



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - I

Subject: ZOOLOGY

Paper: C 1-T & C 1-P

(Non-Chordate - I)

Full Marks : 60 (Theory-40 + Practical-20)

Time : 3 Hours

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

The figures in the margin indicate full marks.

THEORY

Answer any *two* questions from the following :

2×20=40

1. Write the general characteristics of subkingdom Protozoa and classify it upto Phylum (according to Levine et al. 1981) with examples. 3+15+2
2. What is Polymorphism? Write the difference between polyp and medusa. Describe the polymorphism in siphonophora. 2+3+15
3. Comment on Life cycle, Pathogenicity and control of *Wuchereria bancrofti*? 6+8+6
4. Write in brief about evolution of symmetry and segmentation of Metazoa. 10+10

PRACTICAL

Answer *one* question from the following :

1×20=20

1. Write the systematic position and identifying characters of Obelia and Aurelia up to class (according to Ruppert and Barnes) 10+10
 2. Write the steps of preparation of temporary mount slide of Amoeba and Euglena with their identifying characters. 10+10
 3. Write the significance of adult Fasciola hepatica and Taenia solium. 10+10
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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - I

Subject: ZOOLOGY

Paper: C 2-T & C 2-P

(Ecology)

Full Marks : 60 (Theory-40 + Practical-20)

Time : 3 Hours

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

The figures in the margin indicate full marks.

THEORY

Answer any *two* questions from the following :

2×20=40

1. Write about ex-situ and in-situ conservation of biodiversity. 10+10
2. Give an account of the different ecological pyramids found in an ecosystem with castrated diagram.
3. Describe the density-dependent and independent factors regulating a population. 6+8+6
4. Enumerate the steps of ecological succession with a suitable example.

PRACTICAL

Answer *one* question from the following :

1×20=20

1. Write down the procedure of quadrat method in determining population density of a biotic community.
 2. Enlist major phytoplankton and zooplankton which are present in an aquatic ecosystem. Write the systematic position of any two of that.
 3. Write the principle and procedure of determination of dissolved oxygen.
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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - III

Subject: ZOOLOGY

Paper: C5T & C5P

(Chordates)

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

THEORY (Marks : 40)

Answer any *two* questions :

2×20

1. Describe retrogressive metamorphosis with example ? State the chordate features find in Branchiostoma. Describe the general characteristics and classification of cyclostomes up to order. 5+5+10

2. Difference between fish and fishes. What is catadromous and anadromous ? What is euryhaline and stenohaline ? Describe the respiratory system of marine teleosts. 4+4+4+8

3. Describe the poison apparatus and biting mechanism of snake. Describe the general characteristics and classification up to living orders of Reptilia. 10+10
4. Describe the general characteristics and classification up to living Orders of Amphibia. Describe the principles and aerodynamics of flight of bird. 10+10

PRACTICAL (Marks : 20)

Answer any *one* from the following questions : 1×20

1. Describe the general characteristics and classification of following specimen Balanoglossus, Myxine, Hippocampus, Axolotl, Chamaeleon. 4×5=20
 2. Draw and point out the pecten of Fowl head, brain and pituitary of Tilapia. 10+10
 3. Write the difference between poisonous and non poisonous snake. 20
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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - III

Subject: ZOOLOGY

Paper: C6T & C6P

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

THEORY (Marks : 40)

Answer any *two* from the following questions :

2×20

1. Write about each and every step with reason for fixation and staining of any mammalian tissue.
2. How many hormones are released from human placenta ? Write their function.
3. (a) Write the mechanism of action potential generation in any nerve cell with reason with proper diagram.
(b) Imagine that just before the repolarization phase of an action potential begins, the voltage gated K-channel becomes blocked and are unable to open, how might such an action potential look on a graph ?

10+10

4. Classify hormones with characteristic features and example on the basis of their chemical composition. Suppose, posterior pituitary is dissected out in human, whether hormones from posterior pituitary will be available in your body ? Justify your answer. 15+5

PRACTICAL (Marks : 20)

Answer any *one* from the following questions : 1×20

1. Write the characteristic features for identification of histological preparation of thyroid and ovary with drawing and labelling. 10+10
 2. Write about the process of mounting with your squamous epithelial cell. Draw and label the squamous epithelial cell. 10+10
 3. Describe the experimental process and reason of unconditioned reflex action with example and its importance. 10+10
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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - III

Subject: ZOOLOGY

Paper: C7T & C7P

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

THEORY (Marks : 40)

Answer any *two* from the following questions :

2×20

1. Write notes on :

4×5

- (a) Essential amion acids.
- (b) Di-sulphide bond.
- (c) alpha-amino acid.
- (d) Glucogenic amino acid.

2. Write difference between : 2×10
- (a) Eicosanoids & terpenoids.
 - (b) phospholids & sphingolipids.
3. Briefly describe the allosteric properties of enzyme.
4. What is redox system ? Write the regulatory enzyme action strategy.

PRACTICAL (Marks : 20)

Answer any *one* from the following questions : 1×20

1. Write the principle and procedure of protein estimation by lowry method.
 2. Write the molish test & Bewedict test for qualitative test of glucose with proper reaction.
 3. Write the principle & procedure of SDS-PAGE for demonstration of protein separation.
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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - III

Subject: ZOOLOGY

Paper: SEC 1-T

Full Marks : 40

Time : 2 Hours

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

The figures in the margin indicate full marks.

[Apiculture]

Answer any *two* from the following questions :

2×20

1. Describe royal jelly & its function. Define bee language and its significance. 10+10
2. Demerits of Inland apiculture system. 20
3. What is European Foul Brood (EFB) disease ? What are the prospects of apiculture in India. 10+10
4. Describe about Langstroth Model used in apiculture. 20

[Aquarium Fish Keeping]

Answer any *two* from the following questions :

2×20

1. Fish Industry as a cottage industries - Discuss.
2. Write difference between freshwater and marine water aquarium fishes.
2. What do you mean by fish transport ? Write biological significance of Guppy and Molly fish.
3. Aquarium fish as larval predator — Discuss.

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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - V

Subject: ZOOLOGY

Paper: C11T & C11P

(Molecular Biology)

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. (a) Explain the role of the sliding clamp in DNA replication with suitable diagram. Describe with suitable diagrams, the regulatory mechanism of Trp Operon. 4+6=10
- (b) (i) Explain briefly the cloverleaf model of tRNA with suitable diagram.
- (ii) Differentiate between Rho-dependent and Rho-Independent Termination of Transcription. 5+5

2. (a) (i) Describe briefly the nucleotide and base excision repair mechanism of DNA. 5+5
- (ii) Explain in brief the Sanger method of DNA sequencing. 5+5
- (b) (i) Why DNA polymerase cannot start DNA synthesis without free 3'-OH, but RNA polymerase can do this ? 2
- (ii) Name any four proteins involved in the DNA replication in eukaryotes. 2
- (iii) Differentiate between Prokaryotic and eukaryotic ribosomes. 2
- (iv) What is polysome ? 2
- (v) Differentiate between Northern and Southern Blotting. 2
3. (a) Write down the basic principle of PCR and its applications. 2+2
- (b) What is genetic code ? Mention different properties of genetic code. 1+3
- (c) Briefly describe the sequential events that take place in the initiation of translation in prokaryotes. 4
- (d) Briefly describe the aminoacylation of tRNA. 4
- (e) Explain the positive control of lac operon. 4
4. (a) (i) What is catabolyte repression ? 3
- (ii) Explain the molecular mechanism of attenuation in trp operon. 7
- (b) (i) Write down the basic principle, procedure and application of southern blotting hybridization. 6
- (ii) What is wobble hypothesis ? 3
- (iii) What are the different subunits of RNA polymerase holoenzyme ? 1

Group - B

PRACTICAL

Answer any *one* questions :

20×1=20

1. Write down the procedure of Polytene Chromosome preparation. Draw a labelled diagram of Polytene Chromosome.
2. Describe the principle and procedure of Agrose gel electrophoresis, with suitable diagrams.

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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - V

Subject: ZOOLOGY

Paper: C12T & C12P

(Genetics)

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. (a) What is the difference between incomplete dominance and codominance ?
- (b) What is test cross and back cross ?
- (c) Distinguish transition and transversion.
- (d) Write the full form of LINE and SINE.

- (e) What is polygenic inheritance ?
- (f) What is Pleiotropy ?
- (g) Write the genetic constitution of Klinefelter's syndrome.
- (h) What are the methods of genetic recombination ? 8×2.25=20
2. (a) Describe the Genic balance theory of sex determination in *Drosophila*.
- (b) What is Gynandromorphy ?
- (c) What are holandric genes ?
- (d) Why a sex linked gene (X-linked) cannot be passed from a father to his son ? 10+4+3+3
3. (a) Plumage color in mallard ducks is dependent upon a set of 3 alleles : M^* for restricted mallard pattern, M for mallard, and m for dusky mallard. The dominance hierarchy is $MK > M > m$. Determine the genotypic and phenotypic ratios expected in the F_2 from the following crosses :
- (i) $MKMK \times M^*M$
- (ii) $M^*M \times M^*m$
- (iii) $Mm \times mm$
- (b) What is Complete linkage and incomplete linkage ? Explain 15+5
4. (a) (i) Write the differences between transduction and transformation.
- (ii) F^+ strain and Hfr strain of bacteria. 2×5=10
- (b) (i) What do you mean by euploidy and aneuploidy ?
- (ii) Why frameshift mutation is more deleterious than substitution mutation ? 2×5=10

Group - B

PRACTICAL

Answer any **one** questions :

20×1=20

1. A short-winged, dark-bodied fly is crossed with a long-winged, tan-bodied fly. All the F₁ progeny are long-winged and tan-bodied. Flies are crossed among themselves to yield

84 long-winged, tan bodied flies;

27 long-winged dark-bodied flies;

35 short-winged, tan-bodied flies

14 short-winged, dark-bodied flies.

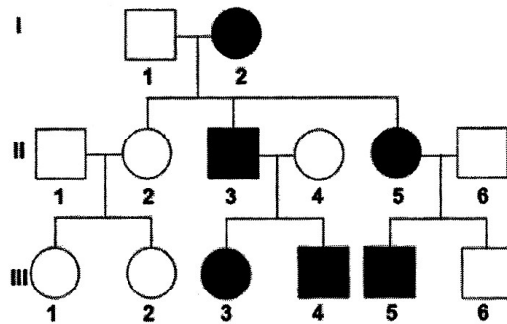
(a) What ratio do you expect in the progeny ?

(b) Use the chi-square test to evaluate your hypothesis. Is the observed ratio within the expected range ?

Control Value of χ^2 at 0.05 for 3 degrees of Freedom is 7.82

5+5=10

2. The following Pegigree was obtained for a small brown spots on your skin, often in areas that get sun exposure; Freckles.



(a) Deduce the inheritance of this condition, stating your reason.

.5+10

(b) Write the genotype of Generation III. 3 & 5.

2.5×2=5

3. (a) Write the genetic constitution & Characteristics of Turner's Syndrome.

(b) Klinefelter's syndrome, in human.

10+10=20



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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - V

Subject: ZOOLOGY

Paper: DSE1T & DSE1P

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

ANIMAL BEHAVIOR AND CHRONOBIOLOGY

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. (a) Define Ethology.
- (b) What is circadian rhythm ?
- (c) What is non-photoc zeitgeber ?
- (d) Define photoperiodism.

- (e) What is biological clock ?
- (f) What is eusocialism ? Give example.
- (g) What is masking ?
- (h) What is intra-sexual selection ? 8×2.5=20
2. (a) What is altruism ? Discuss foraging in honey bees. 5+5
- (b) Write down the advantages of waggle dance. What is sexual dimorphism ? 5+5
- (c) What is intersexual selection ? Give some examples of sexual conflict in parental care. 1+3
- (d) What is biological oscillation ? What is classical conditioning ? What is pheromone ? 1+2+1
4. (a) (i) Write about tidal-rhythms and lunar-rhythms. 2
- (ii) How seasonal reproduction is regulated in vertebrates ? Discuss the role of melatonin in animals. 5+3
- (b) (i) How do honey bees locate food source with relation to solar position. 4
- (ii) Describe Pavlovian experiment on classical conditioning. What is imprinting ? 5+1

Group - B

PRACTICAL

Answer any *one* questions : 20×1=20

1. Describe different types of bird nest and comment on the nesting habit.
 2. Comment on the geotaxis behavior in earthworms.
 3. Comment on the phototaxis behavior of insect larvae. How wood-lice behave in humid conditions.
-

FISH AND FISHERIES

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. What are the various types of feeding habitat of fishes ? Classify fishes on the basis of feeding habits.
2. Explain the structure of gills in fishes with schematic diagram. Discuss the mechanism of gaseous exchange in fishes.
3. Discuss various environmental factors influencing the seasonal variations in fish catches in Bay of Bengal ?
4. Describe various fishing crafts and gears used as fishing techniques.

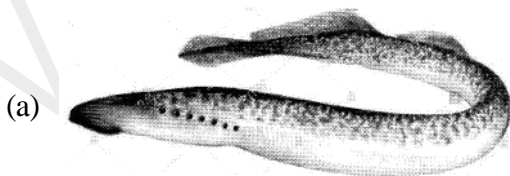
Group - B

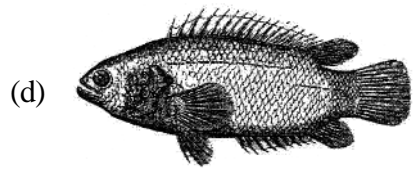
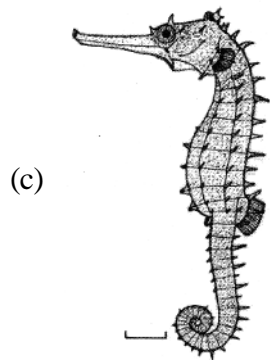
PRACTICAL

Answer any *one* questions :

20×1=20

1. Write scientific name, systematic position and identifying characters of the following specimens.





2. Write the working principle and procedure of estimation of pH of water.
3. Write notes on crafts and gear in fishery.

REPRODUCTIVE BIOLOGY

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. Enumerate the histological structure of ovary in human.
2. Describe in brief the process of spermatogenesis in human.
3. State the mechanism of action of steroid hormones.
4. Write the hormonal regulation in female during menstrual cycle.

Group - B

PRACTICAL

Answer any *one* questions :

20×1=20

1. Describe the breeding techniques and care for experimental animals in animal house.
 2. State the principle of tissue fixation and process of embedding.
 3. Write the identifying characteristics of any two of the following
 - (a) Mammalian testis
 - (b) Mammalian uterus
 - (c) Mammalian ovary
 - (d) Epididymis in male
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B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - V

Subject: ZOOLOGY

Paper: DSE2T & DSE2P

Full Marks : 60

Time : 3 Hours

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

The figures in the margin indicate full marks.

ANIMAL BIOTECHNOLOGY

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. Write the procedure of Sanger method of DNA Sequencing.
2. What is Knock out mice & transgenic animals.
3. Difference between Northern & Western blotting Procedure.
4. Write a note on cystic fibrosis & sickle cell anemia.

Group - B

PRACTICAL

Answer any *one* questions :

20×1=20

1. Write the procedure of plasmid DNA isolation. (Puc 18/19) from E.coli.
 2. Procedure of animal cell culture.
 3. Write a note on restriction digestion of Plasmid DNA.
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MICROBIOLOGY

Group - A

THEORY

Answer any *two* questions :

20×2=40

1. What is cell wall of Bacteria ? Write the domain concept of Carl woose.
2. Write difference between communicable & non-communicable disease.
3. What is Acid fast staining, gram staining, simple & complex media.
4. What is conjugation ? Write the process of Generalised & specialised transduction.

Group - B

PRACTICAL

Answer any *one* questions :

20×1=20

1. Write the principle & procedure of gram staining of Bacteria.
 2. Write the procedure of liquid media preparation.
 3. What is power plate, streak plate, spread plate.
-



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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - VI

Subject: ZOOLOGY

Paper: CC - 13 (T + P) (Development Biology – Theory + Practical)

Full Marks: 40 (Theory) + 20 (Practical) = 60

Time: 4 Hours

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

Questions are of equal value.

Answer any **one question** [within 250 words] from each Part.

Part A: Development Biology (Theory)

1. Write short notes on blocks to polyspermy in Sea Urchin .
2. Describe the process of regeneration in a suitable model you have studied.
3. Describe different types of eggs with example.
4. Write the role of Ca^{++} in fertilization?
5. Write down the molecular events during cleavage?
6. Describe the preparatory phase of gastrulation.



Part B: Development Biology (Practical)

1. Draw and label the 24 hours of chick embryo. Write down its identifying characters.
2. Draw and label the 48 hours of chick embryo. Write down its identifying characters.
3. Draw and label the 72 hours of chick embryo. Write down its identifying characters.
4. Draw and describe the life cycle of *Drosophila* sp.
5. Draw and label the epitheliochorial placenta. Write down its identifying characters.
6. Schematically describe the preparation of 'Drosophila culture medium'.

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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - VI

Subject: ZOOLOGY

Paper: CC - 14 (T + P) (Evolutionary Biology – Theory + Practical)

Full Marks: 40 (Theory) + 20 (Practical) = 60

Time: 4 Hours

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

Questions are of equal value.

Answer any **one question** [within 250 words] from each Part.

Part A: Evolutionary Biology (Theory)

1. Explain Darwinism in the light of modern synthetic theory.
2. Write down in brief about the origin and evolution of human.
3. Write a brief note on speciation in evolution.
4. (i) In the formula for determining a population's genotype frequencies, why is the 2 in the term $2pq$ necessary?
(ii) Brown hair (B) is dominant to blond hair (b). If there are 168 brown-haired people in a population of 200. What is the predicted frequency of heterozygote, homozygous dominant and homozygous recessive?



- (iii) In a given population, only the A and B allele is present in the ABO system. There are no individuals with type O blood or with O alleles in this particular population. If 200 people have type A blood, 75 have type AB blood, 25 have type B blood. What are the allelic frequency of this population?
- (iv) What allelic frequency will generate twice as many recessive homozygotes as heterozygote?
5. Briefly describe the major geological events of Paleozoic era. Draw and describe the evolution of horse using different fossils. What is neutral theory of evolution?
6. Describe the Chemical basis of origin of life with suitable reactions. Comment on the sources of variation in the population and their role in evolution. What is convergent and divergent evolution?

Part B: Evolutionary Biology (Practical)

1. Write down the critical evolutionary significance on the following model specimen provided:



2. Write homology and analogy of the specimens provided:





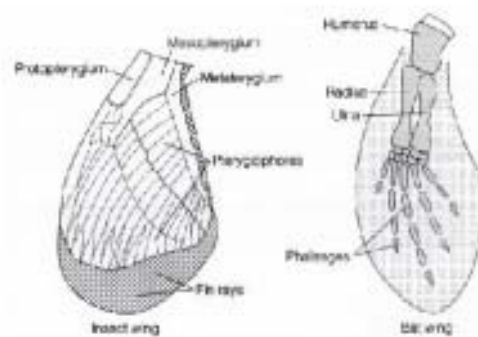
3. Graphically represent the frequency distributions of body weights [kg] of 80 people in the following dataset:

Body weight:	51-53	54-56	57-59	60-62	63-65	66-68	69-71
Number of people:	5	7	14	28	15	8	3

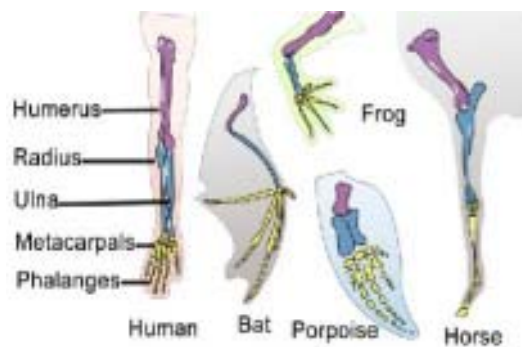
4. Write down the procedure and significance of chi-square test in evolutionary biology.

5. Study the homology and analogy from the provided organs below:

A.



B.





6. In rabbits, gray fur is dominant to white and black eyes are dominant to red. When a gray furred (heterozygous), red eyed rabbit is mated a number of times with a white furred, Black eyed (heterozygous) rabbit the offspring results are: 20 Gray/ Red. 25 Gray/Black , 32 White / Black, 23 White/ Red. Conduct a chi square test on these results and explain what those result means? Calculate using 0.05 level of significance.

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Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - VI

Subject: ZOOLOGY

Paper: DSE - 3 (T + P)

(Parasitology – Theory + Practical)

(Endocrinology – Theory + Practical)

Full Marks: 40 (Theory) + 20 (Practical) = 60

Time: 4 Hours

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

Questions are of equal value.

Answer any **one question** [within 250 words] from each Part.

Part A: Parasitology (Theory)

1. (a) What is parasitism? Give example.
(b) What is parasitoid? Give example.
(c) Define the following terms with examples: phoresis, commensalism, mutualism, amensalism
(d) A growing fetus within mother's womb is not a parasite – justify.



- (e) Compare the terms: (i) pandemic disease vs epidemic disease (ii) zoonotic disease vs sylvatic disease
2. Describe the morphology, life cycle, epidemiology, pathogenicity and treatment of *Leishmania donovani*.
 3. Name the families of Hard and Soft Ticks. Mention their scientific names and differences between them.
 4. Describe the morphology, life cycle, epidemiology, pathogenicity and treatment of *Ascaris lumbricoides*.
 5. (a) Compare ticks and mites.
(b) Describe the pathogenicity and control measures for:
(i) rat flea (*Xenopsylla* sp.) (ii) lice (*Pediculus* sp.) (iii) bedbug (*Cimex* sp.)
 6. State briefly the life cycle and pathogenicity of *Trypanosoma gambiense*. Mention the role of VSG.

Part B: Parasitology (Practical)

1. State the systematic position of *Trypanosoma gambiense* justifying with at least two characters for each taxon.
2. Draw and label the adult stage of *Pediculus humanus*. Add a note on its pathogenicity.
3. Mention the characteristic features of *Xenopsylla chaeopis* with a suitable diagram.
4. Name one nematode from GI tract of chicken and mention their collection method for study.
5. Name one Cestode parasite present in chicken intestine and mention the procedure of collection of these parasites to study under stereomicroscope.
6. Mention the systematic position of *Trichinella spiralis* with relevant characters.



Part A: Endocrinology (Theory)

1. What is neurohormone? Mention six neurohormones with their functions. If posterior pituitary of human beings is cut off then oxytocin and vasopressin will be available or not? Justify your answer with proper reason.
2. What do you mean by ELISA? Mention its types and compare those types with suitable schematic diagram mentioning merits and demerits.
3. Mention mechanism of hormone action of one steroid hormone and one peptide hormone with schematic diagram in detail.
4. Mention maximum hormones which are antagonist with each other. Give reasons with function. Why maximum hormone is having more than one function? Justify your answer.
5. Critically comment on hypothalamo-hypophyseal portal system.
6. State the mechanism of action of steroid hormone.

Part B: Endocrinology (Practical)

1. Mention the characteristic features (histological) of transverse section of liver and pancreas with drawing and labeling.
2. Describe the staining procedure of thyroid gland in details with reasons.
3. Write down the procedure of tissue fixation, embedding in paraffin and microtomy of testis.
4. Briefly describe the procedure of staining of nerve tissue.
5. Write down the principle and methodology of estimation of plasma level of any hormone by ELISA.
6. Draw and label various endocrine glands in a dissected rat.



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - VI

Subject: ZOOLOGY

Paper: DSE - 4 (T + P)

(Biology of Insects – Theory + Practical)

(Wild Life Conservation and Management – Theory + Practical)

Full Marks: 40 (Theory) + 20 (Practical) = 60

Time: 4 Hours

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

Questions are of equal value.

Answer any **one question** [within 250 words] from each Part.

Part A: Biology of Insects (Theory)

1. Write in brief about the integument in insects.
2. What do you mean by social insects? Write down the social characters of termite.
3. Write a note on theory of co-evolution.



4. Mention two important characters of the Class Insecta. Mention important features and one example of the following Insect Order -

(i) Hemiptera (ii) Coleoptera (iii) Odonata

5. (a) Distinguish between Hemimetabolous and Holometabolous Insect.

(b) Briefly discuss about the endocrine control in metamorphosis of insects.

6. Discuss about role of mosquitoes as mechanical and biological vector.

Part B: Biology of Insects (Practical)

1. Write the procedure of study the modification of insects leg.

2. Write down the mounting procedure of insects mouthparts.

3. Write down the methodology of insects collection and preservation.

4. Write down the morphological study of various castes of *Apis* sp.

5. Draw & Describe the life cycle of any mosquito.

6. Mention the adult morphological features of Mulberry silk moth. Draw a sketch of its life cycle.



Part A: Wild Life Conservation and Management (Theory)

1. Briefly describe a note on GIS.
2. What is the necessity of wildlife conservation?
3. Discuss the causes and consequences of human wildlife conflicts.
4. What are the essential features of any protected area? What do you mean by community reserve?
5. Critically comment on conservation values of wildlife.
6. Discuss the methodologies, merit and demerit of any census technique.

Part B: Wild Life Conservation and Management (Practical)

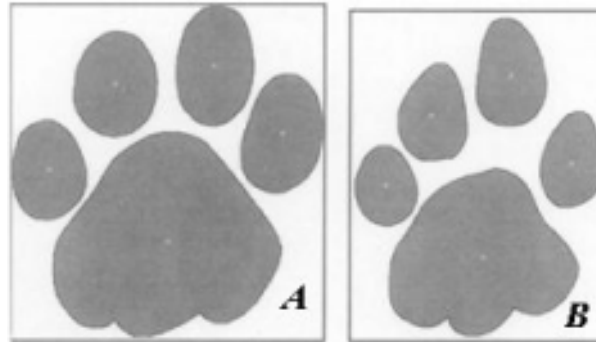
1. Identify the following wildlife fauna with their systematic position (up to order), IUCN status & three salient specimen characters:

Manis crassicaudata, Gyps bengalensis, Batagur baska, Prionailurus viverrinus

2. Write down the uses of GPS in wild life conservation and management.
3. Write down the principle and methodology of Species area curve to determine the size of a quadrat.



4. The following figures A & B representing the hid pugmark of a tiger and tigress. Identify them with reasons.



5. Discuss the procedure, merit and demerit of any field technique for flora and fauna.
6. Explain the procedure of any method for ground cover assessment studied by you.

Vidyasagar University