molecule in a cell.
4. (a) Describe chemistry, structure and function of cell wall.

Or

- (b) Write notes on :
- (i) Lysosomes
- (ii) Endoplasmic reticulum.
5. (a) Describe different stages of mitosis in a plant cell with labelled diagram. Write its significance.

Or

- (b) Write notes on :
- (i) Microtubules
- (ii) Chromatins

2019

(1st Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

*Candidates are required to answer in their own words
as far as practicable*

(BIOTECHNOLOGY)

SECTION – A

1. Answer all questions : 2 x 6

- (a) Two applications of Biotechnology in agriculture.
- (b) Totipotency
- (c) Redifferentiation.

(Turn Over)

(2)

- (d) Cloning
- (e) Ethical issues in Animal biotechnology
- (f) Gene concept.

SECTION – B

Answer all questions : 12 x 4

2. Describe the historical prospective of biotechnology.

Or

Write short notes on :

- (i) Environmental biotechnology
 - (ii) Industrial use of biotechnology.
3. Describe in details about the formation of transgenic plants.

Or

Discuss the role of plant biotechnology in germ plasm conservation.

SGBT 01

(Continued)

SGBT 01

(3)

4. Describe in details about the in vitro fertilization process that leads to the test tube baby.

Or

Write short notes on :

- (i) Gene therapy
- (ii) Transgenic animals.

5. What is nucleic acids. Describe the replication of DNA in a prokaryotic cell.

Or

Write short notes on :

- (i) Nucleus
- (ii) Transcription.

BA-100

Total Pages—3

SHBOT 01

2018

(1st Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from both the Sections as per direction

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Candidates are required to answer in their own words
as far as practicable*

(MICROBIOLOGY AND PHYCOLOGY)

SECTION — A

- I. Answer *all* the questions : 2 × 6
- (a) Define Photoheterotroph.
 - (b) What are prions ? Name the disease caused by prions.
 - (c) In what respect does the protoplast of the cell of green algae shows an advance over that of blue green algae.

(Turn Over)

(2)

- (d) Name the major photosynthetic pigments found in Rhodophyta and Phaeophyta.
- (e) What are the different methods of vegetative reproduction found in *Chara* ?
- (f) Give examples of two algae which are used as food.

SECTION - B

Answer all questions : 12 x 4

- 2. Describe the structure and mode of infection by T-phage virus.

Or

Write notes on :

- (i) Archebacteria
- (ii) Conjugation in bacteria.
- 3. Give the outline of Fritsch's system of classification of algae.

(3)

Or

- (a) Life cycle of *Oscillatoria*
- (b) Economic importance of algae
- 4. Discuss the morphology and life cycle of Polysiphonia.

Or

Discuss the morphology and life cycle of *Fucus*.

- 5. Discuss the morphology and life cycle of Xanthophyta with special reference to *Vaucheria*.

Or

Write notes on :

- (i) General characteristics of Chlorophyta
- (ii) Morphology of *Chara*.

FBS-IS-Bot. (Core-1)

2017

MICROBIOLOGY AND PHYCOLOGY

Time : 2½ Hours] [Full Marks : 60

Answer from both the Sections as directed. The figures in the right-hand margin indicate marks.

SECTION-A

1. Answer all questions : 2×6

- (a) What is Growth Curve? What are the different phases of a microbial growth curve?
- (b) How viroids are different from virus?
- (c) What is Heterocyst? What is its function?
- (d) Name the reserve food materials found in Xanthophyta and Phaeophyta.
- (e) Write any two economic importances of Rhodophyta.
- (f) What are the different types of life cycles found in Algae?

(2)

SECTION-B

Answer all questions :

12×4

2. (a) Give an account on the morphology and life cycle of TMV.

OR

- (b) Write notes on the following :

- (i) Mycoplasma
- (ii) Cell wall of Bacteria

3. (a) Give an account on the thallus structure in algae with suitable examples.

OR

- (b) (i) Life cycle of *Nostoc*
- (ii) Economic importance of Algae

4. (a) Discuss the morphology and life cycle of *Polysiphonia*.

OR

- (b) Discuss the morphology and life cycle of *Fucus*.

5. (a) Describe the morphology and reproduction in *Volvox*.

OR

(3)

- (b) Write notes on the following :

- (i) Morphology of *Chara*
- (ii) General characteristics of Xanthophyta

2017

BIOMOLECULES AND CELL BIOLOGY

Time : 2½ Hours]

[Full Marks : 60

Answer from both the Sections as directed. The figures in the right-hand margin indicate marks.

SECTION-A

1. Answer all questions : 2×6
- (a) Name two purines of DNA molecules.
 - (b) Why enzymes are called biocatalysts ?
 - (c) What is Polysaccharides ?
 - (d) Why is mitotic anaphase known as equational division ?
 - (e) Why is mitochondria called as powerhouse of the cell ?
 - (f) What are the components of cell membrane ?

SECTION-B

Answer all questions : 12×4

2. (a) Describe the different stages of somatic cell division with labelled diagrams.

OR

(2)

(b) Write short notes on the following :

- (i) Meiotic Prophase
- (ii) Nuclear Envelope

3. (a) Describe the fluid mosaic model of cell membrane and its functions.

OR

(b) Write short notes on the following :

- (i) Endoplasmic Reticulum
- (ii) Membrane Transport

4. (a) Describe the chemical and physical structure of DNA molecule with labelled diagrams.

OR

(b) Write short notes on the following :

- (i) Essential Fatty Acids
- (ii) tRNA structure

5. (a) Write broad classification of enzymes with special reference to lock and key hypothesis.

OR

(b) Write short notes on the following :

- (i) Laws of Thermodynamics
- (ii) Factors affecting enzyme activity

2017

**MICROBES, ALGAE, FUNGI &
ARCHEGONIATES (THEORY)**

Time : 2½ Hours]

[Full Marks : 60

Answer from both the Sections as directed. The figures in the right-hand margin indicate marks.

SECTION-A

1. Answer all questions : 2×6

- (a) Define Lytic cycle.
- (b) What are the major components of bacterial cell wall?
- (c) Give one difference between fungal cell wall and algal cell wall.
- (d) Name the different types of spores found in *Puccinia*.
- (e) What is gemma cup? What is its significance?
- (f) How coralloid root of *Cycas* is different from its normal root?

(2)

SECTION-B

Answer all questions :

12×4

2. (a) Describe the different modes of genetic recombination found in bacteria.

OR

- (b) Write notes on the following :

(i) Economic importance of Virus

(ii) TMV

3. (a) Discuss the morphology and life cycle of *Nostoc*.

OR

- (b) Discuss the morphology and life cycle of *Rhizopus*.

4. (a) Give an account on the sporophyte of *Funaria* and discuss its spore dispersal mechanism.

OR

- (b) (i) Unifying characteristics of Archegoniates

(ii) Economic importance of Bryophytes

5. (a) What is Stele? Explain the stellar evolution of Pteridophytes.

OR

- (b) Compare the female cone of *Cycas* and *Pinus*.