

2020

BOTANY (Honours)

Paper Code : VIII - A & B

(New Syllabus)

Full Marks : 80

Time : Four Hours

**Important Instructions
for Multiple Choice Question (MCQ)**

- Write Subject Name and Code, Registration number, Session and Roll number in the space provided on the Answer Script.

Example : Such as for Paper III-A (MCQ) and III-B (Descriptive).

Subject Code :

III	A	&	B
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Subject Name :

- Candidates are required to attempt all questions (MCQ). Below each question, four alternatives are given [i.e. (A), (B), (C), (D)]. Only one of these alternatives is 'CORRECT' answer. The candidate has to write the Correct Alternative [i.e. (A)/(B)/(C)/(D)] against each Question No. in the Answer Script.

Example — If alternative A of 1 is correct, then write :

1. — A

- There is no negative marking for wrong answer.

মাল্টিপল চয়েস প্রশ্নের (MCQ) জন্য জরুরী নির্দেশাবলী

- উত্তরপত্রে নির্দেশিত স্থানে বিষয়ের (Subject) নাম এবং কোড, রেজিস্ট্রেশন নম্বর, সেশন এবং রোল নম্বর লিখতে হবে।

উদাহরণ — যেমন Paper III-A (MCQ) এবং III-B (Descriptive)।

Subject Code :

III	A	&	B
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Subject Name :

- পরীক্ষার্থীদের সবগুলি প্রশ্নের (MCQ) উত্তর দিতে হবে। প্রতিটি প্রশ্নে চারটি করে সম্ভাব্য উত্তর, যথাক্রমে (A), (B), (C) এবং (D) করে দেওয়া আছে। পরীক্ষার্থীকে তার উত্তরের স্বপক্ষে (A) / (B) / (C) / (D) সঠিক বিকল্পটিকে প্রশ্ন নম্বর উল্লেখসহ উত্তরপত্রে লিখতে হবে।

উদাহরণ — যদি 1 নম্বর প্রশ্নের সঠিক উত্তর A হয় তবে লিখতে হবে :

1. – A

- ভুল উত্তরের জন্য কোন নেগেটিভ মার্কিং নেই।

Paper Code : VIII - A

Full Marks : 16

Time : Thirty Minutes

Choose the correct answer.
Each question carries 1 mark.

1. Kreb's cycle takes place in —
 - (A) Golgi Bodies
 - (B) Ribosomes
 - (C) Mitochondria
 - (D) Endoplasmic Reticulum

2. Space between cell wall and plasma membrane in a plasmolysed cell is occupied by —
 - (A) Pure water
 - (B) Air
 - (C) Cell Sap
 - (D) Plasmolysing solution

3. Which of the following protein in the photosynthetic electron transport chain is not a transmembrane protein?
 - (A) ATP synthase
 - (B) LHC
 - (C) PS-II
 - (D) Ferredoxin

4. Instrument used for measuring the transpiration rate —
 - (A) Photometer
 - (B) Phytometer
 - (C) Pinometer
 - (D) Potometer

5. The movement of molecules across a cell membrane which requires cellular energy —
 - (A) Passive transport
 - (B) Active Transport
 - (C) Diffusion
 - (D) Osmosis

Turn Over

6. The primary CO_2 acceptor in CAM plants during night is —
- (A) RUBP
 - (B) PEP
 - (C) OAA
 - (D) Ferredoxin A
7. One of the following is a synthetic auxin
- (A) GA-3
 - (B) BAP
 - (C) 2, 4-D
 - (D) IAA
8. When a short day plant (SD) and a long day plant (LD) are exposed to a short flash of red light in the middle of the dark period, then
- (A) Both SD and LD plants will flower
 - (B) Both SD and Plants will remain vegetative
 - (C) SD plants will remain vegetative and LD plants will flower
 - (D) SD plant will flower and LD plant will remain vegetative
9. Which one is an essential Fatty acid ?
- (A) Palmitic acid
 - (B) Butyric acid
 - (C) Lenolinic acid
 - (D) Acetic acid
10. The high solubility of amino acids in water is due to —
- (A) The Presence of side chains
 - (B) Dipolar ion structure
 - (C) Unipolarity
 - (D) Hydrophilic nature of amino group
11. The Fluid—Mosaic Membrane Model of membrane structure was proposed by —
- (A) Michaelis-Menten
 - (B) Watson and Crick
 - (C) Singer and Nicolson
 - (D) Emil Fischer

Turn Over

12. Which of the following forms of G-protein is considered to be in the active state?
- (A) G-protein-ADP
 - (B) G-protein-ATP
 - (C) G-protein-GDP
 - (D) G-protein-GTP
13. Regulation of an enzyme by binding an effector molecule at a site other than the enzyme's active site is known as —
- (A) Allosteric regulation
 - (B) Feed Back Regulation
 - (C) Competitive Inhibition
 - (D) Non competitive inhibition
14. Enzyme that catalyzes the conversion of an aldose sugar to a ketose sugar, belongs to which class of Enzymes?
- (A) Oxidoreductases
 - (B) Transferases
 - (C) Isomerases
 - (D) Hydrolases
15. An Example of steroid obtained from dried rhizome is —
- (A) Catechin
 - (B) Diosgenin
 - (C) Digitoxin
 - (D) Reserpine
16. Quinine is produced from the barks of —
- (A) *Tecoma*
 - (B) *Shorea*
 - (C) *Tectona*
 - (D) *Cinchona*
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Turn Over

2020

BOTANY (Honours)

Paper Code : VIII - B

(New Syllabus)

Full Marks : 64

Time : Three Hours Thirty Minutes

Group - A

1. Answer any *three* from the following questions : 4×3=12
- i. What are the silent features of cohesion-tension theory of ascent of sap in higher plants ?
 - ii. Briefly discuss the role of K⁺ ions in the opening and closing of stomata in plants.
 - iii. Describe the role of Phytochrome in Circadian rhythm.
 - iv. Briefly discuss the role of Gibberellins in seed germination.
 - v. Distinguish between C4 and CAM pathways operating in plants.
 - vi. Write a brief note on amino acid biosynthesis through ammonia assimilation in plants via GS/GOGAT system.
2. Answer any *two* from the following questions : 10×2=20
- i. Describe briefly the process of oxidation of Pyruvate *via* Tricarboxylic Acid (TCA) Cycle. What is the significance of this cycle? 8+2
 - ii. Differentiate between source and sink. What are the compositions of phloem sap? Describe the process of phloem loading and unloading with the help of a suitable diagram. 2+2+6
 - iii. Name one gaseous plant hormone and mention its role in abscission and fruit ripening. Briefly describe the biosynthesis of IAA *via* Tryptophan dependent Indole Pyruvic Acid Pathway and Tryptophan independent pathway. 1+3+3+3
 - iv. Write notes on the following 2½×4=10
 - a. Red drop and Emerson effect
 - b. Difference between Chlorophyll a and Chlorophyll b
 - c. Nod genes
 - d. Methods of breaking seed dormancy

Turn Over

Group - B

3. Answer any *three* from the following questions : 4×3=12
- i. What is an isoelectric point? Differentiate between covalent and hydrogen bonds with examples. 1+3
 - ii. What are Epimers and Anomers ? Give examples. 2+2
 - iii. Differentiate between Uniport, Symport and Antiport mechanisms of membrane transport in plants. 4
 - iv. Deduce the relationship between the standard free energy change ΔG° and the equilibrium constant K_{eq} . 4
 - v. What are quinones? Give examples of at least two naturally occurring quinones. 2+2
 - vi. Write short notes on the following : 2+2
 - a. Alkaloids as drugs
 - b. Terpenoids in plant protection
4. Answer any *two* from the following questions : 10×2=20
- i. Derive the Michaelis-Menten equation for an enzyme catalyzed reaction. What is the significance of K_m ? 8+2
 - ii. Describe the process of β -oxidation of saturated 16-Carbon Fatty Acids in plants. 10
 - iii. Write note on the following : 2½×4
 - a. Essential and non essential amino acids
 - b. Structural Polysaccharides
 - c. Henderson-Hasselbalch equation
 - d. Ramachandran Plot
 - iv. Describe the source, parts used, chemical nature and uses of the following : 5×2=10
 - a. Catechin
 - b. Digitoxin
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