

2020

BOTANY (Honours)

Paper Code : VII - 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 :

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- 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 : VII - A

Full Marks : 16

Time : Thirty Minutes

Choose the correct answer.
Each question carries 1 mark.

1. ATP synthase is located in —
 - (A) Mitochondrial matrix
 - (B) Inner mitochondrial membrane
 - (C) Outer mitochondrial membrane
 - (D) Peri mitochondrial space
2. The diagrammatic representation of karyotype of a species is termed as —
 - (A) Idiogram
 - (B) Cladogram
 - (C) Dendrogram
 - (D) Chromogram
3. Chromatin is a macromolecular complex predominantly comprising of —
 - (A) DNA
 - (B) DNA and histone proteins
 - (C) DNA, histone proteins and RNA
 - (D) DNA and RNA
4. Keratin in epithelial cell represents —
 - (A) Intermediate filament
 - (B) Actin filament
 - (C) Myosin filament
 - (D) All of the above
5. Which of the following disease is sex - linked?
 - (A) Pneumonia
 - (B) Sickle all anemia
 - (C) Malignancy
 - (D) Colour blindness

Turn Over

6. The ends of the telomere are replicated everytime by —
- (A) Nuclease
 - (B) Telomerase
 - (C) Ribozyme
 - (D) Polymerase
7. Based on Mendelian law of inheritance, which one is odd?
- (A) Round seed
 - (B) Green seed
 - (C) Green pod
 - (D) Purple flower
8. The process of matching of individuals, which are more closely related than the average of the population to which they belong is called —
- (A) Hybridisation
 - (B) Inbreeding
 - (C) Heterosis
 - (D) All of the above
9. When a certain character is inherited only through female parent it probably represents —
- (A) Chromosomal inheritance
 - (B) Cytoplasmic inheritance
 - (C) Incomplete dominance
 - (D) Mendelian inheritance
10. A family of two sons is expecting third issue. The chance of it to be a daughter is —
- (A) Zero
 - (B) 25%
 - (C) 50%
 - (D) 100%
11. In which stage of meiosis, separation of paired homologous chromosome starts?
- (A) Pachytene
 - (B) Diplotene
 - (C) Zygotene
 - (D) Diakinesis

Turn Over

12. If 'bb' mates with 'Bb', what will be the characteristics of offspring?
- (A) All recessive
 - (B) 25% recessive
 - (C) 50% recessive
 - (D) All dominant
13. Heterosis is —
- (A) Appearance of spontaneous mutation
 - (B) Induction of mutations
 - (C) Superiority of hybrids over their parents
 - (D) Mixture of two or more desirable traits
14. Exchange of chromosomal segment between two-non-homologous chromosomes is called —
- (A) Crossing over
 - (B) Bivalent
 - (C) Transition
 - (D) Translocation
15. Median of the set of numbers :
- 22, 4, 8, 17, 19, 31, 46, 20 and 43
- (A) 19
 - (B) 20
 - (C) 210
 - (D) 23.3
16. The _____ checkpoint is also known as the restriction point (R) in mammalian cells cycle —
- (A) G1
 - (B) G2
 - (C) M
 - (D) None of the above
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Turn Over

2020
 BOTANY (Honours)
 Paper Code : VII - B
 (New Syllabus)

Full Marks : 64

Time : Three Hours Thirty Minutes

The figures in the margin indicate full marks.

Group - A

1. Answer briefly any *three* of the following questions : 4×3=12
 - (i) Distinguish between constitutive and facultative heterochromatin. 2+2=4
 - (ii) Mention the different phases of cell cycle. What is MPF? How does it affect cell cycle? 1+1+2
 - (iii) Describe the Nuclear pore complex with suitable diagram. 2+2
 - (iv) Write a concise account on mitochondrial DNA (mt-DNA) 4
 - (v) Write a short note on lamp brush chromosome. 4

2. Answer any *two* of the following questions : 10×2=20
 - (i) Write an account on ultra structure and function of endoplasmic reticulum, mentioning the differences between RER and SER. 4+4+2=10
 - (ii) What are the different kinds of aneuploids? Explain with an example how amphidiploids are formed. What are the meiotic pairing possibilities in an autotetraploid and a segmental allopolyploid? 2+5+3=10
 - (iii) What are microtubules made of? State their role in cell division. Briefly describe the process of apoptosis. 2+3+5=10
 - (iv) (a) Describe the nucleosomal core structure with labelled sketches.
 - (b) Enumerate the ultra structure and functions of Golgibodies with a suitable diagram. 4+(2+2+2)=10

Group - B

3. Answer briefly any *three* of the following questions : 4×3=12
 - (i) Distinguish between co-dominance and incomplete dominance.
 - (ii) Write a short note on polygenic inheritance.

Turn Over

- (iii) Discuss the reasons of success of Mendel in formulating the laws of inheritance.
- (iv) Distinguish between complete and incomplete linkage. What is coefficient of coincidence ? 2+2
- (v) Write down the functions of rec A and rec B proteins in genetic recombination. 4

4. Answer any *two* of the following questions : 10×2=20

- (i) State Hardy-Weinberg principle. Mention the Hardy-Weinberg equation in relation to allele and gene frequency. What are the assumptions for this principle?

3+3+4=10

- (ii) (a) A sample of 20 plants from a population was measured in inches as follows —
18, 20, 23, 21, 20, 21, 22, 20, 19, 20, 17, 21, 20, 22, 20, 21, 20, 22, 19 and 23. Calculate the mean, standard deviation and standard error.

- (b) What is Null hypothesis?

- (c) What is the significance of chi-square test? (2+2+2)+2+2=10

- (iii) (a) What is pure line selection? 2

- (b) Discuss the overdominance hypothesis of heterosis. 4

- (c) Write an account on cytoplasmic male sterility. 4

- (iv) (a) Illustrate the concept of multiple allelism citing a suitable example.

- (b) Describe the split gene concept with diagram. 6+4=10
