U.G. 2nd Semester Examinations 2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H DC 3-T

(Diversity of Chordates)

Full Marks : 25 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *eight* questions : ½×8=4

   (a) Teeth in shark are modified _____ scales. (Fill in the blank)

   (b) Wheel organ is found in _____ . (Fill in the blank)

   (c) _____ is converted into the thyroid gland of vertebrates. (Fill in the blank)

   (d) *Archaeopteryx* is a missing link between reptiles and mammals. (True/False)

   (e) Solenoglyphous fangs are found in vipers. (True/ False)

   (f) Name the type of accessory respiratory organ present in *Channa* sp.

   (g) Adipose fin is a characteristic feature of Catfish. (True/False)

   (h) Cephalochordates are also known as Tunicates. (True/False)

   (i) Aves have _____ skull. (Fill in the blank)

   (j) Study of reptiles is called _____. (Fill in the blank)

   (k) Marsupium is found in metatherian mammals. (True/False)

   (l) Name one egg laying mammal.

2. Answer any *two* questions : 2½×2=5

   (a) Define neoteny and paedogenesis.

   (b) Why *Sphenodon* sp. is called a living fossil? Write the characteristic features of *Sphenodon* sp. 1+1½=2½

   (c) Write the name and geographical distribution of surviving dipnoans.

   (d) Write the salient features of Prototherian mammals with example.

3. Answer any *four* questions : 4×4=16

(a) Give an outline classification of class Amphibia up to living orders with two features and two examples for each.

(b) Write a note on different types of fish migration with examples.

(c) Describe ciliary mode of feeding of *Amphioxus*.

(d) Give a brief account of the exoskeleton features found in Aves.

(e) Describe the poison apparatus of snakes.

(f) What is physostomous and physoclistous type of swim bladder? State the functions of swim bladder. 2+2=4

(g) Describe the chordate features of *Ascidia* larva. Why are they called urochordates? 3+1=4

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U.G. 2nd Semester Examinations 2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H DC 4-T

(Comparative Anatomy of Vertebrates)

Full Marks : 25 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *eight* questions : ½×8=4

   (a) The epidermis of skin is derived from the _____. (Fill in the blank)

   (b) Which part of the cranium support the brain?

   (c) What is the name of the region in the transition between the oesophagus and the stomach?

   (d) Meckel's cartilages give rise to _____ in mammalian skull. (Fill in the blank)

   (e) _____ is a connecting vessel between the bases of the left and right aortic arches in crocodilians. (Fill in the blank)

   (f) Write the name of cranial nerve VI.

   (g) Where do you find pyloric glands in stomach?

   (h) Oviduct in vertebrates is a modified_____duct. (Fill in the blank)

   (i) How many cranial nerves are found in mammals?

   (j) Spiracle of shark is modified _____ slit. (Fill in the blank)

   (k) The outer layer of meninges is known as _____. (Fill in the blank)

   (l) Vomeronasal organ is also known as _____. (Fill in the blank)

2. Answer any *two* questions : 2½×2=5

   (a) What do you mean by amphistylic jaw suspension?

   (b) What are the different anatomical divisions of the ruminant stomach?

   (c) Write a short note on carnassial teeth.

   (d) What do you mean by foramen of Panizza?

3. Answer any *four* questions : 4×4=16

(a) Write a short note on integumentary glands of mammals.

(b) What do you mean by dental formula? Write dental formula of guineapig. What do you mean by thecodont dentition? 1+1+2=4

(c) Discuss about double respiratory system in birds.

(d) Briefly describe comparative anatomy of aortic arches in Aves and Mammalia.

(e) Explain the tripartite concept of kidney.

(f) Write down the structure of vertebra with proper diagram.

(g) Write a short note on splanchnocranium.

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U.G. 4th Semester Examinations 2022

ZOOLOGY (General)

Paper Code : ZOOL-G-SEC 2-T

(Sericulture)

[CBCS]

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *twelve* questions from the following : ½×12=6

(a) In which country silk was first discovered?

(b) What is the scientific name of Tasar silk moth?

(c) Write the scientific name of one host plant of mulberry silk worm.

(d) How many instar stages are there in *Bombyx mori*?

(e) *Ricinus communis* is the host plant of ————————. (Fill in the blank)

(f) Scientific name of Uzi fly is ————————. (Fill in the blank)

(g) Univoltine silk moths are found in ———————— region. (Fill in the blank)

(h) Commercially most superior silk is produced by ———— univoltine/bivoltine/ multivoltine silk moth. (Choose the correct answer)

(i) The process of killing of pupa without harming the silk fibre is called ————. (Fill in the blank)

(j) Muscardine disease is also called ————————. (Fill in the blank)

(k) Grasserie is an example of bacterial disease. (True/ False)

(l) The cocoon without pupa is called _____. (Fill in the blank)

(m) Harpes, a hook like structure is found in male moth. (True/ False)

(n) The silkworm spins silk all over its body from outside to inside. (True/False)

(o) By _____ larva remove the exoskeleton to form next larval stage. (Fill in the blank)

(p) Silk gland is a modified _____. (Fill in the blank)

(q) Herold's gland is found in _____ larva. (Fill in the blank)

(r) Chemically the central part of silk fibre consists of _____. (Fill in the blank)

2. Answer any *four* questions from the following : 2½×4=20

(a) Distinguish male and female larvae of mulberry silk moth.

(b) Describe the structure of full-grown cocoon of mulberry silk moth.

(c) What is Filippi's gland?

(d) Write a short note on stifling.

(e) Write the causative agent and symptoms of any one fungal diseases of silkworm.

(f) Give a short note on Uzifly as a pest of silkworm.

(g) How hibernating egg is different from non-hibernating egg?

3. Answer any *six* questions from the following : 4×6=24

(a) Describe the structure of silk gland with diagram.

(b) Define silk. Write the chemical composition of silk. 1+3

(c) Write a note on culture and up-keeping of mulberry plant.

(d) Briefly describe different types of mountages.

(e) Define reeling. Describe briefly the process of reeling. 1+3

(f) Differentiate Univoltine and Multivoltine races of mulberry moth.

(g) Write the causative agent, symptoms and control measures of Pebrine disease. 1+1+2

(h) Mention the prospects of Sericulture in India.

(i) Describe the different types of equipment required for rearing of silkworm.

(j) Give a chart showing scientific name of four species of silkworm along with the type of silk produced by them. 1+1+1+1

[illegible]

1. [illegible] ½×12=6

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) *Bombyx mori* [illegible]

(e) *Ricinus communis* [illegible] _____ [illegible]

(f) [illegible] _____ [illegible]

(g) [illegible] _____ [illegible]

[P.T.O.]

(h) [illegible] _____ [illegible]

(i) [illegible] _____ [illegible]

(j) [illegible] _____ [illegible]

(k) [illegible]

(l) [illegible] _____ [illegible]

(m) [illegible]

(n) [illegible]

(o) _____ [illegible]

(p) [illegible] _____ [illegible]

(q) [illegible] _____ [illegible]

(r) [illegible] _____ [illegible]

2. [illegible] 2½×4=10

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible]

(e) [illegible]

(f) [illegible]

(g) [illegible]

3. [illegible] 4×6=24

(a) [illegible]

(b) [illegible] 1+3

(c) [illegible]

(d) [illegible]

(e) [illegible] 1+3

[P.T.O.]

(f) [illegible]

(g) [illegible] 1+1+2

(h) [illegible]

(i) [illegible]

(j) [illegible] 1+1+1+1

U.G. 2nd Semester Examinations 2022

ZOOLOGY (General)

Paper Code : ZOOL DC-2 / GE-2

(Comparative Anatomy and Developmental Biology of Vertebrates)

Full Marks : 25 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Attempt any *eight* questions taking four from each group : ½×8=4

Group - A

(Comparative Anatomy)

(a) The external membrane of brain is called _____. (Fill in the blank)

(b) Mammals have thecodont type of dentition. (True/False)

(c) The outermost layer of epidermis is called _____. (Fill in the blank)

(d) Meckel's cartilage originates from _____number of visceral arch. (Fill in the blank)

(e) Single circuit circulation is found in _____. (Fill in the blank)

(f) Which type of kidneys are found in amphibians?

Group - B

(Developmental Biology of Vertebrates)

(g) What type of fertilization is found in sea urchin?

(h) Maturation of sperm is called _____. (Fill in the blank)

(i) Which ion plays crucial role in cortical granule reaction?

(j) In which pole of the egg development of embryo takes place?

(k) Mammals have _____ type of egg. (Fill in the blank)

(l) Acrosome develops from _____. (Fill in the blank)

2. Attempt any *two* questions taking one from each group from the following : 2½×2=5

Group - A

(Comparative Anatomy)

(a) Write the functions of air sacs in pigeon.

(b) Write a brief note on foramen of Panizza.

Group - B

(Developmental Biology of Vertebrates)

(c) What is holoblastic cleavage? Give an example. 2+½=2½

(d) What is extra-embryonic membrane? Write the functions of amnion. 1+1½=2½

3. Attempt any *four* questions taking two from each group : 4×4=16

Group - A

(Comparative Anatomy)

(a) Write a short note on ruminant stomach.

(b) Write the process of respiration in mammals.

(c) Write a short note on swim bladder of fishes.

(d) Describe double circuit circulatory system with diagram.

Group - B

(Developmental Biology of Vertebrates)

(e) Write the functions of placenta.

(f) Write a short note on slow block to polyspermy.

(g) Outline the process of Oogenesis.

(h) Briefly describe acrosomal reaction in fertilization of mammals.

[illegible]

1. [illegible]

Group - A

(Comparative Anatomy)

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible]

(e) [illegible]

(f) [illegible]

Group - B

(Developmental Biology of Vertebrates)

(g) [illegible]

(h) [illegible]

(i) [illegible]

(j) [illegible]

(k) [illegible]

(l) [illegible]

2. [illegible]

Group - A

(Comparative Anatomy)

(a) [illegible]

(b) [illegible]

Group - B

(Developmental Biology of Vertebrates)

(c) [illegible]

(d) [illegible]

[illegible] [illegible]

Group - A

(Comparative Anatomy)

[illegible]

[illegible]

[illegible]

[illegible]

Group - B

(Developmental Biology of Vertebrates)

[illegible]

[illegible]

[illegible]

[illegible]

2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H-DC 9

[Animal Physiology : Life Sustaining System]

(CBCS)

Full Marks: 25 Time: Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *eight* questions : ½×8=4

(a) Give an example of an areolar tissue.

(b) Haversian canals are found in long human bones. (True/False)

(c) Nissl granules found in cyton of a neuron are composed of _____. (Fill in the blank)

(d) The state of sustained muscle contraction resulting from a rapid succession of nerve impulses is called _____. (Fill in the blank)

(e) The other name of Factor X for blood coagulation is _____. (Fill in the blank)

(f) Active reabsorption of glucose occurs in the _____. (Fill in the blank)

(g) The term homeostasis was introduced by _____. (Fill in the blank)

(h) Animals which tolerate a narrow range of variation in salinity are _____. (Fill in the blank)

(i) Contraction of heart starts at the _____ node which is called pacemaker. (Fill in the blank)

(j) The type of cartilage present in intervertebral discs is called fibrocartilage. (True/False)

(k) Write the normal value of resting membrane potential of a neuron.

(l) Give an example of respiratory pigment.

2. Answer any *two* questions : 2½×2=5

(a) Draw schematically the scheme of cascade reactions leading to blood coagulation.

(b) Write in brief on counter-current theory of urine concentration in mammals.

(c) Write a short note on the oxygen dissociation curve of haemoglobin.

(d) Differentiate between squamous and columnar epithelium.

3. Answer any *four* questions : 4×4=16

(a) State the salient histological features of a mammalian bone. What is the difference between compact bone and spongy bone? 2+2

(b) Explain the "saltatory mechanism" of nerve impulse conduction along a myelinated nerve fibre with a diagram.

(c) Define cardiac cycle. Explain briefly the regulation of blood pressure. 2+2

(d) Enumerate the different types of connective tissues along with their functions.

(e) Explain briefly the ultrastructure of skeletal muscle with a diagram.

(f) Describe the process of hemopoiesis with emphasis on regulatory steps.

(g) Write a short note on Hamburger phenomenon. What is carbon monoxide poisoning? 2+2

———————

2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H-DC-10

(Systematics and Evolution)

[CBCS]

Full marks : 25 Time: Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *eight* questions taking *four* questions from each group : ½×8=4

(Group A : Systematics)

(a) Smallest taxon of classification is _____. (Fill in the blank)

(b) Linnaeus evolved a system of nomenclature called _____. (Fill in the blank)

(c) What is the term given to a duplicate specimen of original type?

(d) Artificial system of classification was first used by_____. (Fill in the blank)

(e) *Systema Naturae* was authored by _____. (Fill in the blank)

(f) Who is considered as the father of taxonomy?

(Group B : Evolution)

(g) _____ is considered as a missing link between reptiles and birds. (Fill in the blank)

(h) Wing of Hawkmoths and the wing of hawks are example of _____ evolution. (Fill in the blank)

(i) *Equus, Orohippus, Merychippus, Parahippus, Miohippus*: Write the correct sequence of evolutionary line of horse.

(j) "Genetic drift is a directional change in frequency of alleles in a population." (True/False)

(k) The first terrestrial vertebrates evolved from lobe-finned fishes late in the _____ period. (Fill in the blank)

(l) Write the correct sequence of geological time scale: Cambrian, Permian, Jurassic, Quaternary.

2. Answer any *two* questions taking *one* question from each group : 2½×2=5

(Group A : Systematics)

a) What do you mean by Linnaean hierarchy?

b) Define micro and macro taxonomy.

(Group B : Evolution)

c) Explain founder effect with an example.

d) Write a short note on biological species concept.

3. Answer any *four* questions taking *two* questions from each group : 4×4=16

(Group A : Systematics)

a) What do you mean by Law of priority?

b) Write a short note on molecular taxonomy.

c) Briefly describe the principles of zoological nomenclature.

d) Define with examples primary and secondary types. What is cladistics? 3+1

(Group B : Evolution)

e) Explain adaptive radiation with reference to Galapagos finches.

f) What do you mean by Lamarckism? What was the objection on Lamarckism? 2+2

g) Mention the geographical boundary of Australian realm.Give two examples each of mammalian and avian fauna of Australian realm. 2+1+1

h) What is KT extinction? Write the major causes of loss of fauna during this extinction. 1+3

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U.G. 4th Semester Examinations 2022

ZOOLOGY (General)

Paper Code : ZOOL-G-SEC 2-T

(Sericulture)

[CBCS]

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *twelve* questions from the following : ½×12=6

(a) In which country silk was first discovered?

(b) What is the scientific name of Tasar silk moth?

(c) Write the scientific name of one host plant of mulberry silk worm.

(d) How many instar stages are there in *Bombyx mori*?

(e) *Ricinus communis* is the host plant of ————————. (Fill in the blank)

(f) Scientific name of Uzi fly is ————————. (Fill in the blank)

(g) Univoltine silk moths are found in ———————— region. (Fill in the blank)

(h) Commercially most superior silk is produced by ———— univoltine/bivoltine/ multivoltine silk moth. (Choose the correct answer)

(i) The process of killing of pupa without harming the silk fibre is called ————. (Fill in the blank)

(j) Muscardine disease is also called ————————. (Fill in the blank)

(k) Grasserie is an example of bacterial disease. (True/ False)

(l) The cocoon without pupa is called _____. (Fill in the blank)

(m) Harpes, a hook like structure is found in male moth. (True/ False)

(n) The silkworm spins silk all over its body from outside to inside. (True/False)

(o) By _____ larva remove the exoskeleton to form next larval stage. (Fill in the blank)

(p) Silk gland is a modified _____. (Fill in the blank)

(q) Herold's gland is found in _____ larva. (Fill in the blank)

(r) Chemically the central part of silk fibre consists of _____. (Fill in the blank)

2. Answer any *four* questions from the following : 2½×4=20

(a) Distinguish male and female larvae of mulberry silk moth.

(b) Describe the structure of full-grown cocoon of mulberry silk moth.

(c) What is Filippi's gland?

(d) Write a short note on stifling.

(e) Write the causative agent and symptoms of any one fungal diseases of silkworm.

(f) Give a short note on Uzifly as a pest of silkworm.

(g) How hibernating egg is different from non-hibernating egg?

3. Answer any *six* questions from the following : 4×6=24

(a) Describe the structure of silk gland with diagram.

(b) Define silk. Write the chemical composition of silk. 1+3

(c) Write a note on culture and up-keeping of mulberry plant.

(d) Briefly describe different types of mountages.

(e) Define reeling. Describe briefly the process of reeling. 1+3

(f) Differentiate Univoltine and Multivoltine races of mulberry moth.

(g) Write the causative agent, symptoms and control measures of Pebrine disease. 1+1+2

(h) Mention the prospects of Sericulture in India.

(i) Describe the different types of equipment required for rearing of silkworm.

(j) Give a chart showing scientific name of four species of silkworm along with the type of silk produced by them. 1+1+1+1

[illegible]

1. [illegible] ½×12=6

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) *Bombyx mori* [illegible]

(e) *Ricinus communis* [illegible] _____ [illegible]

(f) [illegible] _____ [illegible]

(g) [illegible] _____ [illegible]

[P.T.O.]

(h) [illegible] _____ [illegible]

(i) [illegible] _____ [illegible]

(j) [illegible] _____ [illegible]

(k) [illegible]

(l) [illegible] _____ [illegible]

(m) [illegible]

(n) [illegible]

(o) _____ [illegible]

(p) [illegible] _____ [illegible]

(q) [illegible] _____ [illegible]

(r) [illegible] _____ [illegible]

2. [illegible] 2½×4=10

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible]

(e) [illegible]

(f) [illegible]

(g) [illegible]

3. [illegible] 4×6=24

(a) [illegible]

(b) [illegible] 1+3

(c) [illegible]

(d) [illegible]

(e) [illegible] 1+3

[P.T.O.]

(f) [illegible]

(g) [illegible] 1+1+2

(h) [illegible]

(i) [illegible]

(j) [illegible] 1+1+1+1

U.G. 4th Semester Examinations 2022

ZOOLOGY (General)

Paper Code : DC-4 / GE-4

[Genetics and Evolutionary Biology]

(CBCS)

Full Marks : 25 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *eight* questions taking *four* questions from each group : ½×8=4

Group - A : Principles of Genetics

(a) When the activity of one gene is suppressed by the activity of another non-allelic gene it is known as _____. (Fill in the blank)

(b) UV-ray is not a mutagen. (True/False)

(c) Non-sense mutation may be caused by a single nucleotide substitution. (True/False)

(d) The alternative form of a gene is called_____. (Fill in the blank)

(e) What is the unit of linkage map distance?

(f) What would be the phenotypic ratio of dihybrid cross in recessive epistatic gene?

Group - B : Evolutionary Biology

(g) Speciation due to geographical isolation is called _____. (Fill in the blank)

(h) Write scientific name of any one of the Darwin's finches.

(i) *Elephas maximus* is an example of fauna of oriental realm. (True/False)

(j) _____ period is known as the "Age of Amphibians". (Fill in the blank)

(k) _____ proposed the theory of chemo-genesis. (Fill in the blank)

(l) *Equus, Merychippus, Orohippus, Parahippus, Miohippus*: Write the correct sequence of evolutionary line of horse.

2. Answer any *two* questions taking *one* question from each group : 2½×2=5

Group - A : Principles of Genetics

(a) With an example briefly describe sex-influenced trait.

(b) What is frameshift mutation?

Group - B : Evolutionary Biology

(c) What do you mean by "hot dilute soup concept"?

(d) Briefly describe the concept of sympatric speciation.

3. Answer any *four* questions taking *two* questions from each group : 4×4=16

Group - A : Principles of Genetics

(a) Explain the concept of multiple alleles citing an example of human trait.

(b) Briefly describe sex-linked characters.

(c) Write a short note on aneuploidy.

(d) Describe briefly the genic balance theory of sex determination of *Drosophila* sp.

Group - B : Evolutionary Biology

(e) Describe briefly the Urey-Miller's experiment.

(f) Mention different regions of the Oriental realm. Prepare a list of faunal distribution (one species of reptile, bird and mammal) of the Oriental realm. 1+3

(g) What is genetic drift? Explain the importance of genetic drift in evolution. 1+3

(h) Write a short note on geological time scale.

[illegible]

1. [illegible] ½×8=4

Group - A : Principles of Genetics

(a) [illegible] _____ [illegible]

(b) UV [illegible]

(c) [illegible]

(d) [illegible] _____ [illegible]

(e) [illegible]

(f) [illegible]

Group - B : Evolutionary Biology

(g) [illegible] _____ [illegible]

(h) [illegible]

(i) *Elephas maximus* [illegible]

[P.T.O.]

(j) _____ [illegible]

(k) [illegible] _____ [illegible]

(l) *Equus, Merychippus, Orohippus, Parahippus, Miohippus* : [illegible]

2. [illegible] 2½×2=5

Group - A : Principles of Genetics

(a) [illegible]

(b) [illegible]

Group - B : Evolutionary Biology

(c) [illegible]

(d) [illegible]

3. [illegible] 4×4=16

Group - A : Principles of Genetics

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible] (*Drosophila* sp.) [illegible]

Group - B : Evolutionary Biology

(e) [illegible]

(f) [illegible] 1+3

(g) [illegible] 1+3

(h) [illegible]

_____

2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H-DC-13

[Parasitology and Immunology]

(CBCS)

Full Marks: 25 Time: Two hours

The figures in the margin indicate full marks.
Candidates are required to give their answers with their own words as far as practicable

1. Answer *eight* questions taking *four* from *each* group: ½ × 8=4

(Group A: Parasitology)

a) Give an example of digenetic parasite.

b) Tsetse fly are the vectors of Chagas disease. (True/ False)

c) Scrub typhus fever is caused by bacteria *Orientia tsutsugamushi*. (True/False)

d) Name a vector species of flea transmitting *Yersinia pestis*.

e) Give an example of haemoflagellate parasite.

f) Which ectoparasite can spread diseases like Lyme disease and Rocky Mountain spotted fever?

(Group B: Immunology)

g) The only immunoglobulin that crosses placenta is _____. (Fill in the blank)

h) Treatment of snake's bite by providing anti-venom is an example of artificial active immunity. (True/ False)

i) The type of hypersensitivity mediated by T-helper cell is _____. (Fill in the blank)

j) Name the B-cell maturation site in birds.

k) Name the first antibody produced in response to infections.

l) All immunogens are antigens, not all antigens are immunogens. (True/ False)

2. Answer *two* questions taking *one* from *each* group: 2½ × 2= 5

(Group A: Parasitology)

a) What is hyperparasitism? Give an example.

b) Write the pathogenicity of *Taenia saginata*.

(Group B: Immunology)

c) Differentiate between MHC-I and MHC-II molecule.

d) Describe the structure of an antibody with a labelled diagram.

3. Answer *four* questions taking *two* from *each* group: 4 × 4= 16

(Group A: Parasitology)

a) Write the major differences between soft tick and hard tick. 4

b) Write the methods of laboratory diagnosis and treatment of leishmaniasis. 2+2

c) Describe briefly the life cycle of *Schistosoma haematobium*. Write the methods of prevention of schistosomiasis infection in humans. 3+1

d) What do you mean by biological and mechanical vector? Add a note on control of bed bugs. 2+2

(Group B: Immunology)

e) Briefly describe sandwich ELISA. State its application. 3+1

f) What is affinity? Briefly describe the process of inflammation. 1+3

g) Explain the endogenous pathway of antigen processing and presentation. 4

h) Define adjuvant. Discuss in brief the factors influencing immunogenicity. 2+2

2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H-DC-14

[Molecular Biology]

(CBCS)

Full Marks: 25 Time: Two hours

The figures in the margin indicate full marks.
Candidates are required to give their answers with their own words as far as practicable

1. Answer any *eight* questions: ½×8=4
   a) During transcription, the DNA site at which RNA polymerase binds is called _____. (Fill in the blank)
   b) Carcinoma refers to malignant tumour of the connective tissue. (True/False)
   c) Which enzyme is called molecular scissor in genetic engineering?
   d) The function of 3′→ 5 ′ exonuclease activity of a DNA polymerase is to _____. (Fill in the blank)
   e) Which type of bond is synthesized by DNA ligase?
   f) DNA helicase remains associated with _____ subunit of DNA-polymerase holoenzyme. (Fill in the blank)
   g) Which type of mutation converts a codon specifying an amino acid into a termination codon?
   h) 'DNA→ RNA→ protein'− this relation is known as _____. (Fill in the blank)
   i) Clamp loading protein in DNA-polymerase holoenzyme is _____. (Fill in the blank)
   j) DNA gyrase is a topoisomerase. (True/False)
   k) In northern blot analysis, _____ extracted from cells or a tissue is separated by size using denaturing gel electrophoresis. (Fill in the blank)
   l) Which enzyme repairs deamination of cytosine in the DNA molecule?

2. Answer any *two* questions: 2½×2=5
   a) Write the role of σ factor in transcription.
   b) Describe the structure of a tRNA.
   c) What do you mean by Wobble hypothesis?
   d) What are the functional differences between DNA polymerase and RNA polymerase?

3. Answer any *four* questions: 4×4=16

a) Write the nature of genetic codes.

b) Write a short note on telomerase.

c) Why p53 is called guardian of genome?

d) Write a short note on 5′ capping.

e) Describe briefly the initiation of translation in prokaryotes.

f) Write a short note on protooncogene.

g) Outline an experiment to prove that DNA replication is a semi-conservative process.

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2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H-DSE-3 (A/B)

(Animal Behaviour and Chronobiology/Toxicology, Environmental Biology and Public Health)

(CBCS)

Full Marks: 25 Time: Two hours

The figure in the margin indicates full marks.
Candidates are required to give answers
(by selecting either DSE-3A: Animal Behaviour and Chronobiology
Or DSE-3B: Toxicology, Environmental Biology and Public Health)
with their own words as far as practicable.

DSE 3A: Animal Behaviour and Chronobiology

1. Answer any *eight* questions : ½×8=4

a) A chick pecking at the red spot on the mother's beak is an example of learning behavior. (True/False)

b) Name the ethologist who gave the famous four questions of causation, development, survival value, and evolution.

c) Asian openbill stork is an example of migratory bird. (True/False)

d) In honey bee colony worker bees arises from fertilized egg. (True/False)

e) In Sea horse, males undergo pregnancy rather than females. (True/False)

f) In Hamilton's rule, 'r' represents _____. (Fill in the blank)

g) Who is known as 'Birdman of India'?

h) The decrease in response to repeated or continuous stimulation is called _____. (Fill in the blank)

i) Chemicals that are synthesized by one organism and that affect the behavior of another member of the same species are called _____. (Fill in the blank)

j) The difference in form between male and female of the same species is called _____. (Fill in the blank)

k) Spinning of web by spiders is an example of _____ behavior. (Fill in the blank)

l) Reflex actions are controlled by _____. (brain/ spinal cord)

2. Answer any *two* questions : 2½×2=5

a) Explain FAP with suitable example.

b) Give a brief account of imprinting.

c) Write a short note on Kinesis.

d) What is altruism? Give an example. 1½+1

3. Answer any *four* questions : 4×4=16

a) Write a note on waggle dance language of honey bee.

b) Discuss the different types of fish migration.

c) What is parental care? Briefly discuss the parental care in amphibians. 1+3

d) Explain classical conditioning with an example. State the laws of classical conditioning. 2+2

e) How instinctive behavior is different from learned behavior?

f) 'Males are more parental compared to females in fish'. Explain.

g) Write a short note on circadian rhythm.

DSE 3B: Toxicology, Environmental Biology and Public Health

1. Answer any *eight* questions : ½×8=4

a) PAN is an example of secondary pollutant. (True/False)

b) Which type of toxicity can occur due to single exposure?

c) The most common target organ of toxicity is CNS. (True/ False)

d) Tuberculosis is caused by _____. (Fill in the blank)

e) Expand NOAEL.

f) 'Black foot' disease is caused by _____. (Fill in the blank)

g) Which toxic gas was responsible for Bhopal gas tragedy?

h) Give an example of ionizing radiation.

i) Typhoid is a viral disease. (True/False)

j) Which metal is responsible for Itai-Itai disease?

k) CO_2 participate in the formation of photochemical smog. (True/ False)

l) The intensity of sound is usually measured in _____. (Fill in the blank)

2. Answer any *two* questions : 2½×2=5

a) Write a short note on biomagnification.

b) How BOD is different from COD?

c) Write briefly on xenobiotic.

d) Write a short note on Minamata disease.

3. Answer any *four* questions : 4×4=16

a) Write the cause, symptoms and control measures of cholera. 1+1+2

b) Classify pesticides on the basis of mode of action.

c) Give an account of global warming.

d) Give a brief account of acid rain.

e) What do you mean by LD_{50} and LC_{50}? 2+2=4

f) State the sources and effects of air pollution.

g) State the causes and effects of ozone layer depletion.

2022

ZOOLOGY (Honours)

Paper Code : ZOOL-H-DSE-4

[Biology of Insects]

(CBCS)

Full Marks: 25 Time: Two hours

The figures in the margin indicate full marks.
Candidates are required to give their answers with their own words as far as practicable.

1. Answer any *eight* questions : ½×8=4

a) Pleuron is the lateral side of the thorax. (True/False)

b) Which order of insect includes bees, wasps and ants?

c) The termite colony is known as _____. (Fill in the blank)

d) Give an example of hemimetabolous insect.

e) Praying mantis have raptorial legs.(True/False)

f) Name the primary vector of dengue virus.

g) Zoraptera is the smallest order of insect.(True/False)

h) Grasshopper belongs to order Hemiptera. (True/False)

i) Sponging type of mouth parts is found in _____. (Fill in the blank)

j) The mutual exchange of regurgitated liquids between adult social insects or between them and their larvae is known as _____. (Fill in the blank)

k) Which order of insect is called as "scaly winged" insects?

l) Johnston organ is found in the legs of insects.(True/False)

2. Answer any *two* questions : 2½×2=5

a) State the difference between pterygota and apterygota with examples.

b) What are elytra and halteres? State their function.

c) List the factors contributing to the success of insects.

d) Write the important features of order Diptera with examples.

3. Answer any *four* questions : 4×4=16

a) Describe the neuroendocrine control of metamorphosis in holometabolous insects.

b) Write a note on the type of mouth parts found in insects with diagrams.

c) What are allelochemicals? Write the main difference between allomones andkairomones.

d) Write about the antennae of insect with their diagram.

e) Explain the caste system in honey bee?

f) Briefly discuss about role of mosquito as vector.

g) Describe the structure of compound eye with diagram.

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