

(4)

UNIT—IV

10. (a) Define the terms taxon, phenon and category.
(b) What are binomial and trinomial nomenclatures? Mention two important rules of zoological nomenclature. $(2+2+2)+(2+2)=10$
11. (a) Write the salient features of *Porifera*.
(b) Classify phylum *Porifera* up to subclasses with chart and suitable example.
(c) What is Linnean hierarchy? Define species. $2+4+(2+2)=10$
12. (a) Write the salient features of class Reptilia.
(b) Classify the class Reptilia up to order with suitable examples and characters. $4+6=10$

M9—710/10

S-1/ZOOH/01/18

S-1/ZOOH/01/18

TDP (Honours) 1st Semester Exam., 2018

ZOOLOGY

(Honours)

FIRST PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, selecting **two** from each Unit

UNIT—I

1. (a) Why is *Paramecium* called slipper animalcule?
(b) Describe the metachronal rhythm of locomotion in *Paramecium* with diagram.
(c) Briefly describe the ultrastructure of cilia of *Paramecium* with diagram. $1+(3+2)+(2+2)=10$
2. (a) What are different types of cell found in the body wall of sponges?
(b) Describe the canal system of *Sycon* with labeled diagram.

M9/10

(Turn Over)

(2)

- (c) Describe the function of the canal system in sponge. $2+(3+2)+3=10$
3. (a) What is the difference between coelom and pseudocoelom? Give example of one acoelomate animal.
- (b) Describe the excretory organ of platyhelminthes with a labeled diagram.
- (c) What is sanguivorous animal? Mention four important adaptive features of digestive system of Hirudinaria. $(2+1)+(3+1)+(1+2)=10$

UNIT—II

4. (a) Give a brief description of pharynx of Branchiostoma with diagram.
- (b) Explain the process of ciliary mode of feeding in Branchiostoma with diagram.
- (c) Name the excretory organ of Branchiostoma. $(3+2)+(2+2)+1=10$
5. (a) Describe the water vascular system of Asterias with diagram.
- (b) Mention the evolutionary significance of larval forms of Asterias.
- (c) Write the difference between torsion and detorsion. $(3+2)+3+2=10$

M9/10

(Continued)

(3)

6. (a) What are the differences between male and female cockroach?
- (b) What do you mean by torsion? Describe the mechanism of torsion in *Pila*.
- (c) State the significance of torsion in *Pila*. $2+(1+4)+3=10$

UNIT—III

7. (a) Write the significance of accessory respiratory organs in fishes.
- (b) Describe briefly the accessory, respiratory organs in *Anabas*, *Clarias* and *Heteropneustes* sp. with diagram.
- (c) Mention two important characters of lungfish. $2+(2+2+2)+2=10$
8. (a) Define pedomorphosis and progenesis.
- (b) Explain the phenomenon of neoteny with examples in *Necturus* and *Triturus* sp.
- (c) Draw a labeled diagram of poisonous apparatus of snake. $2+(3+3)+2=10$
9. (a) What is the basic plan of aortic arch in vertebrate? Draw and label the aortic arch in bird.
- (b) Describe briefly the structure of ruminant stomach with diagram. $(2+3)+(4+1)=10$

M9/10

(Turn Over)

(4)

11. (a) Write the salient features of Amphibia.
(b) Classify phylum Amphibia up to order with suitable examples and characters. $4+(4+2)=10$
12. (a) Write the salient features of phylum Cnidaria.
(b) Classify phylum Cnidaria up to subclasses with suitable examples and characters. $4+(4+2)=10$

20M—770/16

S-1/ZOOH/01/19

(S) S-1/ZOOH/01/19

TDP (Honours) 1st Semester Exam., 2019

ZOOLOGY

(Honours)

FIRST PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **eight** questions, selecting **two** from each Unit

UNIT—I

1. (a) Define polymorphism.
(b) Describe the structure of nematocyst with diagram.
(c) What is the function of nematocyst? $2+(4+2)+2=10$
2. (a) Describe the life cycle of *Ascaris* with diagram.
(b) What do you mean by pseudocoelom?
(c) Describe the structure of pseudocoelom in *Ascaris* with diagram. $(3+2)+2+(2+1)=10$

20M/16

(Turn Over)

TDP (Honours) 2nd Semester Exam., 2018

ZOOLOGY

(Honours)

SECOND PAPER (Group—A)

Full Marks : 48

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, selecting **two** from each Unit

*Candidates are required to give their answers in their
own words as far as practicable*

UNIT—I

1. What are the differences between euchromatin and heterochromatin? Classify chromosome on the basis of the position of centromere. Describe the ultrastructure of chromosome with nucleosome model. What is polytene chromosome? $2+2+(5+2)+1=12$

8M/1099 (2)

2. Write the difference between bone and cartilage. Give an account of histological structure of mammalian liver with labelled diagram. Mention two important functions of liver. $3+(5+2)+2=12$

3. Write short notes on any three of the following : $4 \times 3 = 12$

- (a) Ultrastructure of mammalian sperm
- (b) Formation of amnion in chick
- (c) Types of cleavage in vertebrates
- (d) Types of placenta in mammals with example
- (e) Formation of placenta in rabbit

UNIT—II

4. Write the name of four species of silk moth. What is the composition of silk? Describe the extraction and reeling of silk from cocoon. Mention one fungal and one bacterial disease of silkworm and their control measures. $2+2+(2+2)+2+2=12$

5. Mention the characteristic features of vermicomposting earthworm species. Describe the principle and tank method of vermicomposting in India. Mention the importance of vermicompost in agriculture. $3+(3+4)+2=12$

8M/1099

(Continued)

(3)

6. What is IPM? What do you mean by biological pest control? Explain the nature, damage and control measures of *Scirpophaga incertulus*. $(1\frac{1}{2}+1\frac{1}{2})+3+3+3=12$

8M—660/1099

S-2/ZOOH/02/18

TDP (Honours) 2nd Semester Exam., 2019

ZOOLOGY

(Honours)

SECOND PAPER (Group—A)

Full Marks : 48

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer four questions, selecting two from each Unit

UNIT—I

1. Write two differences between smooth and rough endoplasmic reticulum (ER). Describe in brief the ultrastructure of mitochondria with labelled diagram. Write the important functions of lysosome. 2+(6+2)+2=12

(2)

2. Write the important differences between normal cells and cancer cells. Give an account of the histological structure of mammalian skeletal muscle with suitable labelled diagram. Mention two important functions of kidney. $2+(6+2)+2=12$
3. Describe the process of oogenesis with a labelled diagram. Add a note on extra-embryonic membrane in chick. $(5+2)+5=12$

UNIT—II

4. Write the scientific names of two exotic carps. State the scientific principle and advantages of composite fish culture. Distinguish between penaeid and non-penaeid prawns. Briefly describe the method of freshwater prawn culture in India. $1+(2+2)+3+4=12$
5. Describe the deep-litter system of rearing in a poultry farm and mention two advantages and disadvantages of this method. Add a note on different breeds of poultry. Name one viral disease of poultry. $(4+2+2)+3+1=12$

(3)

6. Write short notes on any *three* of the following : $4 \times 3 = 12$
- (a) Pollinators in agriculture
 - (b) Biological pest control
 - (c) Social organization of honeybee
 - (d) Langstroth hive/box
 - (e) Chemical composition and medicinal value of honey

TDP (Honours) 3rd Semester Exam., 2018

ZOOLOGY

(Honours)

THIRD (A) PAPER

Full Marks : 48

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, selecting **two** from each Unit

*Candidates are required to give their answers
in their own words as far as practicable*

UNIT—I

1. (a) Write four principal characteristics of genetic material.
- (b) Describe the experiment performed by Alfred D. Hershey and Martha Chase in 1953 as important evidence supporting DNA as the genetic material with diagram.
- (c) If marriage occurs between two carrier individuals of thalassaemia, predict the probable genotypes and phenotypes of their offsprings with suitable cross.

2+(5+2)+3=12

(2)

2. (a) What do you mean by complete and incomplete linkage? What is linkage group? How many linkage groups are present in *Drosophila* and human?
- (b) Mention one chemical mutagen. Describe the ClB method of detecting lethal mutation in *Drosophila* with appropriate diagrams. $(2+1+2)+(1+4+2)=12$
3. (a) What is gynandromorphism?
- (b) With proper ratio, determine the sex in *Drosophila* having chromosomes 2X2A, XY2A, 4X4Y3A, X3A, 3X4A.
- (c) With proper cross, show the possible gametes from the genotype $stv/+++$.
- (d) State the role of Y chromosome in man. $2+5+4+1=12$

UNIT—II

4. Write short notes with proper example on the following : $4 \times 3 = 12$
- (a) Commensalism
- (b) Mutualism
- (c) Parasitism

M9/30

(Continued)

(3)

5. (a) What is ecosystem? Discuss the significance of light and temperature on biotic components of an ecosystem.
- (b) What do you mean by ecological niche? Discuss habitat niche with one example. State the advantages of niche segregation. $(1+4)+(1+4+2)=12$
6. (a) Give four major changes that may occur due to global warming in Indian sub-continent.
- (b) What are the consequences of depletion of atmospheric ozone?
- (c) Give four measures of controlling ozone depletion. $4+4+4=12$

M9—480/30

S-3/ZOOH/03A/18

TDP (Honours) 3rd Semester Exam., 2019

ZOOLOGY

(Honours)

THIRD (A) PAPER

Full Marks : 48

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, selecting **two** from each Unit

*Candidates are required to give their answers
in their own words as far as practicable*

UNIT—I

1. (a) What is allele and multiple allele?
- (b) Prove that ABO blood group is controlled by multiple alleles.
- (c) If a colour-blind man is married to a normal visioned woman, then what will be the phenotypes and genotypes?
- (d) Why males are more sufferer than females as far as colour-blindness is concerned?

2+5+3+2=12

(2)

2. (a) What is mutation? State the significance of mutation.
- (b) Mention different types of chromosomal mutation with a chart.
- (c) Write down the chromosomal makeup and phenotypic characteristics of Klinefelter's syndrome. How is this syndrome developed? $(2+3)+(1+3)+3=12$
3. (a) Name two important diseases caused due to mutation in metabolic breakdown of phenylalanine.
- (b) Mention the reasons, symptoms and inheritance of phenylketonuria.
- (c) What is sickle cell anemia and why it takes place? $2+6+4=12$

UNIT—II

4. (a) What is population and community?
- (b) Mention the important properties of a population.
- (c) Compare and contrast basic two patterns of population growth by graphical representation.
- (d) What is survivorship of population? $2+3+(4+2)+1=12$

20M/35

(Continued)

(3)

5. (a) What is ecological succession?
- (b) Write about the primary and secondary ecological succession along with their properties.
- (c) Illustrate the sequential processes of primary autotrophic succession with example.
- (d) What do you mean by edge effect? $1+(2+2)+(4+2)+1=12$
6. (a) Illustrate the term 'bird migration'. Give four examples of migratory birds.
- (b) In short describe different types of migration observed in birds.
- (c) What are the major problems faced during bird migration? $4+4+4=12$

20M—500/35

S-3/ZOOH/03A/19

TDP (Honours) 4th Semester Exam., 2018

ZOOLOGY

(Honours)

FOURTH PAPER

(Group—A)

Full Marks : 48

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer four questions, selecting two from each Unit

*Candidates are required to give their answers
in their own words as far as practicable*

UNIT—I

(Microbiology, Parasitology and Immunology)

1. (a) What is microbe? Briefly describe the major classification of microbes with example.

(b) Mention at least three important characters of microbes.

(c) Discuss the role of microbes in human welfare.

(1+4)+3+4=12

8M/1120 (2)

2. Describe in brief the life cycle of *Ancylostoma duodenale*. Write in short the pathogenicity, clinical features and control measures of this parasite. (4+2)+2+2+2=12
3. (a) Distinguish between innate and acquired immunity.
(b) Name the major types of cells involved in immune system.
(c) How do B-lymphocyte and T-lymphocyte differ from each other? Name different types of T-lymphocyte. 4+3+(3+2)=12

UNIT—II

(Tools and Techniques in Biology)

4. What is electrophoresis? Write down its principle. Mention some of its applications. Write the full forms of TLC and GLC. 2+4+4+2=12
5. (a) What is pH? Write the principle of pH meter.
(b) Which property of the particles is exploited in centrifugation?
(c) Discuss the application of centrifugation.

8M/1120

(Continued)

(3)

- (d) Mention two applications of thin layer chromatography. What do you mean by R_f value? (2+3)+1+3+(2+1)=12
6. (a) Write the aims of fixation. Name four important fixatives used in microscopy.
(b) Distinguish between acid stain and basic stain. Mention the names of one acid stain and one basic stain.
(c) Write down the method of double staining technique applied in histological studies. (2+2)+(2+1)+5=12

8M—510/1120

S-4/ZOOH/04/18

(6)

- (c) Calculate the value of the median from the data recorded on the number of grains per earhead on 300 wheat earhead :

No. of grains per earhead	5-10	10-15	15-20	20-25
Frequency	02	27	52	118

$$2+4+4=10$$

12. (a) Define mean, median and mode. Write the formula for determination of median.
- (b) The body weights (in kg) of students in a class are—32.7, 37.5, 41.7, 53.8, 50.7, 48.2, 46.3, 65.0 and 44.8. Determine the median of the body weight of those students.
- (c) Mention the advantages and disadvantages of median. $(2+2)+3+3=10$

M9—310/59

S-5/ZOOH/05/18

S-5/ZOOH/05/18

TDP (Honours) 5th Semester Exam., 2018

ZOOLOGY

(Honours)

FIFTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Candidates are required to give their answers in their own words as far as practicable

UNIT—I

Answer any two questions

1. (a) Distinguish between convergent and divergent adaptation with examples.
- (b) Give a brief account of adaptive radiation of forelimbs in placental mammals with diagram.
- (c) Write one morphological, one anatomical and one physiological adaptation in pigeon. $2+(3+2)+3=10$

M9/59

(Turn Over)

(2)

2. (a) Define mimicry with example. What are 'mimic' and 'model'?
- (b) Describe briefly the protective mimicry with one example.
- (c) Mention three conditions of protective mimicry. $(2+2)+3+3=10$
3. (a) Define endemism. Give one example.
- (b) Briefly describe the subregions, climate and characteristic faunal composition of Australian realm.
- (c) Distinguish between Innate and Learned behaviour. $2+6+2=10$

UNIT—II

Answer any two questions

4. (a) Name two respiratory pigments found in animal.
- (b) Describe briefly the transport of oxygen in blood during respiration in man. What is oxygen dissociation curve?
- (c) Write a short note on Bohr effect. $2+(5+1)+2=10$

M9/59

(Continued)

(3)

5. (a) Distinguish between 'osmoregulators' and 'osmoconformers'.
- (b) Describe the process of osmoregulation in marine teleost with diagram.
- (c) Discuss briefly 'counter-current' mechanism of urine formation in man. $2+(3+2)+3=10$
6. (a) What is synapse?
- (b) What is action potential? How is action potential generated through a nerve fibre? Give figure.
- (c) Name two chemicals that inhibit synaptic transmission. $1+(1+4+2)+2=10$

UNIT—III

Answer any two questions

7. (a) What is biodiversity? Write the difference between genetic diversity and species diversity.
- (b) Mention four important aspects of biodiversity as a resource.
- (c) Give one example each of alpha and beta diversity. $(2+2)+4+2=10$

M9/59

(Turn Over)

(3)

UNIT—III

Answer any two questions

7. (a) What is alpha and beta diversity? .01
(b) Explain *ex situ* methods of conservation of biodiversity.
(c) How destruction of wildlife disturbs the ecological balance? 2+5+3=10
8. (a) Mention the Wildlife (Protection) Act, 1972 (at least three guidelines for conserving wildlives in India).
(b) How do CITES and IUCN contribute in conservation of wildlives?
(c) Explain the main reasons for decreasing the Rhino population in India. Mention some protective measures of Indian Rhino population. 3+2+(3+2)=10
9. Write short notes on any two of the following : 5×2=10
(a) Endangered species of IUCN threatened category
(b) Vulnerable species of IUCN threatened category
(c) Biosphere reserves in India
(d) National Park and Sanctuary of India

20M/62

(Turn Over)

S-5/ZOOH/05/19

TDP (Honours) 5th Semester Exam., 2019

ZOOLOGY

(Honours)

FIFTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Candidates are required to give their answers in their own words as far as practicable

UNIT—I

Answer any two questions

1. Define adaptive radiation with example. Write down the morphological and physiological adaptation in Camel and Whale. Give diagram. 2+(3+3)+2=10
2. What are the adaptive significances of colouration and mimicry in animals? Give example of cryptic and warning colouration from vertebrate and invertebrate. 2+4+4=10

20M/62

(Turn Over)

3. What is zoogeography? Name the subareas of oriental realm. Name four (4) important species of this realm. Give an account of Australian realm with its fauna. (1+2+2)+5=10

UNIT—II

Answer any two questions

4. (a) Distinguish between the intracellular and extracellular digestion in animal.
 (b) Describe with diagram the structure of a ruminant stomach in *Bos* sp. Explain the physiological process of digestion in ruminant stomach with diagram. 2+4+4=10
5. (a) Explain the chloride shift in mammals with diagram.
 (b) What is Bohr effect? State the biological significance of Bohr effect. 5+(3+2)=10
6. (a) What is glomerular filtration?
 (b) Discuss the role of loop of Henle in hypertonic urine formation.
 (c) Write the significance of uric acid excretion in birds. 3+4+3=10

12. (a) What is correlation coefficient? When is it used?
 (b) In a frog-egg study, ten frogs were used and following data obtained :

Egg No.	:	1	2	3	4	5
Egg weight (g)	:	5.5	5.8	5.6	5.4	5.3
Frog weight (g)	:	125	140	123	127	121
Egg No.	:	6	7	8	9	10
Egg weight (g)	:	5.6	5.9	5.6	5.4	5.7
Frog weight (g)	:	130	141	128	124	138

Find out the *r* value of relation between egg weight and frog weight. Comment on the result. (2+2)+5+1=10

(5)

11. (a) What do you mean by lac operon? Give a diagram showing major elements controlling lac operon. Briefly describe it.
- (b) What is positive and negative control of gene expression? What is an inducer? How does it control expression of lac operon? $(1+2+3)+(2+1+1)=10$
12. Write notes on any two of the following : $5 \times 2 = 10$
- (a) Cloning vector
- (b) Benzer's rII locus
- (c) Benefits of genetic engineering

8M-480/877

S-6/ZOOH/07/18

(4)

8. (a) Describe the mechanism of hormonal control of oogenesis in mammal. Illustrate your answer with diagram.
- (b) Write the origin, source and function of testosterone. $(4+2)+(1+1+2)=10$
9. (a) What is ovulation? Describe the process of ovulation in mammal. How is ovulation hormonally controlled?
- (b) How does oestrous cycle differ from menstrual cycle? Write two characteristics each from cretinism and myxedema. $(1+3+2)+(2+2)=10$

UNIT-IV

(Molecular Biology and Genetic Engineering)

10. (a) What is 'Central Dogma'? Mention the structure of RNA polymerase and write its role in the process of transcription of a model prokaryote.
- (b) What do you mean by 'coupled transcription and translation'? $(3+1+4)+2=10$

8M/877

(Continued)

S-6/ZOOH/07/18

TDP (Honours) 6th Semester Exam., 2018

ZOOLOGY

(Honours)

SEVENTH PAPER

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer eight questions, selecting two from each Unit

Candidates are required to give their answers in their own words as far as practicable

UNIT-I

(Evolutionary Biology)

1. (a) Write down the basis (hypothesis and inference) of Darwin's theory of Natural Selection. What are the drawbacks of this theory?
- (b) Describe in brief the evolutionary process leading to the formation of new species in the light of modern synthetic theory (Savage's model). $(3+3)+4=10$

8M/877

(Turn Over)

(2)

2. (a) What is speciation? Differentiate between allopatric and sympatric speciations.
- (b) Give a brief note on stabilizing selection with suitable example. $(2+4)+(3+1)=10$
3. Write notes on any two of the following : $5 \times 2 = 10$
- (a) Geological timescale
- (b) Parapatric speciation
- (c) Postzygotic isolation

UNIT—II

(Biochemistry)

4. (a) What are pH and p^H scale? Distinguish between acid and base.
- (b) What is called buffer? State the mechanism of buffer action in blood. $(3+2)+(2+3)=10$
5. (a) Briefly describe the mechanism of enzyme action as proposed by Fischer. Illustrate your answer with suitable diagram.

8M/877

(Continued)

(3)

- (b) How is the rate of enzyme action affected by the concentration of substrate? Illustrate your answer with schematic diagram. $(4+1)+(4+1)=10$
6. (a) What is carbohydrate? What is its general structural formula? Write the difference between 'glucan' and 'glycan'. $(5+5)=10$
- (b) Classify carbohydrate only through the schematic diagram. Write only the names of four carbohydrates, two from monosaccharides and two from polysaccharides. $(2+1+2)+(3+2)=10$

UNIT—III

(Endocrinology and Reproductive Biology)

7. (a) Write the names of different parts of pituitary gland. Mention the cell types occurring in adenohypophysis.
- (b) Name the hormones secreted from the anterior pituitary. Mention the functions of oxytocin and vasopressin. $(2+2)+(2+4)=10$

8M/877

(Turn Over)

TDP (General) 1st Semester Exam., 2018

ZOOLOGY

(General)

FIRST PAPER

Full Marks : 40

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) What is conjugation? Describe the process of conjugation in *Paramecium caudatum* and its importance.
- (b) What is spongocoel?
- (c) What is spicule? (1+5+1)+2+1=10

Or

- (a) State the differences between polyp and medusa in *Obelia*.
- (b) Draw and label the structure of *Fasciola hepatica* and explain briefly how it is adapted to the parasitic mode of life.

(2)

- (c) What is a miracidium larva?
(d) State the location and function of acetabulum in *Fasciola*. $2+(2+2)+2+2=10$

2. (a) Why is *Pila* known as an amphibious animal?
(b) Illustrate aquatic respiration in *Pila* with labelled diagram.
(c) Where is the location of osphradium? $2+(5+2)+1=10$

Or

- (a) Describe the nervous system of cockroach with labelled diagram.
(b) Draw and describe briefly the structure of a septal nephridia.
(c) State two differences between open and closed circulations. $(4+2)+2+2=10$

3. (a) What do you mean by retrogressive metamorphosis?
(b) Mention the important progressive changes observed in *Ascidian* tadpole. Draw a labelled diagram of *Ascidian* tadpole
(c) What is the evolutionary significance of tadpole larva of *Ascidia*?
(d) What is cyclostomata? $2+(2+2)+2+2=10$

M9/87a

(Continued)

(3)

Or

- (a) Draw and describe the digestive system of *Lates*.
(b) State four morphological differences between *Petromyzon* and *Myxine*.
(c) What is gill raker? State its function. $(3+2)+2+3=10$
4. (a) State the speciality of the stomach in *Columba*.
(b) Elucidate the movement of food in the stomach of cow with an arrow diagram and briefly describe it.
(c) How many chambers are there in the heart of reptiles and mammals? Name the chambers. $2+(2+4)+2=10$

Or

- (a) What is the difference between down feather and filoplume of *Columba livia*?
(b) State the differences between sympathetic and para-sympathetic nerves.
(c) Draw a labelled diagram of the brain of *Bufo* and mention the function of different regions.
(d) What is aortic arch? $2+2+(2+3)+1=10$

M9-1520/87a

S-1/ZOOG/01/18

TDP (General) 2nd Semester Exam., 2018

ZOOLOGY

(General)

SECOND PAPER (Group-A)

Full Marks : 40

Time : 2 hours

The figures in the margin indicate full marks for the questions

Answer four questions, selecting two from each Unit

Candidates are required to give their answers in their own words as far as practicable

UNIT—I

(Cell Biology, Histology and Developmental Biology)

1. (a) What are the differences between euchromatin and heterochromatin? What is glycocalyx? What is nucleosome?
- (b) Draw a labelled diagram of plasma membrane. Describe fluid mosaic model of plasma membrane. (2+1+1)+(1+5)=10

81158(000)15-8 (2)

2. (a) Mention the location and function of squamous epithelial cells. Give one example of connective tissue.
- (b) Draw a labelled diagram of TS of mammalian thyroid gland. Describe the histology of thyroid gland.
(2+1)+(2+5)=10
3. (a) What is extraembryonic membrane? Name its components.
- (b) What is the mechanism of formation of extraembryonic membranes in chick? Explain with labelled diagram.
- (c) State the changes occurring during cortical reaction.
(1+2)+(4+1)+2=10

UNIT—II

(Biochemistry, Animal Physiology and Endocrinology)

4. (a) What is essential amino acid?
- (b) What is PUFA?
- (c) What is allosteric enzyme? Define buffer.

8M/1149

(Continued)

(3)

- (d) Explain briefly the effect of pH on enzyme action. Mention two importances of lipids in our body.
 $1+1+(1+1)+(4+2)=10$
5. (a) What is osmoregulation? Define osmoconformer.
- (b) What is extracellular digestion? Briefly describe the digestion process in cow with suitable diagram.
- (c) What is action potential?
(1+1)+(1+5+1)+1=10
6. (a) What is estrous cycle? What is the role of hormones in estrous cycle?
- (b) Why is the hormone of anterior pituitary known as trophic hormone? Name two pituitary hormones.
- (c) Name the cell from where testosterone hormone is produced. Mention two important functions of testosterone hormone.
(1+3)+(2+1)+(1+2)=10

8M—1440/1149

S-2/ZOOG/02/18

TDP (General) 3rd Semester Exam., 2018**ZOOLOGY****(General)****THIRD PAPER****Full Marks : 40****Time : 2 hours**

The figures in the margin indicate full marks for the questions

Answer **four** questions, selecting **two** from each Unit

UNIT—1

1. (a) Define species.
 - (b) What do you mean by hierarchy?
 - (c) Discuss the Linnaean hierarchy citing examples of all taxa in man.
 - (d) Enlist three rules for assigning scientific names. 1+1+5+3=10
2. (a) What do you mean by volant adaptation?
 - (b) Describe the structural and physiological modifications of camel to overcome the extreme conditions of desert.
 - (c) What is patagium? 2+(3+3)+2=10

(2)

3. Write short notes on any two of the following : $5 \times 2 = 10$

- (a) Modern synthetic theory of evolution
- (b) Batesian and Mullerian mimicry with examples
- (c) Stability and directional selection

UNIT—2

4. (a) Define population.

(b) What do you mean by ecological natality?

(c) Explain the S-shaped growth curve of population with suitable examples.

(d) What is ecological pyramid? Where do you find inverted ecological pyramid?

$1+2+5+(1+1)=10$

5. (a) What is barrier?

(b) Discuss different types of barriers that restrict animal distribution on earth.

(c) What do you mean by bipolar distribution?

(d) What is Wallace's line? $1+5+2+2=10$

M9/113a

(Continued)

(3)

6. (a) Define biodiversity. Mention two causes of depletion of biodiversity.

(b) Mention the faunal composition of oriental realm.

(c) Describe briefly the *in-situ* conservation of biodiversity. $(1+2)+3+4=10$

M9—1000/113a

S-3/ZOO/03/18

S-3/ZOOG/03/21

**TDP (General) 3rd Semester Exam., 2021
(Held in 2022)**

ZOOLOGY

(General)

THIRD PAPER

Full Marks : 40

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, taking **two** from each Unit

UNIT—I

1. Write the names of phylum and class of the following animals : $2 \times 5 = 10$
 - (a) Sycon
 - (b) Obelia
 - (c) Pheretima
 - (d) Bufo
 - (e) Naja
2. With the example, briefly describe the stabilizing and directional selection. $5 + 5 = 10$

22M/172

(Turn Over)

(2)

3. What is speciation? With appropriate example, describe allopatric and parapatric speciations. $2 + (4 + 4) = 10$

UNIT—II

4. Why is energy flow unidirectional? With a flow chart, describe the Lindemann's model of energy flow. $2 + (3 + 5) = 10$
5. With example, describe the S-shaped and J-shaped population growth curve. $5 + 5 = 10$
6. Write short notes on the following : $5 + 5 = 10$
 - (a) Fauna of Australian Realm
 - (b) Physical barriers that prevent animal distribution

22M—1160/172

S-3/ZOOG/03/21

TDP (General) 4th Semester Exam., 2018

ZOOLOGY

(General)

FOURTH PAPER

(Group—A)

Full Marks : 40

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, selecting **two** from each Unit

UNIT—I

(Applied Zoology—II)

1. (a) What is the principle of vermicomposting?

(b) Describe in brief the tank method of vermicomposting as practiced in India. Give the scientific names of two vermicomposting earthworms.

(c) Give two important differences between penaeid and non-penaeid group of prawn.

2+(4+2)+2=10

(2)

2. (a) Give the scientific names of four silk moth species found in India. State the difference between male and female cocoon.
- (b) What is the chemical composition of silk?
- (c) Describe the rearing of mulberry silkworms in India with diagram.
- (d) What is flacherie? $(2+1)+1+5+1=10$
3. (a) What is honey? Write the chemical composition of honey.
- (b) Illustrate the modern method of apiculture with diagram of movable hive.
- (c) Name different castes of honey-bees and their roles. $(1+2)+5+2=10$

UNIT—II

(Genetics and Molecular Biology)

4. (a) Why is cytoplasmic inheritance also known as maternal inheritance?
- (b) Describe the cytoplasmic inheritance in short in *Lymnaea* species.
- (c) How many Barr bodies are present in a cell having 24A8X, AXXXY, 2A2X and 20A16X? $2+4+4=10$

8M/1176

(Continued)

(3)

5. (a) Describe with suitable diagram, the experiment of Avery, Macleod and McCarty to prove DNA as genetic material.
- (b) A man of blood group 'O' marries a woman of blood group 'A'. The wife's father is of blood group 'O'. What are the probabilities that their children will belong to blood group 'O'?
- (c) With a simple cross, show the probable way of offspring having Klinefelter's and Turner's syndromes. $4+3+3=10$
6. (a) What is central dogma?
- (b) In short, mention the initiation process of translation in a prokaryote.
- (c) Name three termination codons. $3+4+3=10$

8M—900/1176

S-4/ZOOG/04/18

ZOOLOGY

(General)

FOURTH PAPER

(Group—A)

Full Marks : 40

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, selecting **two** from each Unit

UNIT—I

(Applied Zoology—II)

1. (a) Describe the life cycle of *Bombyx mori* with diagram.

(b) What is silk? Write the scientific names of any two silk moths studied by you.

(5+2)+(1+2)=10

(2)

2. (a) Name three vermicomposting earthworms.
(b) Mention three important features of vermicomposting earthworm. What is epigeic earthworm?
(c) What is vermiculture? How will you perform vermicomposting? Explain briefly. $1\frac{1}{2}+(2+1)+(1+4\frac{1}{2})=10$
3. (a) Write the difference between penaeid and non-penaeid prawn.
(b) Describe in brief the method of prawn culture in India.
(c) Write on the hazards of prawn farming. $2+6+2=10$

UNIT—II

(Genetics and Molecular Biology)

4. (a) What is codon? What do you mean by nonsense codon?
(b) Name the process when mRNA is synthesized from DNA. What is the function of TATA box?
(c) Describe briefly the functions of 'Rho' factor and RNA polymerase enzyme. $(2+1)+(1+2)+(2+2)=10$

M9/1161

(Continued)

(3)

5. (a) What is the difference between sex-linked inheritance and autosomal inheritance? Give examples.
(b) What is replication? What is RNA primer?
(c) A colour-blind male married a carrier female. With suitable crosses, find out the probable colour-blind female and colour-blind male offsprings. $(2+1)+(2+1)+4=10$
6. (a) Name the enzyme that helps to unwind the DNA strand during replication.
(b) Briefly describe the structure of RNA polymerase.
(c) What is 'Okazaki' fragment? Explain briefly the process of replication with suitable diagram. $1+3+(1+4+1)=10$

M9—860/1161

S-4/ZOOG/04/19

TDP (General) 5th Semester Exam., 2018

ZOOLOGY

(General)

FIFTH PAPER

Full Marks : 40

Time : 2 hours

The figures in the margin indicate full marks for the questions

Answer four questions, taking two from each Unit

UNIT—I

1. (a) Write the four species of *Plasmodium* which causes different types of malaria.
- (b) Describe briefly the life cycle stages of *Entamoeba histolytica*
- (c) Write the pathogenicity and control measures of *Entamoeba* sp.

2+(3+2)+3=10

2. (a) What is signet ring stage? Mention four important adaptive features of *Taenia solium*

81/20/0005/18 (2)

(b) What is sexual dimorphism? Write a note on control measures of Ascariasis.
(1+4)+(1+4)=10

3. (a) What is vector? Write the diseases caused by the following vectors.

- (i) Aedes
- (ii) Pediculus
- (iii) Cimex
- (iv) Musca
- (v) Culex

(b) Distinguish between Anopheles, Culex and Aedes mosquito. (1+5)+4=10

UNIT—II

4. (a) Define microbes. Give examples of the different types of microbes.

(b) Name two microbes which cause diseases.

(c) How is cholera transmitted? (1+2)+2+5=10

5. (a) What do you mean by the term probiotics? Give two examples.

(b) Mention the names of cells and organs involved in immune system.

(c) What are antibody and antigen?
(1+2)+(2+2)+(1½+1½)=10

M9/140a

(Continued)

(3)

6. (a) Describe briefly the antigen and antibody reaction.

(b) What do you mean by immunity? Distinguish between innate immunity and acquired immunity.

(c) Draw a labelled diagram of IgG.
4+(1+2)+3=10

M9—900/140a

S-5/ZOOG/05/18