

2021

ZOOLOGY (Honours)

Paper Code : XII - A & B

[New Syllabus]

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 : XII - A

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Each question carries 1 mark.

1. Which subunit of DNA polymerase III has polymerase activity?
 - (A) β subunit
 - (B) α subunit
 - (C) γ subunit
 - (D) ϵ subunit
2. Which enzyme is responsible for photoreactivation of DNA?
 - (A) Photoligase
 - (B) Photoreductase
 - (C) Photo-oxidase
 - (D) Photolyase
3. DNA glycosylase is an enzyme involved in base excision repair. The function is —
 - (A) to add correct base
 - (B) to add correct nucleotide
 - (C) to remove incorrect base
 - (D) to break phosphodiester bond
4. How many possible transversion and transition are possible?
 - (A) 4 and 6
 - (B) 4 and 8
 - (C) 8 and 4
 - (D) 6 and 4

5. Cancer of the mesodermal connective tissue is known as —
- (A) Carcinoma
 - (B) Lymphoma
 - (C) Blastoma
 - (D) Sarcoma
6. Choose the *incorrect* statement about restriction endonuclease —
- (A) Restriction endonucleases have both endonuclease and methylase activity.
 - (B) They have specific recognition sequences where they cleave both DNA strands.
 - (C) They are restricted to foreign DNA only and the recognition sequences are in most cases palindromic.
 - (D) The length of the DNA fragments depends upon the type of restriction endonuclease.
7. How many DNA duplex is obtained from one DNA duplex after 4 cycles of PCR?
- (A) 4
 - (B) 8
 - (C) 16
 - (D) 32
8. What type of vector can clone a gene of more than 100 kb long?
- (A) Cosmid
 - (B) YAC
 - (C) Plasmid
 - (D) Phagemid

9. Which of the following technique(s) is/are performed to study gene expression?
- (A) Northern blotting
 - (B) DNA microarray
 - (C) RT-PCR
 - (D) All of the above
10. During which stage of wastewater treatment methanogenic microbes are most important?
- (A) Primary treatment
 - (B) Secondary treatment
 - (C) Sludge digestion
 - (D) Disinfection
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P - III (1+1+1) H / 21 (N)

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ZOOLOGY (Honours)

Paper Code : XII - B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

The figures in the margin indicate full marks.

Write your answer maximum within one page for the questions carrying 4 marks each and maximum within three pages for the questions carrying 12 marks each.

Unit - 1

(Molecular Biology)

1. Answer any *two* questions : 4×2=8
 - (a) Classify proto-oncogene on the basis of their functions.
 - (b) Give an account on apoptosis.
 - (c) Briefly describe the secondary structure tRNA.
 - (d) Sickle cell anaemia is the result of point mutation — justify it.

2. Answer any *one* question : 12×1=12
 - (a) Discuss the role of UV radiation, 5BU and Nitrous acid in inducing point mutation. 4+4+4=12

 - (b) What are Shine-Dalgarno sequence and Kozak sequence? Describe how DNA replication is initiated in bacteria. What is Wobble pairing? How the ends of linear DNA are replicated in eukaryotic DNA? 2+4+2+4=12

- (c) What is photo-reactivation? Describe briefly the process of base excision repair mechanism and nucleotide excision repair mechanism. $2+5+5=12$

Unit - 2
(Biotechnology)

3. Answer any *two* questions : $4 \times 2 = 8$

- (a) Write a note on cryopreservation.
- (b) What do you mean by primary and secondary cell culture?
- (c) Give an account of gene therapy.
- (d) Write a note on application of DNA microarray in medical diagnosis.

4. Answer any *one* question : $12 \times 1 = 12$

- (a) Define cloning vector. Point out the criteria of a cloning vector. Distinguish between plasmid and cosmid cloning vector. Describe the procedure of gene cloning using YAC. $2+2+2+6=12$
 - (b) Describe any one DNA sequencing method studied by you with its merits and demerits. Add a note on Southern blotting. $8+4=12$
 - (c) Define vaccine. State the principle of vaccination. Distinguish between active and passive immunization. Write short notes on attenuated vaccine, inactivated vaccine and nucleic acid vaccine with example. $1+2+3+(2 \times 3)=12$
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