

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - I - 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 : 

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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 : ZHT - I - A**

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Answer *all* the following questions,  
each question carries 1 mark.

1. Prothoracicotropic hormone (PTTH) in insects is released from —
  - (A) Corpora cardiaca
  - (B) Corpora allata
  - (C) Prothoracic glands
  - (D) All of the above
  
2. Which one of the following is unrelated?
  - (A) Sea cucumber
  - (B) Sea star
  - (C) Sea urchin
  - (D) Sea squid
  
3. Aristotle's lantern functions as \_\_\_\_\_ organ.
  - (A) Masticatory
  - (B) Excretory
  - (C) Respiratory
  - (D) Reproductive

4. The infective stage of *Ascaris* is —
- (A) Microfilaria
  - (B) Rhabditiform
  - (C) Redia
  - (D) Cercaria
5. The excretory organ of *Pheretima* consists of —
- (A) Septal nephridia
  - (B) Integumentary nephridia
  - (C) Pharyngeal nephridia
  - (D) All of the above
6. Stomochord found in —
- (A) Insecta
  - (B) Mollusca
  - (C) Echinodermata
  - (D) Hemichordata
7. Which one of the following is the wrongly matched pair?
- (A) Star coral- *Astrea*
  - (B) Brain coral- *Meandrina*
  - (C) Blue coral- *Heliopora*
  - (D) Sea fan- *Pennatula*

8. The sequence of larval forms found in the life cycle of *Fasciola* is —
- (A) Miracidium-sporocyst-redia-cercaria-metacercaria
  - (B) Hexacanth-redia-cercaria-metacercaria
  - (C) Miracidium-cercaria-hexacanth-metacercaria
  - (D) Miracidium-hexacanth-cercaria-redia
9. The trochophore larva is found in —
- (A) Cnidarians and Annelida
  - (B) Annelida and Porifera
  - (C) Annelida and Mollusca
  - (D) Mollusca and Coelenterata
10. Anal cerci are present in —
- (A) Both male and female cockroaches
  - (B) Male cockroach
  - (C) Female cockroach
  - (D) Female *Ascaris*

P - I (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - I - B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

*The figures in the margin indicate full marks.*

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

### Unit - 1

#### (Life and Diversity : Protozoa to Annelida)

1. Answer any *two* questions : 4×2=8
  - (a) Write a note on syconoid type of canal system with a suitable diagram. 2+2=4
  - (b) Write in brief about locomotion in *Euglena* with suitable diagram.
  - (c) Write a short note on regeneration in *Hydra*.
  - (d) Write the structure and function of aboral sense organ of *Hormiphora*.
  
2. Answer any *one* question : 12×1=12
  - (a) Define polymorphism. Describe the phenomenon of polymorphism and its significance in siphonophora. 2+7+3=12
  - (b) Classify phylum Cnidaria up to subclasses with suitable characters and examples. 12
  - (c) Define conjugation. Describe the process of conjugation and its significance in *Paramoecium caudatum* with proper diagram. 2+7+3=12

## Unit - 2

### (Life and Diversity : Arthropoda to Hemichordata)

3. Answer any *two* questions : 4×2=8
- (a) Explain the process of hormonal regulation of insect metamorphosis.
  - (b) Write a note on torsion in Gastropoda.
  - (c) Describe the water vascular system in asteroids with diagram.
  - (d) Describe the parasitic adaptations of *Sacculina*.
4. Answer any *one* question : 12×1=12
- (a) Classify phylum Mollusca up to living subclasses with suitable characters and examples. 12
  - (b) State the phylum whose larval form is bilaterally symmetrical compared to radially symmetrical adult. Give a short account of the different larval forms found in that phylum with diagram. Mention the significance of larval forms found in that phylum. 1+4+4+3=12
  - (c) Briefly describe the feeding mechanism of *Balanoglossus*. Draw and describe the structure of tornaria larva. 6+6=12
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2020

## ZOOLOGY (Honours)

Paper Code : ZHT - II - 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 : ZHT - II - A**

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Answer *all* the following questions,  
each question carries 1 mark.

1. Which one of the following structures is present in all Chordates?
  - (A) Cranium
  - (B) Notochord
  - (C) Spinal cord
  - (D) Vertebral column
  
2. Notochord is restricted to tail region only in —
  - (A) Hemichordata
  - (B) Cephalochordata
  - (C) Urochordata
  - (D) None of these
  
3. Which of the following are Anamniotes?
  - (A) Chondrichthyes, Osteichthyes, Amphibia
  - (B) Reptilia, Aves, Amphibia
  - (C) Amphibia, Aves, Mammals
  - (D) Reptilia, Mammals, Aves
  
4. Preen gland occurs in —
  - (A) Pisces
  - (B) Aves
  - (C) Reptilia
  - (D) Mammalia

5. The larva of Petromyzon is called —
- (A) Ammocoete
  - (B) Planula
  - (C) Tadpole
  - (D) Tornaria
6. The space between incisor and premolar in rodent is called —
- (A) Diastema
  - (B) Trituberculate
  - (C) Metamere
  - (D) Pterylosis
7. Snakes are sensitive to —
- (A) Noises
  - (B) Thunder
  - (C) Air-borne vibrations
  - (D) Earth-borne vibrations
8. The most common mode of flight is —
- (A) Gliding
  - (B) Flipping
  - (C) Hovering
  - (D) Soaring

9. Mammary glands are modified —

- (A) Sebaceous glands
- (B) Sudorific glands
- (C) Cutaneous glands
- (D) None of these

10. Central nervous system in vertebrates is derived from —

- (A) Basal plate
- (B) Blastopore
- (C) Neural plate
- (D) None of these

P - I (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - II - B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

*The figures in the margin indicate full marks.*

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

### Unit - 1

#### (Life and Diversity : Urochordates to Mammals)

1. Answer any *two* questions : 4×2=8
  - (a) Write a short note on Ammocoete larva and its evolutionary significance.
  - (b) Write a note on salient features of Dipnoi.
  - (c) What is uropygial gland? State its function. 2+2=4
  - (d) State the differences between Osteichthyes and Chondrichthyes.
  
2. Answer any *one* question : 12×1=10
  - (a) Describe with suitable diagram respiratory system of *Columba* sp.  
Describe the mechanism of double respiration in *Columba* sp. 6+6=12
  - (b) What is retrogressive and progressive metamorphosis? Describe in detail the retrogressive metamorphosis seen in *Ascidia* sp. 4+8=12
  - (c) Give an account of accessory respiratory organs in fishes with suitable diagram. 12

## Unit - 2

### (Life and Diversity : Comparative anatomy and special features)

3. Answer any *two* questions : 4×2=8
- (a) Write a short note on different types of scales in fish.
  - (b) Distinguish between horn and antlers.
  - (c) What do you mean by Neoteny and Paedogenesis?
  - (d) Write a short note on dentition in mammals.
4. Answer any *one* question : 12×1=12
- (a) Give a comparative account of heart in Amphibia, Reptilia and Mammalia with suitable diagram. 12
  - (b) Draw and describe mammalian hair structure. Write a short note on echolocation of bat. 6+6=12
  - (c) Write short notes on : 6+6=12
    - (i) Integumentary glands of Mammals
    - (ii) Types of feathers in bird
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2020

## ZOOLOGY (Honours)

Paper Code : ZHT - III - A & B

[New Syllabus]

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

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**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 : ZHT - III - A**

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Answer *all* the following questions,  
each question carries 1 mark.

1. Chegu is a name of —
  - (A) Indigenous cow breed
  - (B) Exotic cow breed
  - (C) Indigenous goat breed
  - (D) Exotic goat breed
  
2. Which is *not* a viral disease of poultry?
  - (A) Egg drop syndrome
  - (B) Swollen head syndrome
  - (C) Newcastle disease
  - (D) Necrotic enteritis
  
3. Nosema, a disease of silk moth is caused by —
  - (A) Bacterial infection
  - (B) Parasitic infection
  - (C) Viral infection
  - (D) Fungal infection

4. *Antheraea assamensis* is the scientific name of —

- (A) Muga silk moth
- (B) Eri silk moth
- (C) Tasar silk moth
- (D) Mulberry silk moth

5. An example of *ex-situ* conservation is —

- (A) National Park
- (B) Wild life Sanctuary
- (C) Botanical Garden
- (D) Biosphere Reserve

6. The term biodiversity refers to the —

- (A) Totality of genes of a region
- (B) Totality of species of a region
- (C) Totality of ecosystems of a region
- (D) All of the above

7. In India, the Asiatic Lion is found in —

- (A) Sunderbans
- (B) Gir National Park
- (C) Kaziranga National Park
- (D) Jaldapara National Park

8. The first national park to be established in India is —

- (A) Gir
- (B) Sunderbans
- (C) Nilgiri
- (D) Jim Corbett

9. *Apis dorsata* is called —

- (A) Little bee
- (B) Indian bee
- (C) European bee
- (D) Rock bee

10. Which of the following is an example of homology and similarity tool?

- (A) BLAST
- (B) RasMol
- (C) EMBOSS
- (D) PROSPECT

P - I (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - III - B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

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

### Unit - 1

#### (Applied Zoology)

1. Answer any *two* questions : 2×4=8
  - (a) Write a short note on mango pest.
  - (b) Write a note on fish diseases caused by bacteria.
  - (c) What are mulberry and non-mulberry silk moths? Write about silk gland with diagram. 2+2=4
  - (d) Write a short note on pearl culture?
  
2. Answer any *one* question : 12×1=10
  - (a) What is induced breeding? Describe the process of induced breeding of major carps. 2+10=12
  - (b) Write an essay on integrated pest management. 12
  - (c) Write on the life history, damage and control measures of *Leptocorisa acuta*. 4+4+4=12

## Unit - 2

### (Conservation Biology and Wild life, Biostatistics and Bioinformatics)

3. Answer any *two* questions : 2×4=8
- (a) What do you mean by conservation?
  - (b) Write a short note on sampling.
  - (c) Write a short note on biodiversity hot spot in India.
  - (d) Define variance and standard error. 2+2=4
4. Answer any *one* question : 12×1=12
- (a) Describe the mean, median and mode with their advantages and disadvantages. 4+4+4=12
  - (b) Define wild life. Describe the importance of wildlife. Add a note on cause of wildlife depletion. 2+4+6=12
  - (c) Write an essay on project tiger in India. 12
-

P - II (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - V - A & B

[New Syllabus]

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

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**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 : ZHT - V - A**

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Answer *all* the following questions,  
each question carries 1 mark.

1. Full form of PAS is —
  - (A) Periodine Acid Staining
  - (B) Periodic Acid Staining
  - (C) Periodine Acid Schiff
  - (D) Periodic Acid Schiff
  
2. Haematoxylin is a —
  - (A) Acid stain
  - (B) Basic stain
  - (C) Neutral stain
  - (D) None of these
  
3. Lipids are commonly stained using —
  - (A) Fast green
  - (B) Orange G
  - (C) Sudan stain
  - (D) Acetoalcohol



4. Which is NOT a coagulant fixative?
- (A) Ethanol
  - (B) Mercuric chloride
  - (C) Chromium trioxide
  - (D) Formaldehyde
5. Haversian canals occur in —
- (A) Humerus
  - (B) Pubis
  - (C) Clavicle
  - (D) Scapula
6. The 3-D picture of a specimen is obtained by —
- (A) SEM
  - (B) TEM
  - (C) Compound Microscope
  - (D) Simple Microscope
7. DNA separation by electrophoresis commonly uses —
- (A) Agarose- vertical
  - (B) Agarose-Horizontal
  - (C) PAGE- vertical
  - (D) PAGE- Horizontal

8. Podocytes are present in —
- (A) Ureters
  - (B) Loop of Henle
  - (C) Proximal convoluted tubule
  - (D) Bowman's capsule
9. Lambert-beers law is applied for —
- (A) Electrophoresis
  - (B) Chromatography
  - (C) Colorimetry
  - (D) None of these
10. The ends of actin filaments are anchored with —
- (A) M line
  - (B) Z disc
  - (C) Perimysium
  - (D) Sarcoplasmic reticulum
-

P - II (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - V - B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

*The figures in the margin indicate full marks.*

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

### Unit - 1

#### (Histology and Histochemistry)

1. Answer any *two* questions : 4×2=8
  - (a) Define mordant and fixative. Differentiate between fixative and preservative. 2+2=4
  - (b) State the histological features of mammalian kidney with a labelled diagram.
  - (c) What is direct and indirect detection method used in immunohistochemistry?
  - (d) Briefly illustrate the chemical basis of “Feulgen staining”.
  
2. Answer any *one* question : 12×1=12
  - (a) Write briefly about Chromophoric and Auxophoric group. What do you mean by metachromasia of a dye? Give example. Name the plant source of Hematoxylin. Differentiate between Hematoxylin and Hematein. 2+2+5+1+2=12
  - (b) Point out the histological differences between mammalian thyroid gland and testis. Briefly discuss about the histological and functional aspects of mammalian adrenal gland. (3+3)+(3+3)=12

- (c) Write short notes on : 4×3=12
- (i) PAS reaction
  - (ii) Techniques of immunochemical staining and their applications.
  - (iii) Structure and function of lymph node with diagram.

## Unit - 2

### (Microscopy and Analytical Techniques)

3. Answer any *two* questions : 4×2=8
- (a) Differentiate between TEM and SEM. What is electron gun? 3+1=4
  - (b) State the principle of spectrophotometry. Distinguish between Colorimetry and Spectrophotometry. 2+2=4
  - (c) Write a short note on centrifugation. What is sedimentation coefficient? 3+1=4
  - (d) Give a brief account on the process of Agarose Gel electrophoresis.
4. Answer any *one* question : 12×1=12
- (a) Define  $R_f$  value. What do you mean by stationary and mobile phase of chromatography? Write down the steps involved in TLC. State the advantages of HPLC over TLC. 2+3+4+3=12
  - (b) State the basic principle of “Phase contrast microscopy”. What do you mean by the term ‘Light waves are in Phase’? State the applications of fluorescence microscopy. 4+4+4=12
  - (c) Write a short note on angular aperture. State its relation with numerical aperture. Define resolving power of microscope. Calculate the resolution of a microscope while using blue light ( $\lambda = 450\text{nm}$ ), considering the angular aperture as  $70^\circ$  ( $\sin 70^\circ = 0.94$ ). What will be the resolution of the same microscope if you use immersion oil? 2+2+2+4+2=12

P - II (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - VI - 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 : ZHT - VI - A**

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Answer *all* the following questions,  
each question carries 1 mark.

1. The most abundant lipid in cell membrane is —
  - (A) Phospholipid
  - (B) Steroid
  - (C) Cholesterol
  - (D) Cutin
  
2. Which of the following participate in the formation of spindle fibre?
  - (A) Actin
  - (B) Tubulin
  - (C) Troponine
  - (D) Myosin
  
3. All are membrane bounded cell organelles except —
  - (A) Mitochondria
  - (B) Spherosomes
  - (C) Ribosomes
  - (D) Lysosomes

4. At metaphase, chromosomes are attached to the spindle fibres by their —
- (A) Centromere
  - (B) Satellite
  - (C) Secondary constriction
  - (D) Kinetochore
5. Number of ATP and Water molecules formed per four electrons transported through electron transport chain are —
- (A) 4 and 1
  - (B) 4 and 2
  - (C) 6 and 2
  - (D) 3 and 1
6. Genetic alteration of a bacteria by incorporation of foreign DNA is known as —
- (A) Transduction
  - (B) Transfection
  - (C) Transformation
  - (D) Infection
7. Down's syndrome is a result of —
- (A) Trisomy
  - (B) Nullisomy
  - (C) Monosomy
  - (D) Tetrasomy



8. Kappa particles indicate —
- (A) Cytoplasmic inheritance
  - (B) Mutation
  - (C) Nuclear inheritance
  - (D) Nucleo-cytoplasmic inheritance
9. Which of the following is not heritable?
- (A) Point mutation
  - (B) Chromosome mutation
  - (C) Somatic mutation
  - (D) Gene mutation
10. Who coined the term “gene”?
- (A) H. J. Muller
  - (B) T. Boveri
  - (C) W. S. Sutton
  - (D) W. L. Johanssen
-

P - II (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - VI - B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

*The figures in the margin indicate full marks.*

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

### Unit - 1

#### (Cell Biology)

1. Answer any *two* questions : 4×2=8
  - (a) Write a short note on synaptonemal complex.
  - (b) Describe the polymerization process of actin filament.
  - (c) Write a note on active transport mediated by Na-K ATPase.
  - (d) Describe Metaphase I of meiotic cell division with proper diagram.
  
2. Answer any *one* question : 12×1=12
  - (a) Describe the fluid mosaic model of plasma membrane and state its merits. Mention the factors influencing the fluidity of the membrane. Distinguish between prokaryotic and eukaryotic ribosome. (4+2)+2+4=12
  - (b) What is Lamp brush chromosome? Why it is so named? Write the features of Lamp brush chromosome. Describe the structure and functions of Lamp brush chromosome. 1+1+2+(4+4)=12

- (c) Describe the nucleosome model of chromatin. Describe the molecular events occurring during different phases of cell cycle. Differentiate between mitotic and meiotic cell divisions. 4+5+3=12

**Unit - 2**  
**(Genetics)**

3. Answer any *two* questions : 4×2=8

- (a) What is Robertsonian translocation? Give an example of consequence of Robertsonian translocation in human. 2+2=4

- (b) Consider three yellow, round peas, labelled A, B, and C. Each was grown into a plant and crossed to a plant grown from a green, wrinkled pea. Exactly 100 peas issuing from each cross were sorted into phenotypic classes as follows :

A: 51 yellow, round

49 green, round

B: 100 yellow, round

C: 24 yellow, round

26 yellow, wrinkled

25 green, round

25 green, wrinkled

What were the genotypes of A, B and C? (Use gene symbols of your own choice.)

- (c) Write a note on cytological basis of crossing over.  
(d) Mention the characteristics of sex-linked inheritance.

4. Answer any *one* question :

12×1=12

- (a) How the results of reciprocal crosses differ between Mendelian inheritance and cytoplasmic inheritance? Give example of human disease caused by Mitochondrial gene mutation. How inheritance pattern of cytoplasmic genes differs from nuclear genes? What do you mean by cytohet?

3+4+3+2=12

- (b) Briefly describe Aneuploidy. Mention some consequences of Aneuploidy in human. What are paracentric and pericentric inversion?

6+4+2=12

- (c) 'Autosomal gene is also responsible for determination of female *Drosophila*' — Justify the statement with proper cross. Describe the role of different genes in sex determination of *Drosophila*.

4+8=12

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P - II (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - VII - 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
-----	---	---	---

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 : ZHT - VII - A**

Full Marks : 10

Time : Thirty Minutes

Choose the correct answer.

Answer *all* the following questions,  
each question carries 1 mark.

1. The volume of air which can be inspired or expired normally is called —
  - (A) Vital capacity
  - (B) Residual volume
  - (C) Tidal volume
  - (D) Lung's volume
  
2. Hematopoiesis take place in —
  - (A) Bone marrow
  - (B) Liver
  - (C) Spleen
  - (D) All of the above
  
3. If Henle's loop is absent from mammalian nephron, which of the following is to be expected?
  - (A) Does not change in quality and quantity of urine formed
  - (B) Urine will be more concentrated
  - (C) Urine will be more dilute
  - (D) Urine will be highly acidic

4. Which one is not an example of neurotransmitter?
- (A) GABA
  - (B) DOPA
  - (C) Acetylcholine
  - (D) Dopamine
5. The action potential is generated due to —
- (A) Rapid influx of sodium ions
  - (B) Rapid influx of potassium ions
  - (C) Rapid efflux of sodium ions
  - (D) Rapid efflux of potassium ions
6. Which of the following is ketogenic amino acid?
- (A) Valine
  - (B) Threonine
  - (C) Leucine
  - (D) Aspartic acid
7. Maltose is made up of two glucose molecules, the linkage is —
- (A)  $\alpha$  1, 6 linkage
  - (B)  $\alpha$  1, 4 linkage
  - (C)  $\beta$  1, 6 linkage
  - (D)  $\beta$  1, 4 linkage



8. How many ATP molecules are synthesized by substrate level phosphorylation per glucose molecule by glycolysis?
- (A) 4
  - (B) 2
  - (C) 8
  - (D) 6
9. What is the advantage of storing glucose as glycogen in animals instead of as monomeric glucose?
- (A) Energy obtained from glycogen is more than that from the corresponding glucose monomers.
  - (B) Glucose present as monomers within the cell exerts more osmotic pressure than a single glycogen molecule, resulting in loss of water from the cells.
  - (C) Glucose present as monomers within the cell exerts more osmotic pressure than a single glycogen molecule, resulting in excess water within the cells.
  - (D) Glycogen gives more rigidity to the cells.
10. Enzyme which promote the removal of a group from the substrate to leave a double bond reaction is —
- (A) Lyase
  - (B) Hydrolase
  - (C) Transferase
  - (D) Isomerase
-

P - II (1+1+1) H / 20 (N)

2020

## ZOOLOGY (Honours)

Paper Code : ZHT - VII- B

[New Syllabus]

Full Marks : 40

Time : One Hour Thirty Minutes

*The figures in the margin indicate full marks.*

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

### Unit - 1

#### (Animal Physiology)

1. Answer any *two* questions : 4×2=8
  - (a) Write short note on chloride shift.
  - (b) Briefly describe the process of Erythropoiesis.
  - (c) Describe the process of transmission of nerve impulse through a synapse.
  - (d) Write short note on ECG.
  
2. Answer any *one* question : 12×1=12
  - (a) Draw a labeled diagram of mammalian nephron. Describe the physiology of urine formation. 4+8=12
  - (b) What are orthodromic & antidromic nerve impulse? Write a note on different types of sleep disorder. 6+6=12
  - (c) Describe the structure of haemoglobin. Describe the mechanism of transport of Oxygen. Write a note on the factors affecting dissociation of Oxygen from haemoglobin. 4+4+4=12

**Unit - 2**  
**(Biochemistry)**

3. Answer any *two* questions : 4×2=8
- (a) Amino acids can act as acid and base — justify it.
  - (b) Write a note on  $\alpha$ -keratin.
  - (c) Describe the process of deamination.
  - (d) Briefly write on the irreversible steps of glycolysis.
4. Answer any *one* question : 12×1=12
- (a) How does an enzyme increase the reaction rate? Describe the Michaelis-Menten rate equation. 4+8=12
  - (b) Why does maltose act as a reducing sugar but sucrose does not? Describe the structure of one homo polysaccharide and one hetero polysaccharide. 2+5+5=12
  - (c) Differentiate oxidative phosphorylation and substrate level phosphorylation. Describe the process of transport of electron through the electron transport chain. 4+8=12
-