

(9)

16/5/17

[This question paper contains 4 printed pages]

**Your Roll No.** : .....

**Sl. No. of Q. Paper** : **1833**      **GC-4**

**Unique Paper Code** : 32231201

**Name of the Course** : **B.Sc.(Hons.) Zoology**

**Name of the Paper** : Non-Chordata-II-  
Coelomates

**Semester** : II

**Time : 3 Hours**

**Maximum Marks : 75**

**Instructions for Candidates :**

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt any **five** questions in **all** including **Question No.1** which is compulsory.

1. (a) Define the following terms : 5
- (i) Tagmosis
  - (ii) Ecdysis
  - (iii) Trophallaxis
  - (iv) Detorsion
  - (v) Epitoky

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(b) Name the Phylum in which the following structures are present and give one function of each : 4

(i) Osphradium

(ii) Pedicellaria

(iii) Ocellus

(iv) Typhlosole

(c) Differentiate between the following terms, giving examples : 6

(i) Book lungs and Book gills

(ii) Brachiolaria and Ophiopluteus larvae

(iii) Apposition and Superposition image

(d) Give the scientific names and classify upto classes giving distinguishing characteristics of each category : 8

(i) King crab

(ii) Paddle worm

(iii) Devil fish

(iv) Brittle star

- (e) Match the following : 4
- |                 |                  |
|-----------------|------------------|
| (i) Mollusca    | (a) Soldier      |
| (ii) Leech      | (b) Doliolaria   |
| (iii) Nasute    | (c) Mantle       |
| (iv) Echinoderm | (d) Ectoparasite |
2. What is meant by Eusociality ? Discuss social organisation in any **one** insect. 12
3. (a) Explain the structure of gills in Mollusca and discuss the mechanism of respiration in gastropods. 8
- (b) How does pearl formation occur in Bivalves ? 4
4. Describe the Water Vascular System in Asterias with the help of labelled diagrams. Add a note on its functions role in locomotion. 12
5. (a) Give an account of metamorphosis in Insects and discuss its hormonal control. 8
- (b) Discuss the affinities of Echinoderms with Chordates. 4

6. (a) Draw neat labelled diagrams of the excretory organs of Annelids and explain their working. 8
- (b) Justify the statement that *Peripatus* is a connecting link between Annelida and Arthropoda. 4
7. Write short notes on any **three** of the following :  
4×3=12
- (a) Torsion in gastropods
  - (b) Tracheal respiration in Insects
  - (c) Structure of the compound eye
  - (d) Evolutionary significance of Trochophore
  - (e) Metamerism

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[This question paper contains 4 printed pages]

**Your Roll No.** : .....

**Sl. No. of Q. Paper** : **1834** **GC-4**

Unique Paper Code : 32231202

Name of the Course : **B.Sc.(Hons.) Zoology**

Name of the Paper : Cell Biology

Semester : II

**Time : 3 Hours**

**Maximum Marks : 75**

**Instructions for Candidates :**

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt **Five** questions in **all**.
- (c) Question **No. 1** is compulsory.

1. (a) Define the following :

5

- (i) Glycocalyx
- (ii) Prions
- (iii) Cell cycle
- (iv) Chaperone
- (v) Lamins

P.T.O.

- (b) Differentiate between the following : 8
- (i) CGN and TGN
  - (ii) Hetrochromatin and Euchromatin
  - (iii) Co-translational and Post-translational transport of proteins
  - (iv) Tight Junction and Gap Junction
- (c) Write the contribution(s) of the following scientists : 4
- (i) Roger Kornberg
  - (ii) Paul Nurse
  - (iii) Peter Mitchell
  - (iv) Christian de Duve
- (d) Give the location and significance of the following : 5
- (i) Sodium Potassium ATPase
  - (ii) cAMP
  - (iii) Cadherin
  - (iv) Dolichol phosphate
  - (v) Cytochrome P<sub>450</sub>

- (e) Expand the following : 3
- (i) MTOCs
  - (ii) NOR
  - (iii) GPCR
- (f) Match the following : 2
- |                    |                             |
|--------------------|-----------------------------|
| (i) Peroxisome     | (A) Vesicle coating         |
| (ii) Ribophorin    | (B) Succinate Dehydrogenase |
| (iii) Mitochondria | (C) RER                     |
| (iv) Clathrin      | (D) Catalase                |
2. (a) Describe the structure and function of Nuclear Pore Complex. 4
- (b) Compare microtubule assembly with actin filament assembly. 8
3. (a) With the help of diagram explain the process of receptor-mediated endocytosis. 4
- (b) Give an account on packaging of chromosomal DNA in eukaryotes. 8

4. (a) Describe fluid mosaic model of Plasma membrane. What decides the fluidity of the membrane ? Give experimental evidence to show that membrane is quasi fluid. 8
- (b) Give an account on the role of Golgi apparatus in cell secretion. 4
5. (a) Explain the role of cdk cyclin in cell cycle regulation. 6
- (b) Discuss active transport across membrane systems. 6
6. (a) Describe polymorphism in lysosome. Add a note on the importance of lysosome in the cell. 6
- (b) What is the role of smooth endoplasmic reticulum in a cell ? 6
7. Write short notes on any **three** of the following :  $4 \times 3 = 12$
- (i) Facilitated diffusion
  - (ii) Desmosome
  - (iii) Chemiosmotic Hypothesis
  - (iv) cAMP as Second Messenger
  - (v) Active Transport

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16/5/17  
Your Roll No.....

Sr. No. of Question Paper : 757 G  
Unique Paper Code : 217251  
Name of the Paper : Chemistry-II (CHCT-402)  
Name of the Course : B.Sc. (Hons) Biochemistry/  
Botany/Zoology/Microbiology  
Semester : II  
Duration : 3 Hours Maximum Marks : 75

**Instructions for Candidates:**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **SIX** questions.
3. Question No. 1 carries **15** marks.

1. Attempt any **five** of the following:

(a) Chair conformation of cyclohexane is more stable than the boat conformation.

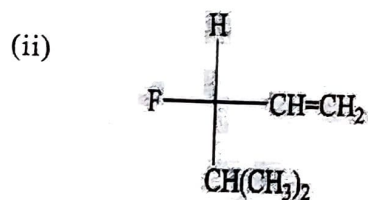
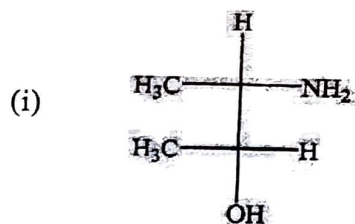
(b) Give the name and the structure of one reducing and one non-reducing disaccharide.

(c) What are essential amino acids? Give two examples.

P.T.O.

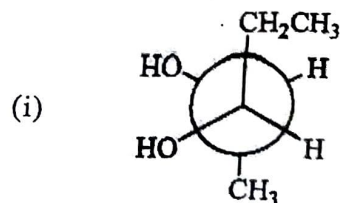


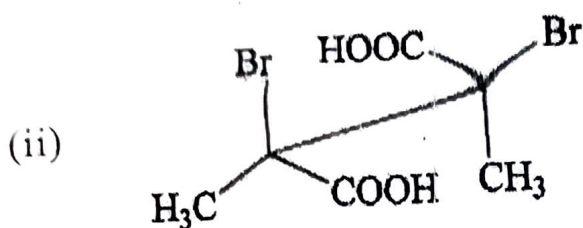
- (d) Why ortho substituted benzoic acids are stronger acids than benzoic acid?
- (e) Giving reasons, arrange the following compounds in increasing order of their basic strength.  $C_6H_5NH_2$ ,  $o-H_3CO-C_6H_4NH_2$ ,  $p-NO_2C_6H_4NH_2$ ,  $m-NO_2C_6H_4NH_2$
- (f) Glucose forms a cyanohydrin on treatment with HCN but glucose pentacetate does not. Give reason. (3x5)
2. (a) Explaining the priority order, assign R/S configuration at each chiral carbon atom in the following compounds:



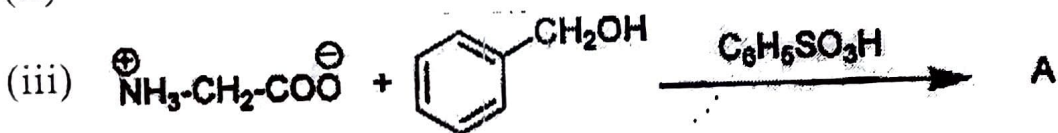
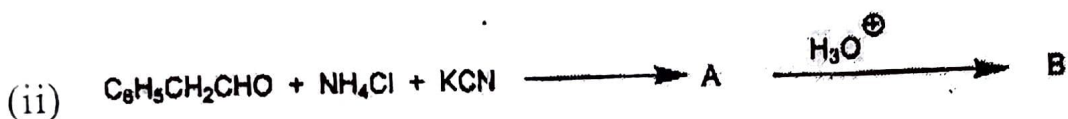
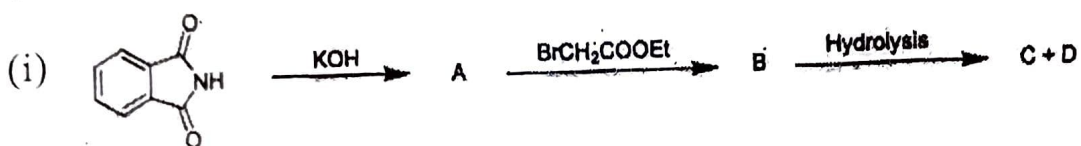
- (b) Write all the possible stereoisomers of 2,4-Hexadiene and designate them by E/Z notation. (6,6)
3. What happens when
- (a) D(-) Fructose is treated with concentrated nitric acid

- (b) D(+) Glucose is treated with a dilute solution of sodium hydroxide.
- (c) D(-) Fructose is treated with methanol in the presence of HCl.
- (d) D(-) Glucose is treated with excess of phenylhydrazine. Give the mechanism of the reaction also. (4x3)
4. (a) Using Merrifield solid phase peptide synthesis, write the synthesis of the dipeptide Ala-Gly from alanine and glycine. (Glycine;  $NH_2CH_2COOH$ ; Alanine;  $NH_2CH(CH_3)COOH$ )
- (b) Compound A, a monosaccharide having molecular formula  $C_6H_{12}O_6$ , reacts with HCN to give B,  $C_7H_{13}NO_6$  which on acid hydrolysis gives C,  $C_7H_{14}O_8$  (a polyhydroxy acid). C on reduction with HI/P yield 2-methylhexanoic acid. Deduce the structure of A, B and C and explain the reactions involved. (6,6)
5. (a) What is electrophoresis? Explain how it can be used for the separation of a mixture of amino acids.
- (b) Explaining the steps involved, convert the following compounds into their Fischer projections.





(c) Complete the following:



6. Differentiate between the following pairs: (4,4,4,)

(a) Enantiomers and Diastereoisomers

(b) Heterolytic and Homolytic Cleavage

(c) Anomers and Epimers

(d) Meso and Racemic modification (3,3,3,3)

7. Write short notes on any three of the following:

(a) Wohl's method of descending the sugar series

(b) Use of D.C.C. in peptide synthesis

(c) Edman method of end group analysis of peptides.

(d) Mutarotation (4,4,4)

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Roll No.

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S. No. of Question Paper : 892

Unique Paper Code : 223201

G

Name of the Paper : Biodiversity-II (Chordata-1) (ZOHT-202)

Name of the Course : B.Sc. (H) Zoology

Semester : ■

Duration : 3 Hours

Maximum Marks : 75

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

Answer five questions only,

including Question No. 1 which is compulsory.

1. (a) Define the following terms : 4
- (i) Plastron
- (ii) Integument
- (iii) Notochord
- (iv) Asphyxiation.

P.T.O.

- (b) Differentiate between the following : 10
- (i) Poisonous and Non-poisonous snakes
  - (ii) Nails and Claws
  - (iii) Eutheria and Metatheria
  - (iv) Catadromous and Anadromous migration.
- (c) Give the exact location and the function of the following : 4
- (i) Ampulla of Lorenzini
  - (ii) Endostyle
  - (iii) Electric organs
  - (iv) Tympanum.
- (d) Give the Scientific name and classify upto order : 6
- (i) Sea horse
  - (ii) Mud puppy
  - (iii) Dog fish
  - (iv) Tree frog.

- (e) State whether the following statements are true or false : 3
- (i) Only left aortic arch is present in mammals.
  - (ii) Gills are covered by an operculum in Chondrichthyes.
  - (iii) Rumen is present in Camel.
2. (a) Define and explain retrogressive metamorphosis. 6
- (b) Explain migration of birds with suitable example. 6
3. (a) Draw a labeled diagram of the skin of mammal. 6
- (b) Give an account of hard epidermal derivatives of mammals. 6
4. (a) Give an account of terrestrial adaptation in reptiles. 6
- (b) Discuss the affinities of Sphenodon in brief. 6
5. Give a detailed account of Theories of "Origin of Chordates". 12
6. (a) Discuss the parental care in fishes. 6
- (b) Describe distinctive features of Class Mammalia. 6

7. Write short notes on any *three* :

4,4,4

(i) Air Sac in Birds

(ii) Biting mechanism in snakes

(iii) Mammary glands

(iv) Agantha.

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S. No. of Question Paper : 893

Unique Paper Code : 223203

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Name of the Paper : Biodiversity III (Chordata II) [ZOHT-203]

Name of the Course : B.Sc. (Hons.) Zoology

Semester : ■

Duration : 3 Hours

Maximum Marks : 75

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

Attempt five questions in all including  
question No. 1 which is compulsory.

All the parts of a question must be attempted together.

Draw well labelled diagrams wherever required.

1. (a) Define the following :

5

(i) Acetabulum

(ii) Splanchnocranium

(iii) Pseudobranch

(iv) Iter

(v) Operculum.

P.T.O.

- (b) Differentiate between the following pairs : 10
- (i) Lamelliform and Filiform Gill
  - (ii) Procoelous and Opisthocoelus Vertebra
  - (iii) Uteri Simplex and Uteri duplex
  - (iv) Larynx and Syrinx
  - (v) Motor and Sensory nerves.
- (c) State whether the following statements are *true* or *false* :
- (i) Functional kidney in mammals is metanephros.
  - (ii) 9th cranial nerve is known as vagus.
  - (iii) Foramen ovale is present in Reptilian heart.
  - (iv) Red glands are present in swim bladder.
  - (v) Stapes is the smallest bone of vertebrates. 5
- (d) Give *one* function of the following : 4
- (i) Gill raker
  - (ii) Spiral valve
  - (iii) Chevron bone
  - (iv) Vomeronasal organ.
- (e) Draw a labelled diagram of L.S. of bird's syrinx. 3

2. Discuss the fate of visceral arches in vertebrates. 12
3. Trace the evolution of heart in various groups of vertebrates. 12
4. Give an account of male and female urinogenital ducts in vertebrates. 12
5. Explain the respiratory structure and mechanism of respiration in birds. 12
6. (a) Classify the different types of receptors in vertebrates. 6  
(b) Draw and describe the structure of mammalian eye. 6
7. Write short notes on any *three* of the following : 4+4+4
  - (a) Accessory respiratory organs in fishes
  - (b) Autonomic nervous system
  - (c) Jaw suspensorium
  - (d) Succession of kidney.