

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer *all* questions selecting either {(a),(b)}
or {(c),(d)} from each question

Give diagrams wherever necessary

1. a) Discuss lysogenic cycle of Virus. 8
- b) Write short notes on any *two* : 2 × 2
- i) RNA Virus
- ii) Conjugation
- iii) Economic importance of Virus.

OR

- c) Discuss bacterial transduction. 8
- d) Write short notes on any *two* : 2 × 2
- i) DNA virus
- ii) Sporulation in Bacteria
- iii) Economic importance of Bacteria.

2. a) Discuss the life cycle of *Vaucheria*. 8
- b) Write short notes on any *two* : 2 × 2
- i) Ectomycorrhiza
 - ii) Crustose Lichens
 - iii) Cleistothecium.

OR

- c) Discuss the life cycle of *Puccinia*. 8
- d) Write short notes on any *two* : 2 × 2
- i) Heterocyst.
 - ii) Classification of Algae
 - iii) Conceptacles in *Fucus*.
3. a) Discuss the alternation of generation in *Funaria*. 8
- b) Write short notes on any *two* : 2 × 2
- i) Archegoniophore of *Marchantia*.
 - ii) Economic importance of Bryophytes
 - iii) Classification of Bryophytes upto family.

OR

c) Discuss the range of thallus organization in Bryophytes. 8

d) Write short notes on any *two* : 2 × 2

i) Antheridiophore of *Marchantia*

ii) Ecological importance of Bryophytes

iii) Sporophyte of *Funaria*.

4. a) Discuss reproduction in *Selaginella*. 8

b) Write short notes on any *two* : 2 × 2

i) Actinostele

ii) Sporophyte of *Equisetum*

iii) Sporophyte of *Cooksonia*.

OR

c) Describe the structure and anatomy of *Rhynia*. 8

d) Write short notes on any *two* : 2 × 2

i) Heterospory

ii) Megaspangia of *Selaginella*

iii) Embryo of *Pteris*.

5. a) Describe the female gametophyte of *Cycas*. 8
- b) Write short notes on any *two* : 2 × 2
- i) T.S. of Coralloid root
 - ii) Male cone of *Pinus*
 - iii) Megasporophyll of *Cycas*.

OR

- c) Describe the general characteristics, morphology and economic importance of Gymnosperms. 8
- d) Write short notes on any *two* : 2 × 2
- i) *Pinus* needle
 - ii) Ecological importance of Gymnosperms
 - iii) Male cone of *Cycas*.

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1. a) Describe the structure and functions of storage polysaccharides. 8
- b) Write short notes on any *two* : 2×2
- i) Types and significance of chemical bonds.
- ii) Biological roles of Proteins.
- iii) Structure of 'Z' DNA.

OR

- c) Describe in detail the primary and secondary structure of proteins. 8
- d) Write short notes on any *two* : 2×2
- i) Structure of t-RNA
- ii) Essential fatty acids
- iii) Role of Mannitol and Sorbitol.

[2]

2. a) What do you mean by free energy ? Differentiate endergonic and exergonic reactions with examples. 8
- b) Write short notes on any *two* : 2 × 2
- i) 2nd Law of thermodynamics
 - ii) Structure of enzyme
 - iii) Enzyme inhibition.

OR

- c) Define Michaelis-Menter equation for a single substrate-enzyme catalysed reaction. 8
- d) Write short notes on any *two* : 2 × 2
- i) Redox reactions
 - ii) Coupled reactions
 - iii) Classification of enzymes.
3. a) Describe the structure of an eukaryotic cell and mention the functions of different organelles. 8
- b) Write short notes on any *two* : 2 × 2
- i) Characteristics of Prokaryotic Cell
 - ii) Passive membrane transport
 - iii) Exocytosis.

OR

[3]

- c) Describe the fluid mosaic model of membrane structure. Mention briefly the functions of cell membrane. 8
- d) Write short notes on any *two* : 2 × 2
- i) Facilitated transport
 - ii) Characteristics of eukaryotic cell
 - iii) Endocytosis.
4. a) Elaborate the structure and roles of microfilaments and intermediary filaments. 8
- b) Write short notes on any *two* : 2 × 2
- i) Molecular organization of Chromatin
 - iii) Functions of Golgi apparatus
 - iii) Peroxisomes.

OR

- c) Describe the structure and functions of mitochondria. 8
- d) Write short notes on any *two* : 2 × 2
- i) Nuclear pore
 - ii) Chloroplast ultrastructure
(Labelled diagram only)
 - iii) Functions of endoplasmic reticulum.

[4]

5. a) Describe in detail the regulation of cell cycle. 8
- b) Write short notes on any *two* : 2 × 2
- i) Prophase of Mitosis
 - ii) Chiasmata formation
 - iii) Diakinesis.

OR

- c) Describe in detail the different stages of Meiosis-I. 8
- d) Write short notes on any *two* : 2 × 2
- i) Interphase
 - ii) Telophase of mitosis
 - iii) Anaphase-II of meiosis.

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Give relevant diagrams wherever necessary

1. a) Depict with diagrams different levels of structure of protein. Describe the biological roles of proteins. 8
- b) Write notes on the following : 2+2
- i) Polysaccharides
 - ii) Structural lipids.

OR

- c) Depict with diagrams A, B and Z types of DNA and their importance in Cell. 8
- d) Write notes on the following : 2+2
- i) Nomenclature and classification of Carbohydrates
 - ii) Fatty acid structure and function.

[2]

2. a) Describe the mechanism and Kinetics of enzyme action with special reference to Michaelis-Menten equation. 8
- b) Write notes on the following : 2+2
- i) Derive the 2nd law of thermodynamics
 - ii) ATP as energy currency of cell.

OR

- c) Describe the structure and classification of enzymes. 8
- d) Write notes on the following : 2+2
- i) Enzyme Inhibition
 - ii) Redox reactions.
3. a) Describe Mechanism of membrane transport. 8
- b) Write notes on the following : 2+2
- i) Endosymbiotic theory
 - ii) Prokaryotic cell characters.

OR

[3]

- c) Discuss the structure, chemistry and function of plant cell wall. 8
- d) Write notes on the following : 2+2
- i) Difference between Prokaryotic and Eukaryotic Cells.
 - ii) Endocytosis and Exocytosis.
4. a) Describe the structure and molecular organisation of Chromosomes. 8
- b) Write notes on the following : 2+2
- i) Nuclear pore complex
 - ii) Microfilament.

OR

- c) Discuss the structural organisation, function and semiautonomous nature of chloroplast. 8
- d) Write notes on the following : 2+2
- i) Mitochondria structure
 - ii) Role of Microtubules.

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5. a) Discuss different stages of Mitotic cell division. 8
- b) Write notes on the following : 2+2
- i) Cell cycle
 - ii) Regulation of Cell cycle.

OR

- c) Discuss different stages of Meiotic cell Division. 8
- d) Write notes on the following : 2+2
- i) S phase
 - ii) Difference between Pachytene and Diakinesis.

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Give diagrams wherever necessary

1. a) Give an illustrated account of cell structure of Bacteria. 8
- b) Write short notes on the following : 2 × 2
- i) Conjugation
- ii) TMV.

OR

- c) Describe bacterial transformation as a method of genetic recombination. 8
- d) Write short notes on the following : 2 × 2
- i) Lytic Cycle
- ii) Role of bacteria in Industry.

[2]

2. a) Give an illustrated account of Range of thallus organisation in Chlorophyceae. 8
- b) Write short notes on the following : 2 × 2
- i) Endomycorrhiza
 - ii) Apothecium.

OR

- c) Give an illustrated account of life cycle of *Penicillium*. 8
- d) Write short notes on the following : 2 × 2
- i) Algal bloom
 - ii) Crustose lichen.
3. a) Give an illustrated account of Morphology and Anatomy of *Marchantia*. 8
- b) Write short notes on the following : 2 × 2
- i) Antheridiophore
 - ii) Economic importances of *Sphagnum*

OR

c) Give an account of classification of Bryophytes (upto family). 8

d) Write short notes on the following : 2 × 2

i) Mass Protonema

ii) Gemma cap.

4. a) Describe the process of reproduction in *Equisetum*. 8

b) Write short notes on the following : 2 × 2

i) Protostele

ii) Heterospory.

OR

c) Describe the process of reproduction in *Pteris*. 8

d) Write short notes on the following : 2 × 2

i) *Rhynia* Reproductive Structure

ii) Siphnostele.

[4]

5. a) Give an illustrated account of female gemetophyte of *Pinus*. 8
- b) Write short notes on the following : 2 × 2
- i) *Cycas* male cone
 - ii) *Pinus* needle.

OR

- c) Give an illustrated account of ovule of *cycas*. 8
- d) Write short notes on the following : 2 × 2
- i) Coralloid root
 - ii) Ovuliferous scale.

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Answer *all* questions

Give labelled diagrams wherever necessary

1. a) Describe the mode of infection and life cycle of TMV. 8
- b) Write short notes on the following : 2 × 2
 - i) General Characters of Prions.
 - ii) Physicochemical characteristics of viruses.

OR

- c) Give an account of the characteristics and classification of viruses. 8
- d) Write short notes on the following : 2 × 2
 - i) Application of viruses in molecular research
 - ii) Characteristics of Viroids.

2. a) Describe the mechanism of genetic transformation in bacteria. 8
- b) Write short notes on the following : 2 × 2
- i) Importance of bacteria as a biofertilizer
 - ii) Structure of *Mycoplasma*.

OR

- c) Give an account of the industrial application of bacteria. 8
- d) Write short notes on the following : 2 × 2
- i) Endospores
 - ii) Classification of archaebacteria.
3. a) Give a general account of the structure of a typical algal cell. 8
- b) Write short notes on the following : 2 × 2
- i) Algal pigments
 - ii) Environmental significance of algae.

OR

[3]

- c) Describe the range of thallus organization in algae with reference to the structural evolution. 8
- d) Write short notes on the following : 2 × 2
- i) Aplanospores in algae
 - ii) Contribution of TV Desikachary to algal research in India.
4. a) Give a general account of the life cycle of *Oedogonium*. 8
- b) Write short notes on the following : 2 × 2
- i) Isogamy in *Chlamydomonas*
 - ii) Morphology of *Volvox* colony.

OR

- c) Give an account of the life cycle of *Nostoc*. 8
- d) Write short notes on the following : 2 × 2
- i) Thallus structure of *Coleochaete*
 - ii) Asexual reproduction in *Chlamydomonas*.

[4]

5. a) Describe the sexual mode of reproduction in *Vaucheria*. 8
- b) Write short notes on the following : 2 × 2
- i) General characters of Rhodophytes
 - ii) Structure of globules of *Chara*

OR

- c) Describe the sexual reproduction in *Ectocarpus*. 8
- d) Write short notes on the following : 2 × 2
- i) Evolutionary significance of *Chara*.
 - ii) Tetrasporophyte of *Polysiphonia*.

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Answer *all* questions

Part-I

1. Answer the following : 8 × 1
- a) The major components of Protoplasm is _____.
 - b) The smallest amino acid is _____.
 - c) The cell wall was discovered in _____.
 - d) Microtubules are made up of _____.
 - e) Which enzyme can digest Proteins of plant origin ?
 - f) The amino acid has equal +Ve and -Ve charge known as ?

[2]

- g) Name the cementing agent present between the cell wall.
- h) Cytoplasm without cell organelles termed as ?

Part-II

2. Answer any *eight* of the following : 1½ × 8
- a) Give the function of inhibitors.
 - b) Explain redox reactions ?
 - c) What is a nucleotide ?
 - d) Write is process of protein denaturation.
 - e) What is a proton Pump.
 - f) Explain co-transport.
 - g) Write the Advantages of crossing over.
 - h) Explain the diadvantages of mitosis.
 - i) Define Michaelies-Menten equation.
 - j) What are the peptide bonds.

[3]

Part-III

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

- a) Give the detail structure of Dia-saccharides.
- b) Write the function of Oligosaccharides.
- c) Describe the structure of z-DNA molecule.
- d) Differentiate between storage and structural lipids.
- e) Discuss endosymbiotic theory.
- f) Give an over view of fluid mosaic model.
- g) Explain the semiautonomous nature of chloroplast.
- h) What are the functions of Golgi apparatus ?
- i) What are the advantages of exocytosis.
- j) What are applications of cell cycle.

Part-IV

4. a) Explain different classes of enzymes with examples.

OR

[4]

b) Discuss the law's of Thermodynamics.

5. a) Describe the types and functions of lipids. 6

OR

b) Give an account of the sturcuture of nitrogenous bases of a DNA molecules.

6. a) Write about the nuclear pore complex.

OR

b) Give the principles of facilitated transport.

7. a) Explain the Advantages and disadvantages of cell cycle regulation. 6

OR

b) Give the sturcture and function of Cytoskeleton.

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Answer *all* questions

Part-I

1. Answer the following : 1 × 8

- a) Name a single stranded RNA viruses.
- b) What are the reserve food materials in *Algae*.
- c) Name the tallest Bryophy in the world.
- d) Which is commonly known as living fossil.
- e) The bacterial nucleus calles as _____.
- f) Discovery of Penicillin was based on _____.
- g) Male gometophyte of *Selaginella* is found within the _____.
- h) *Pinus* embryo contains _____ number of Cotyledons.

Part-II

2. Answer any *eight* of the following : 1½ × 8
- a) Name three symbiotic bacteria.
 - b) Write the meaning of latent stage.
 - c) Name three edible fungi.
 - d) Define Hologamy.
 - e) Define Actinostele.
 - f) Write about the sporoginious tissue in Moss.
 - g) Ovuliferous scales of Pinus.
 - h) Describe transfusion tissues.
 - i) How and who discovered the Virus.
 - j) Name three algae used in food industry.

Part-III

3. Answer any *eight* of the following : 2 × 8
- a) Differentiate the parts at Bacteriophage.
 - b) Write about the Gram-Negative bacteria.

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- c) How sexual reproduction of Lichen occur ?
- d) Write the composition of cell wall composition of *fungi*.
- e) Ennumerate the sorus of *Pterus*.
- f) Write about the megasporophyll of *cycas*.
- g) Write notes on Coralloid roots.
- h) Give an account of thallus structure of *Riccia*.
- i) What is stellar evolution.
- j) Anatomical features of *Pinus* needle.

Part-IV

4. a) Discuss the different processes of genetic recombination in bacteria. 6

OR

- b) Describe the sturcture and process of infection of TMV.

[4]

5. a) Give an account of morphology and life cycle of *Polysiphonia*. 6

OR

- b) Discuss the ecological significance of the order Zygomycota.

6. a) Give the general identifying characters and classification of Pteridophytes. 6

OR

- b) Discuss the range of thallus organisation in Bryophytes.

7. a) Describe the morphology and life cycle of *Gnetum*. 6

OR

- b) Discuss the ecological and economical importance of Gymnosperms.

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Answer *all* questions

Part-I

1. Answer the following : 1 × 8

- a) Bacteriophage consist of _____.
- b) "Crown gall" disease in plants is caused by _____.
- c) Name the type of sexual reproduction found in *volvox*.
- d) Name the photosynthetic pigment present in *Vaucheria*.
- e) Give the name of Virus group causing AIDs.
- f) The cell wall of bacteria consist of _____.
- g) Cell wall of chlorophyceae is made up of _____.
- h) What is the reserve food materials in *Polysiphonia*.

[Turn Over

Part-II

2. Answer any *eight* of the following :

$1\frac{1}{2} \times 8$

- a) Define Prions.
- b) What is lytic cycle.
- c) Name three useful Bacteria.
- d) What is a Mesospore.
- e) Write the names of reserve food materials in *Algae*.
- f) Digramatically represent the cell structure of Chlorophyta.
- g) Describe the life cycle of *Chara*.
- h) Write the significance of Rhodophyta.
- i) Define Oogamous.
- j) What is a aplanospore.

Part-III

3. Answer any *eight* of the following :

2×8

- a) What are viroids.
- b) Describe pathogenesis.

- c) What is a root nodules.
- d) Give the cell structure of cyanobacteria.
- e) Write the structure of flagella.
- f) Describe the life cycle of *chlamydomonas*.
- g) Write the general characters of Xanthopolyter.
- h) Diagramatically represent the cell structure of *Fucus*.
- i) Elaborate the physicochemical properties of virus.
- j) Briefly describe about mycoplasma.

Part-IV

4. a) Discuss the economic importance of virus with reference to a vaccine production. 6

OR

- b) Define microbes. Give a detail account of Microbial nutrition and growth.

[4]

5. a) Give an detail account of genetic recombination in bacteria. 6

OR

- b) Discuss the evolutionary significance of *prochloron*.

6. a) Describe the role of algae in agriculture and industry with examples. 6

OR

- b) Write the morphology and life cycle at *Oedogonium*.

7. a) Discuss the cell structure, morphology and life cycle of *Ectocarpus*. 6

OR

- b) Give the detail account of the Morphology and Evolutionary significance of chlorophyta.

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Answer *all* questions

Part-I

1. Answer the following : 1 × 8
- a) Iodine is obtained from _____.
 - b) Who discovered heterothallism in fungi _____.
 - c) The main plants of Bryophytes are _____.
 - d) Pteridophytes are commonly known as _____.
 - e) Name the organism which is an exception to the cell theory.
 - f) *Rhizopus* is commonly known by the name _____.
 - g) Give the common name of *funaria*.
 - h) Give the type of seed germination found in *Pinus*.

[2]

Part-II

2. Answer any *eight* of the following : 1½ × 8
- a) Write the function of receptor site.
 - b) What is a virion.
 - c) Write about endomycorrhiza.
 - d) Explain dikaryotic hyphae.
 - e) Explain apogamy.
 - f) Diagram of *Riccia* thallus.
 - g) Write the definition of dictyostele.
 - h) Give the function of a sporophylls.
 - i) Explain Algal zone.
 - j) What is Mycorrhiza.

Part-III

3. Answer any *eight* of the following : 2 × 8
- a) Write notes on Heterocyst.
 - b) Justify RNA as genetic material.
 - c) Briefly discuss about the Gill of *Agaricus*.

[3]

- d) Write notes on VAM.
- e) Write the economic importance of *Sphagnum*.
- f) Describe the gemma cup of *Marchentia*.
- g) Differentiate between archegonium of Fern and Moss.
- h) What is Heterospory.
- i) Write about the polyembryony in *Pinus*.
- j) Write notes on transfusion tissue.

Part-IV

4. Give a detail account of genetic recombination in bacteria. 6

OR

Describe the general characters and economic importance of Algae.

5. Enumerate the reproduction and economic importance of Lichens. 6

OR

Discuss different types of reproduction in fungi.

[4]

6. Write about the unifying characters of *Archigoniates*. 6

OR

Explain what you understand by alternation of generations.

7. Justify why selaginella is not considered as a seed plant. 6

OR

Describe the life cycle of *cycas* with labelled diagrams.

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Give labelled diagrams wherever necessary.

Part-I

1. Answer the following by fill in the blanks or one sentence answer : 1 × 8
- a) Give the name of nitrogen fixing bacteria.
 - b) Bacterial cell wall is chemically composed of ____.
 - c) Heterocyst present in ____.
 - d) Fruit body of Agaricus is called as ____.
 - e) Elaters helps in ____.
 - f) Mention the systematic position of the Selaginella up to family.
 - g) Coraloid root is found in ____.
 - h) Polyembryony condition is found in the embryo development of ____.

Part-II

2. Answer any *eight* of the following : $1\frac{1}{2} \times 8$
- a) Mention the chemical nature of Virus.
 - b) Define endospore.
 - c) Diagrammatic representation of T phage.
 - d) Thallus structure of Vauheria.
 - e) Conidiophore of Penicillium.
 - f) Structure of fruticose lichen.
 - g) Antherdiophore.
 - h) What do you mean by heterospory ?
 - i) Megasporophyll of cycas.
 - j) Mention the general characters of Gymnosperms.

Part-III

3. Answer any *eight* of the following : 2×8
- a) Explain economic importance of Virus.
 - b) Describe the role of bacteria in agriculture.
 - c) Explain bacterial conjugation.

- d) Structure of a Chlamydomonas cell.
- e) Thallus structure of Fucus.
- f) Sexual reproduction of Rhizopus.
- g) Sporophyte of Marchantia.
- h) Archegoniophore of Funaria.
- i) Anatomical features of coraloid root of Cycas.
- j) Microsporophyll of Pinus.

Part-IV

4. a) Describe the replication process of a DNA Virus with reference to T phage. 6

OR

- b) What do you mean by genetic recombination. Explain the process of genetic recombination found in bacteria.

5. a) Describe the range of thallus organisation in algae. 6

OR

- b) Give an account of morphology and life cycle of Penicillium.

[4]

6. a) Describe the gametophytic phase of reproduction in Funaria. 6

OR

- b) What do you mean by heterospory? How it leads in to seed habit discuss it.

7. a) Give an account of sporophytic phase of reproduction in Cycas. 6

OR

- b) Describe the process of reproduction found in Pinus.

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Answer *all* questions

Give labelled diagrams wherever necessary.

Part-I

1. Answer the following by fill in the blanks or one word answer : 1 × 8

- a) Lock and key hypothesis was proposed by ____.
- b) The change in heat energy is called ____.
- c) The nucleotide absent in DNA is ____.
- d) Name of chemical bond present in the protein.
- e) The longest period of the cell cycle is ____.
- f) Chiasmata occurs in _____ substage of Prophase-I.
- g) Chlorophyll molecules are present in the ____ of Chloroplast.
- h) Mitochondria is called ____ of the cell.

Part-II

2. Answer any *eight* of the following : $1\frac{1}{2} \times 8$
- a) Write two significant features of buffers.
 - b) Write two important features of first law of thermodynamics.
 - c) What is holoenzyme ? Write the components of a holoenzyme.
 - d) Define reducing sugar.
 - e) What is Chargaff's rule ?
 - f) Incipient nucleus.
 - g) What are the essential features of S-Phase ?
 - h) Diagrammatic representation of Chloroplast.
 - i) Why lysosome is called as the suicidal bag of the cell.
 - j) Write the important functions of the peroxisome.

Part-III

3. Answer any *eight* of the following : 2×8
- a) Explain ionic bonds.
 - b) Exergonic reactions.

[3]

- c) Biological role of enzymes.
- d) Explain important features of disaccharides with examples.
- e) Write down the significance of meiosis.
- f) Mention the biological roles of protein.
- g) Fluid-mosaic model of plasma membrane.
- h) Explain nuclear pore complex.
- i) Why mitochondria is called as the power house of the cell.
- j) Ribosome.

Part-IV

4. a) What are enzymes? Give an account of nomenclature and classification of enzymes. 6

OR

- b) Give an account of different types of chemical bond.

[4]

5. a) What are proteins ? Describe the different structures of proteins. 6

OR

- b) Give an illustrated account of double helical structures of DNA.

6. a) What is mitosis ? Describe the different stages of mitosis with it's significance. 6

OR

- b) Explain the ultra structure and function of mitochondria.

7. a) Describe the structure and functions of an interphase nucleus. 6

OR

- b) Describe the chemistry, structure and functions of plant cell wall.

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Answer *all* questions

Part-I

1. Fill in the blanks : 1 × 8
- a) Chemoautotrophs use ___ as their energy source.
 - b) Genetic material present in TMV is ___ type.
 - c) Cell wall of bacteria is chemically composed of _____.
 - d) Transformation in bacteria was explained by _____.
 - e) Cyanobacterial cell contains ___ type of pigments.
 - f) Types of reserve food materials present in rhodophycean algae is _____.
 - g) Thallus structures in Vaucheria is ___ type.
 - h) Agar-agar is extracted from _____ algae.

Part-II

2. Answer any *eight* of the following : 1½ × 8
- a) What is Prions ?
 - b) What is endospore ?
 - c) Chemical nature of Virus.
 - d) What is bacterial transduction ?
 - e) Name the bacteria used as bio-pesticides.
 - f) Thallus structure of Coleochaete.
 - g) What do you mean by coenobium ?
 - h) Diagrammatic representation of life-cycle of polysiphonia.
 - i) What do you mean by archaebacteria ?
 - j) Economic importance of Nostoc.

Part-III

3. Write short notes on any *eight* of the following : 2 × 8
- a) Photoautotropism
 - b) Viroids
 - c) Structure of TMV
 - d) Bacterial conjugation

- e) Role of Bacteria in vaccine production
- f) Role of algae in industrial use
- g) Cell structures of Chara
- h) Structures of conceptacle
- i) Plurilocular sporangia
- j) Autotrophic nature of algae.

Part-IV

4. a) Describe the structure and multiplication of T_4 bacteriophage. 6

OR

- b) Discuss the Baltimore's system of virus classification.

5. a) Describe the mechanism of genetic recombination in bacteria. 6

OR

- b) Describe the ultra-structure of a bacterial cell.

6. a) Give a note on various economic use of algae. 6

OR

- b) Describe the cell structure and life-cycles of Chlamydomonas.

7. a) Describe the morphology and life cycle of Vaucheria. 6

OR

- b) Describe the thallus structure and life cycle of Ectocarpus.

2021

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Answer *all* questions

Part-I

1. Answer the following in a word or in a sentence each :

1 × 5

ନିମ୍ନୋକ୍ତ ଗୁଡ଼ିକର ଉତ୍ତର ଗୋଟିଏ ଶବ୍ଦରେ ଅଥବା ଗୋଟିଏ ବାକ୍ୟରେ ପ୍ରଦାନ କର :

- a) Define social progress.

ସାମାଜିକ ପ୍ରଗତିର ସଂଜ୍ଞା ନିରୂପଣ କର ।

- b) Define gender justice.

ଲିଂଗଗତ ନ୍ୟାୟର ସଂଜ୍ଞା ନିରୂପଣ କର ।

- c) What do you mean by 'honour killing' ?

ସମ୍ମାନଜନକ ମରଣର ଅର୍ଥ କ'ଣ ?

- d) What does STEM stands for ?

ଏସ୍.ଟି.ଇ.ଏମ୍.ର ପୂରାନାମ କ'ଣ ?

- e) How forced marriage is forbidden in the Quran ?

'କୂରାନ'ରେ ବଳପୂର୍ବକ ବିବାହକୁ କିପରି ନିଷେଧ କରାଯାଇଛି ?

Part-II

2. Answer any *five* of the following within 50 words each :

ନିମ୍ନୋକ୍ତ ଯେ କୌଣସି ପାଞ୍ଚଟିର ଉତ୍ତର ପ୍ରତ୍ୟେକ ୫୦ ଶବ୍ଦ ମଧ୍ୟରେ ପ୍ରଦାନ କର :

2 × 5

- a) What does PCPNDT Act aim at ?
ପ୍ରାକ୍ ଗର୍ଭଧାନ ଓ ପ୍ରାକ୍ ପ୍ରସବ ନିବାରଣ ଡକ୍ଟିନ (ପ୍ରା.ଗ.ପ୍ରା ପ୍ର.ନି.ଡ) ଅଧିନିୟମର ଲକ୍ଷ୍ୟ କ'ଣ ?
- b) Examine the factors that deter women's position in the society.
ସମାଜରେ ନାରୀର ଅବସ୍ଥିତି ବା ଅଧିଷ୍ଠାନକୁ କ୍ଷୁର୍ଣ୍ଣ କରୁଥିବା କାରକଗୁଡ଼ିକୁ ପରୀକ୍ଷା କର ।
- c) What is 'double burden' of women ?
ନାରୀର 'ଦ୍ୱିତୀୟ ବୋଧ' କହିଲେ କ'ଣ ବୁଝ ?
- d) Who become more victimised by child marriage and why ?
ବାଳ୍ୟବିବାହ ଦ୍ୱାରା କିଏ ଅଧିକ ଶିକାର ହୋଇ ବିପତ୍ତିଗ୍ରସ୍ତ ହୋଇଥାଏ ଓ କାହିଁକି ?
- e) Why is gender sensitive language needed ?
ଲିଙ୍ଗ ସଚେତନ ଭାଷାର ଆବଶ୍ୟକତା କାହିଁକି ରହିଛି ?
- f) What is 'MeToo' Movement ? Discuss.
'ମୁଁ ମଧ୍ୟ' ଆନ୍ଦୋଳନ କହିଲେ କ'ଣ ବୁଝ ? ଆଲୋଚନା କର ।

g) Why is women's work not taken into account in the National GDP Account ?

ରାଷ୍ଟ୍ରୀୟ ସମୁଦାୟ ଘରୋଇ ଉତ୍ପାଦ ଖାତାରେ ନାରୀର କାର୍ଯ୍ୟାବଳୀକୁ କାହିଁକି ନିଆଯାଏ ନାହିଁ ?

h) Elaborate how gender equality can ensure social progress.

ଲିଙ୍ଗଗତ ସାମ୍ୟ ସମାଜିକ ପ୍ରଗତିକୁ କିପରି ସୁନିଶ୍ଚିତ କରିଥାଏ ବ୍ୟାଖ୍ୟା କର ।

Part-III

Answer the following within 250 words each

ନିମ୍ନୋକ୍ତ ଉତ୍ତର ପ୍ରତ୍ୟେକ ୨୫୦ ଶବ୍ଦ ମଧ୍ୟରେ ପ୍ରଦାନ କର

3. a) "Dowry is a potential sin under the guise of virtue"—Justify. 5

“ଦୈତୁକ ପ୍ରଥା ପୁଣ୍ୟର ପ୍ରଚ୍ଛଦ ତଳେ ଏକ ସଂଭାବିତ ପାପକ୍ରିୟା ମାତ୍ର”— ଏ ଉକ୍ତିର ଯଥାର୍ଥତା ପ୍ରତିପାଦନ କର ।

OR

b) Differentiate between Visible and Invisible work with examples.

ସଦୃଶ୍ୟତ ଦୃଶ୍ୟମାନ (ପ୍ରତ୍ୟକ୍ଷ) ଓ ଅଦୃଶ୍ୟମାନ (ଅପ୍ରତ୍ୟକ୍ଷ) କାର୍ଯ୍ୟମଧ୍ୟରେ ପ୍ରଭେଦ ଦର୍ଶାଅ ।

4. a) What is Role Conflict ? Explain.
ଭୂମିକା ପାଇଁ ସଂଘର୍ଷ କହିଲେ କ'ଣ ? ବୁଝାଅ ।

OR

- b) What is FGM ? Justify how it is a barbaric Practice.

ଏଫ୍.ଜି.ଏମ୍. କ'ଣ ? ଏହା କିପରି ଭାବରେ ଏକ ଅମାନୁଷିକ କାର୍ଯ୍ୟ ବୁଝାଅ ।