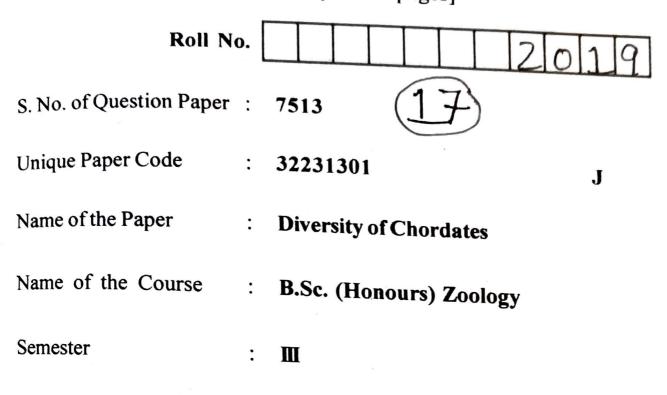
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Duration : 3 Hours

1.

Maximum Marks: 75

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

Answer *five* questions in all, including

Question No. 1 which is compulsory.

Draw labelled diagrams wherever necessary.

(a) Define the following terms :

(i) Retrogressive metamorphosis

(ii) Osmoregulation

(iii) Endemic species

(iv) Fossorial Adaptations.

( 2 )

Give the scientific name and classify the following upto (b) Orders : 10

Rat fish (*i*)

(ii) Glass snake

(iii) Acorn worm

(iv) Mongoose

(v)Mud Puppy.

(c) Differentiate between the following terms :

> Lacertilia and Ophidia (*i*)

(ii) Euryhaline and Stenohaline

(iii) Carinatae and Ratitae

(iv) Wallace's line and Weber's line.

(d)Match the following animals with the Zoogeographical region : 3

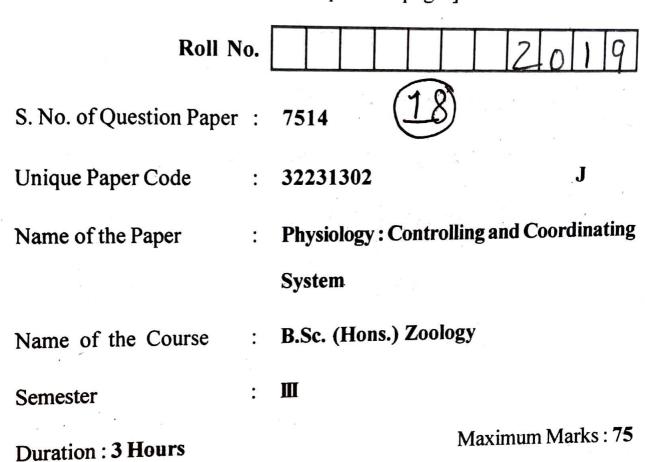
( <i>î</i> )	Two-horned Rhinoceros	(a)	Oriental
(ii)	Orangutan	( <i>b</i> )	Ethiopian
(iii)	Bison	(c)	Neotropical
(iv)	Koala bear	( <i>d</i> )	Nearctic
(v)	Llama	(e)	Palearctic
(vi)	Mole rat	(/)	Australian

7513

- (e) State whether the following statements are true or false :
  - (i) Eyelids of snakes are movable.
  - (ii) Perissodactyles have an even number of digits.
  - (iii) In frogs and toads teeth are present in both upper and lower jaws.
  - (*iv*) Duck-billed Platypus is endemic to Australian realm.
- 2. (a) "Hemichordates are non-chordates". Justify the statement.
  - (b) Discuss the Echinoderm theory for the origin of
    Chordates.
    6,6
- 3. (a) Enumerate the various structural adaptations in birds related to their aerial mode of life.
  - (b) How do fresh water fishes osmoregulate ? 8,4
- 4. (a) Discuss the theories of distribution of animals.
  - (b) Give an account of the mammalian fauna of the Ethiopian realm.8,4

- (4) 7513
- 5. (a) Describe the poison apparatus in snakes and explain the biting mechanism.
  - (b) Discuss the mechanics of bird flight. 7,5
- 6. (a) Discuss the evolution of terrestrial ectotherms.
  - (b) Write a note on the affinities of Prototheria. 8,4
- 7. Write short notes on any three of the following : 4,4,4
  - (i) Migration in fishes
  - (ii) Cursorial adaptations in mammals
  - (iii) Parental care in Amphibia
  - (iv) Affinities of Sphenodon
  - (v) General characters of Agnatha.

This question paper contains 4 printed pages]



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

Attempt five questions in all.

Question No. 1 is compulsory.

1. (A) Define :

- (i) Temporal Summation
- (ii) Tropic hormone
- (iii) Oxygen debt
- (iv) Theca interna.
- (B) Distinguish between :
  - (i) EPSP and IPSP

5×2=10

1	2	<b>`</b>
( –	See.	)

(ii) Fused and Unfused Tetanus

(iii) Leydig cells and Sertoli cells

(iv) Osteoclasts and Osteoblasts

(v) Stratified and Pseudo-stratified epithelium.

(C) Expand the following :

(*i*) 5-HT

(*ii*) CK

(iii) PVN

(iv) NE

(*v*) LTH

(vi) cAMP.

(D) Give the location and function for each of the following : 4

(a) Nebulin

(b) Parafollicular Cells

(c) Organ of Corti

(d) Ependymal Cells.

- ( 3. )
- (E) Give reasons/Physiological significance of the following
  (any two) : 2
  - (i) Blood Testis Barrier.
  - (ii) Amplitude of an action potential once generated is always the same.
  - (iii) Slumping of the head forward on the chest
  - (F) Fill in the blanks :

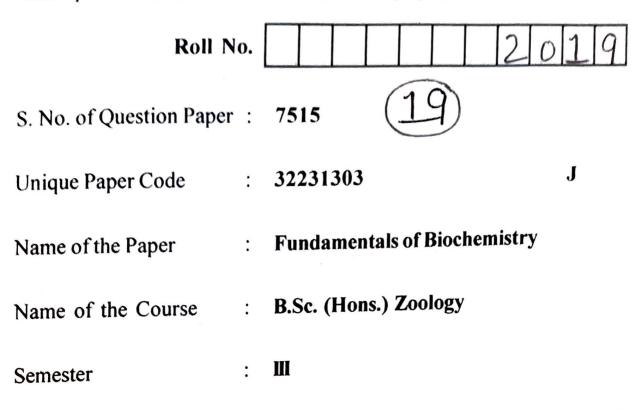
2.

- (i) A toxin popularly used in cosmetic surgery is ......
- (*ii*) Deep grooves in the motor end plate that are rich in receptors are called ......
- (iii) ..... tissue is avascular.
- (iv) Angiotensinogen, a plasma protein produced
  by the liver is converted into Angiotensin I
  by .......
- (a) Mention different types of ion channels and describe their role in generation of electrical signals.
  - (b) Explain the transmission of nerve impulse across a
    Chemical Synapse.

**P.T.O**.

3.	( <i>a</i> )	Describe the role of troponin, tropomyosin and calcium
		in muscle contraction. 9
	( <i>b</i> )	Diagrammatically represent the ultrastructure of
		sarcomere. 3
4.	Comp	are the major changes occurring in the ovary, uterus
	and t	heir hormonal regulation during the female reproductive
	cycle.	12
5.	(a)	Explain the various mechanisms regulating hormone
		secretion. 6
	( <i>b</i> )	How does the adrenal cortex and medulla compare with
		regard to its structure and function ? 6
6.	(a)	Describe the process of bone ossification. 9
	( <i>b</i> )	Enumerate the various types of cells present in
		connective tissue.
7.	Write	e short notes on the following (any three) : $3 \times 4 = 12$
	( <i>i</i> )	Molecular events in Contraction cycle
	( <i>ií</i> )	Bleaching and regeneration of photo-pigments
	(iii)	Mechanism of action of water soluble hormones
	(iv)	Spermatogenesis.

This question paper contains 4 printed pages]



Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.) Attempt five questins in all, including Q. No. 1 which is compulsory.

Attempt various parts of a question at one place only.

Draw well labelled diagram wherever necessary.

1. (A) Define :

- (1) Peptide bond
- (2) Amphipathy
- (3) Epimers
- (4) Nucleoside
- (5) Plasmalogens.

1×5

- (2)
- (B) Differentiate between :
  - (1) Reducing and Non-Reducing Sugars
  - (2) Phi and Psi angle
  - (3) Isoenzymes and Coenzymes
  - (4) Alpha helix and Beta pleated sheet structure of protein
  - (5) B and Z DNA.
- (C) Give the structures of the following :  $1\times 5$ 
  - (1) Proline
  - (2) Phosphatidyl Serine
  - (3) Sucrose
  - (4) Chondroitin sulphate
  - (5) Adenine.

(D) Fill in the blanks :

- Repeated nucleotide sequence.....the chances of its renaturation.
- (2) Enzymes speed up reactions by.....activation energy.
- (3) Auto-oxidation of lipids exposed to oxygen results in .....
- (4) An increase in side chain alkyl groups numbers increases the.....of the amino acids.

 $1 \times 4$ 

( 3 )

(E) Give contributions of the following :  $1 \times 3$ 

- (1) Watson and Crick
- (2) Linus Pauling
- (3) Fredrick Sanger.
- (a) Describe various types of secondary structure of protein taking suitable examples.
  - (b) Justify the statement that information of protein folding resides within the sequence of amino acids.
- 3. (a) Elucidate the Michaelis-Menten kinetics for a one enzyme-one substrate reaction. 8
  - (b) With the help of well labelled bond angles and bond lengths, diagrammatically explain that peptide bond is rigid and coplanar.
- 4. (a) Classify enzymes on the basis of type of reaction catalyzed (International Classification of Enzymes). 4
  - (b) What are different types of DNA ? Briefly discuss
    different properties of various types of DNA.
  - (a) Describe the salient features of Clover leaf model of t-RNA.

5.

(b) Give a detailed account of physiologically important carbohydrates.
 8

P.T.O.

( 4 ) 7515

6.	( <i>a</i> )	With the help of structures, classify phospholipids. 8
	( <i>b</i> )	Briefly discuss about allosteric enzymes. 4
7.	Write	short notes on any <i>three</i> of the following : 3×4
	( <i>a</i> )	Cot Curves
	( <i>b</i> )	Glycolipids
	( <i>c</i> )	Mechanism of enzyme action
	( <i>d</i> )	Protein Denaturation

(e) Double reciprocal plot.