[This question paper contains 4 printed pages.]

(20) Your Roll No. 2019

Sr. No. of Question Paper : 7382 **J**

Unique Paper Code : 32161102 – OC

Name of the Paper : Biomolecules and Cell Biology

Name of the Course : **B.Sc. (H) 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** questions carry equal marks.
3. Question No. **1** is compulsory.
4. Attempt **five** questions in all including Question No. **1.**

1. (a) Define the following **(any five)** : (1×5=5)

(i) Buffer

(ii) Hydrophobic interactions

(iii) Glycosylation

P.T.O.

(iv) Activation energy

(v) Ketose

(vi) Kinetochore

(b) Expand the following **(any five)** : (1×5=5)

(i) MTOC

(ii) CGN

(iii) MPF

(iv) SER

(v) SnoRNA

(vi) NOR

(c) Match the following : (1×5=5)

(i) Emil Fischer	(a) Structure of insulin
(ii) Carl Benda	(b) Lysosomes
(iii) Frederick Sanger	(c) Endosymbiotic hypothesis
(iv) Christian de Duve	(d) Mitochondria
(v) Lynn Margulis	(e) Lock and Key model

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

(i) Semiautonomous organelles

(ii) Triglycerides

(iii) GERL complex

(iv) Double helical structure of DNA

3. (a) Describe the relationship between nucleolar organizing region of chromosome and biogenesis of rRNA. (5)

(b) Discuss the role of carrier proteins in membrane transport. (5)

(c) Give a brief account on storage polysaccharides. (5)

4. Differentiate between the following **(any five)** : (3×5=15)

(i) Active and passive transport

(ii) Mitosis and Meiosis

(iii) Primary and secondary cell wall

(iv) Endergonic and exergonic reactions

(v) Competitive and non-competitive enzyme inhibition

(vi) Peptide and glycosidic bonds

5. Comment on the following **(any three)** : (5×3=15)

(i) Cell secretion by Golgi Apparatus

(ii) Types of protein structure

(iii) Coated vesicles

(iv) Fluidity of plasma membrane

(v) Allosteric enzymes

6. (a) What is cell cycle? Discuss the role of check points in regulation of cell cycle with the help of suitable diagram. (7)

(b) Lysosomes are known as suicidal bags. Comment. (3)

(c) What properties of water makes it the most significant biomolecule? (5)

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(21) Your Roll No..2019..

Sr. No. of Question Paper : 8589 **J**

Unique Paper Code : 32161101

Name of the Paper : MICROBIOLOGY AND PHYCOLOGY

Name of the Course : **B.Sc. (Hons.) BOTANY** (Admission 2019 onwards)

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 six questions.
5. **All** questions carry equal marks.
6. Attempt any **FIVE** questions, including Question No. **1,** which is compulsory.

P.T.O.

1. **This Question is COMPULSORY.**

(a) Fill in the blanks : (1×5=5)

(i) _____ coined the term 'Algae'.

(ii) Rust of Tea is caused by _____ .

(iii) A colony with a definite number and arrangement of cells is called _____ .

(iv) The principle component of bacterial cell wall is _____ .

(v) Smallest known infectious agents that lack protein coat are called _____ .

(b) Briefly explain the following terms : (2×5=10)

(i) Clump formation

(ii) Cystocarp

(iii) Synzoospore

(iv) Air bladders

(v) Fimbriae

2. Differentiate between any **THREE** of the following : (5×3=15)

(a) Unilocular sporangium & plurilocular sporangium

(b) Gongrosira stage & palmella stage

(c) Phaeophyta & rhodophyta

(d) Gram positive bacteria & gram negative bacteria

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

(a) Lytic cycle

(b) *Chara* - L.S. globule

(c) *Chlamydomonas* - E.M.

(d) *Polysiphonia* - Thallus bearing Cystocarp

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

(a) Structure of TMV

(b) Morphology of *Fucus*

(c) Sexual reproduction in *vaucheria*

(d) Cell division in *Oedogonium*

5. Discuss **any three** of the following : (5×3=15)

(a) Unusual habitats of Algae

(b) Industrial products from Algae

(c) Bacterial growth curve

(d) Symptoms & control measures of any two plant viral diseases

6. Explain **any three** of the following : (5×3=15)

(a) Thallus organization in coleochaete

(b) Vegetative reproduction in BGA

(c) Binary fission in bacteria

(d) Importance of viruses in the field of medicine

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Your Roll No. : 2019

Sl. No. of Q. Paper : **8609** **J**

Unique Paper Code : 32161102

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

Name of the Paper : Biomolecules and cell Biology

Semester : I

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt any **five** questions in all, including Question No. **1** which is compulsory.

(c) **All** parts of a question must be attempted together.

1. (a) Define (any **five**) : 1×5=5

(i) Buffers

(ii) Peptide bond

(iii) Prosthetic group

(iv) Isoelectric point

P.T.O.

(v) Free energy

(vi) Nuclear lamina

(b) Give structures of the following (any **five**) : 1×5=5

(i) Lactose

(ii) Cellulose

(iii) Amino acid with positively charged R group

(iv) Adenine

(v) Sterol

(vi) Isoprene

(c) Match the following : 1×5=5

(i) Acid Phosphatase	(a) Lipid synthesis
(ii) Ribosome	(b) Lysosome
(iii) Beta Sheet	(c) Carrier protein
(iv) SER	(d) Nucleolus
(v) Facilitated transport	(e) Silk Protein

2. Differentiate between the following (any **five**) : 3×5=15

(i) Globular and Fibrous protein

(ii) Euchromatin and Heterochromatin

(iii) Primary and Secondary cell wall

(iv) Endergonic and Exergonic reactions

(v) Competitive and Non competitive inhibition

(vi) B and Z DNA

3. Write short notes on (any **three**) : 3×5=15

(i) Nuclear pore complex

(ii) Regulation of cell cycle

(iii) tRNA

(iv) Water as a universal solvent

4. Draw well labelled diagrams (any **three**) : 3×5=15

(i) Ultrastructure of mitochondria

(ii) Ultrastructure of primary cell wall

(iii) Metaphase II stage of meiosis

(iv) Fluid mosaic model

5. (a) Discuss the role of endoplasmic reticulum in folding, processing and quality control of protein. 10

(b) Name a marker enzyme for the following organelles : 5

(i) Inner mitochondrial membrane

(ii) Lysosome

(iii) Peroxisomes

(iv) Golgi bodies

(v) Chloroplast stroma

6. (a) Define activation energy. Explain mechanism of enzyme action with the help of various theories. 8

(b) Give structure and function of lysosomes. 7