

Question Bank

F. Y. B. Sc. Zoology

Sem-I.

P-I: ZOO-111 (Non-Chordate-I)

UNIT 1: Study of *Pila globosa* (5 Marks)

Question-1: Multiple choice questions (1 mark each)

- 1) *Pila* is popularly called the
a) apple snail b) pearl oyster c) sea horse d) sea lemon.
- 2) In *Pila* the shell is made up of
a) single piece b) two pieces c) 3 to 4 pieces d) several pieces
- 3) In the *Pila*, shell usually consists of
a) 3.5 whorls. b) 5.5 whorls c) 6 whorls. d) 6.5 whorls
- 4) The whole series of whorls, exclusive of the body whorl in *Pila* is known as.....
a) spire b) varinx. c) umbilicus d) suture.
- 5) The colour of the shell of *Pila* is
a) green b) brown c) lemon yellow d) red
- 6) In *Pila*, on the inner surface of the operculum there is an area for the attachment of the opercular muscles, called.....
a) nucleus b) boss c) peristome d) pallium
- 7) The foot in *Pila* is
a) elongated b) flat leaf shaped c) well muscularised d) not found

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | | |
|------------------|-------------------------|------------------|
| 1) Mollusca | 2) Shell of <i>Pila</i> | 3) Columella |
| 4) Tentacles | 5) Mantle | 6) Peristome |
| 7) Boss | 8) Foot of <i>Pila</i> | 9) Visceral mass |
| 10) Nuchal lobes | | |

Question-3: Attempt the following (4 marks each)

- a. Enlist any 6 characteristic features of Phylum Mollusca
- b. Systematic position, habits and habitat of *Pila*.
- c. Explain shell of *Pila*.
- d. Describe microscopic structure of *Pila* shell.
- e. Sketch and label shell of shell

Question – 4 a Attempt the following (3 marks each)

- i. Sketch and label outer view of operculum
- ii. Sketch and label inner view of operculum
- iii. Describe operculum in *Pila*
- iv. Sketch and label microscopic structure of *Pila* shell

UNIT 2 : Pallial complex and Torsion (12 Marks)

Question-1: Multiple choice questions (1 mark each)

- 1) The floor of buccal cavity in *Pila* is raised to form the tongue mass which is
a) radula b) ctenidium c) odontophore d) vestibule
- 2) In radular teeth are arranged in transverse rows, each one bears.....
a) 5 teeth b) 7 teeth c) 9 teeth d) 12 teeth.
- 3) The mantle cavity is divided into two chambers by
a) ctenidium b) genital duct c) rectum d) epitaenia
- 4) In *Pila*, epitaenia divides the mantle of pallial cavity into
a) two equal chambers
b) small branchial chamber and large pulmonary chamber
c) large pulmonary sac and small pulmonary chamber
d) small pulmonary sac and large pulmonary sac
- 5) In *Pila* the odontophore is associated with
a) olfaction b) vision c) hearing d) gustation

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | |
|------------------------------|-----------------------|
| i. Mantle cavity | ii. Pallial complex |
| iii. Epitanea | iv. Pulmonary chamber |
| v. Torsion in <i>Pila</i> . | vi. Coelom |
| vii. Radula of <i>Pila</i> . | viii. Egestion. |
| ix. Odontophore | |

Question-3: Attempt the following (4 marks each)

- a. Describe Mantle of *Pila*
- b. Describe structures and function of salivary gland in *Pila*
- c. Describe digestive gland of *Pila*
- d. Describe structure and function of Radula of *Pila*
- e. Explain buccal mass in *Pila*
- f. Food, feeding and digestion mechanism in *Pila*

Question 4 a. Attempt the following (3 marks each)

- i. Sketch and label single row of radular teeth
- ii. Sketch and label the radula of *Pila*
- iii. Explain stomach of *Pila*
- iv. Explain mechanism of digestion in *Pila*

Question- 5. Attempt the following (8 marks each)

- 1) Explain the Pallial complex of *Pila*
- 2) Sketch and label mantle cavity and Pallial complex of *Pila*
- 3) Sketch and label alimentary canal of *Pila*

- 4) What is digestion? Describe digestive system of *Pila*
- 5) Define torsion. With labeled diagram describe various stages of torsion in gastropod.
- 6) Describe the various digestive gland of *Pila*. Add a note on Food and Feeding mechanism.

UNIT 3: Respiratory system (5 Marks)

Question-1: Multiple choice questions (1 mark each)

- 1) The function of ctenidium is
 - a) digestion.
 - b) respiration.
 - c) reproduction.
 - d) all.
- 2) Monopectinate ctenidium is found in
 - a) *Pila*.
 - b) *Heliothis*.
 - c) *Patella*
 - d) all.
- 3) The mode of respiration in *Pila* is
 - a) aquatic
 - b) aerial
 - c) parasitic
 - d) aquatic and aerial.
- 4) In *Pila*, Aquatic respiration is performed by.....
 - a) ctenidium.
 - b) genital duct.
 - c) rectum.
 - d) epitaenia.
- 5) In *Pila*, pulmonary respiration is performed by.....
 - a) ctenidium.
 - b) lung.
 - c) rectum.
 - d) epitaenia.

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | |
|------------------------|--------------------------|
| a. Ctenidium | b. Nuchal lobes |
| c. Aquatic respiration | d. Pulmonary respiration |
| e. Pulmonary sac | |

Question-3: Attempt the following (4 marks each)

- i. Mechanism of aerial respiration in *Pila*

Question 4 a Attempt the following (3 marks each)

- i. Sketch and label ctenidium of *Pila*.
- ii. Explain aquatic respiration in *Pila*
- iii. Explain ctenidium of *Pila*.

UNIT 4: Circulatory system (5 marks)

Question-1: Multiple choice questions (1 mark each)

- 1) The respiratory pigment found in blood of *Pila* is.....
 - a) haemocyanin
 - b) haemoglobin
 - c) chlorocruorin
 - d) vanadin.
- 2) There is thick walled bulbous ampulla present at the base of
 - a) Cutaneous artery
 - b) Pericardial artery
 - c) Cephalic aorta
 - d) Penial artery.
- 3) In *Pila*, the spaces filled with blood are known as
 - a) arteries
 - b) veins
 - c) Sinuses
 - d) none of the above.
- 4) In *Pila*, circulatory system is of type.
 - a) open
 - b) closed
 - c) mixed
 - d) none of the above.

5) The heart of *Pila* consists of chamber/s.

- a) three b) two c) one d) four

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Pericardium ii. Auricle
iii. Aortic ampulla iv. Ventricle
v. Sinuses vi. Blood of *Pila*.

Question-3: Attempt the following (4 marks each)

- a. With labelled diagram describe heart of *Pila*
b. Give an account on different arteries in *Pila*
c. Give an account on different veins in *Pila*
d. Give in brief mechanism of blood circulation in *Pila*.

Question 4 a: Attempt the following (3 marks each)

- i. Explain cephalic aorta
ii. Explain visceral aorta
iii. Sketch and label heart of *Pila*

UNIT 5: Nervous system and sense organs (7 marks)

Question-1: Multiple choice questions (1 mark each)

1. One of following is not found in *Pila*..... .
a) Cerebral ganglia, b) Pleural ganglia,
c) pedal ganglia, d) Commissural ganglia.
2. Tick out correct statement.
a) *Pila* does not distinguish object b) *Pila* does not respond to variation of light.
c) *Pila* cannot see the object clearly. d) None of the above is correct.
3. In, *Pila* osphradium is
a) monopectinate type, b) bipectinate type
c) peliccate type d) holobranchiate type.
4. In *Pila*, osphradium is
a) tangoreceptor. b) chemoreceptor.
c) photoreceptor. d) none of above.
- 5) In *Pila*, statocyst is filled with fluid which contains
a) otoliths. b) otoclade.
c) statoconia. d) autoliths.
- 6) Statocysts are organ of
a) digestion. b) respiration.
c) Vision. d) equilibrium.

7) In *Pila*, pairs of tentacles are present.

- a) 2.
- b) 4.
- c) 6.
- d) 8.

Question- 2 and 4 b: Attempt the following (2 marks each)

- i) Commissures.
- ii) Connectives.
- iii) Cerebral ganglia.
- iv) Buccal ganglia.
- v) Pleuro-pedal ganglionic mass.
- vi) Visceral ganglion.
- vii) Ommatophore.
- viii) Retinal cells.
- ix) Statocyst.
- x) Statoconia.
- xi) Osphradium.
- xii) Supra-intestinal ganglion

Question-3: Attempt the following (4 marks each)

- i. Explain briefly nervous system in *pila*
- ii. With labeled diagram describe structure and function of osphradium
- iii. Sketch and label V. S. of the eye of *Pila*.
- iv. Sketch and label nervous system in *Pila*

Question- 4 (a): Attempt the following (3 marks each)

- a. Describe pleuro-pedal ganglia
- b. Define ganglia. Enlist ganglia in *pila*
- c. Sketch and label T. S. of osphradium of *Pila*.
- d. Sketch and label Statocyst of *Pila*.

UNIT 6: Reproductive system (8 marks)

Question-1: Multiple choice questions (1 mark each)

- 1. The *Pila* isanimal.
 - a) monocecius.
 - b) dioecious.
 - c) hermaphrodite.
 - d) undifferentiated.
- 2. Testis is closely attach with the
 - a) pericardium.
 - b) anterior renal chamber.
 - c) digestive gland.
 - d) ctenidium.
- 3. *Pila* copulates in
 - a) sand
 - b) burrows
 - c) water
 - d) dry soil.
- 4. In *Pila*, ova are fertilized in
 - a) water
 - b) uterus.
 - c) branchial chamber.
 - d) posterior renal chamber.

Question- 2 and 4 b: Attempt the following (2 marks each)

- i) Dioceous.
- ii) Eupyrene sperms.

- iii) Oligopyrene sperms.
- iv) Vesicula seminalis.
- v) Testis
- vi) Ovary.
- vii) Uterus.
- viii) Copulation.
- ix) Oviposition

Question-3: Attempt the following (4 marks each)

- i) Sketch and label Male reproductive system of *Pila*.
- ii) Sketch and label Female reproductive system of *Pila*.
- iii) Describe copulation and fertilization in *Pila*.
- iv) Describe structure and function of Sperms of *Pila*

Question- 5. Attempt the following (8 marks each)

1. Describe male reproductive system of *Pila* and add a note on copulation.
2. Explain the female reproductive system of *Pila* and add a note on copulation
3. Describe in detail the copulation, ovulation and development of *Pila*.

UNIT 7: Excretory system (3 marks)

Question-1: Multiple choice questions (1 mark each)

1. Organ of Bojanus is associated with
 - a) respiratory system.
 - b) excretory system.
 - c) endocrine system.
 - d) reproductive system.
2. *Pila* chiefly excretes.....
 - a) ammonia.
 - b) uric acid.
 - c) ammonium compounds
 - d) urea.

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Excretion
- ii. Organ of Bojanus

Question- 4 (a): Attempt the following (3 marks each)

- i. Explain anterior renal chamber in *Pila*
- ii. Explain posterior renal chamber in *Pila*
- iii. Explain physiology of excretion in *Pila*.

UNIT 8: General topics (15 marks)

Question-1: Multiple choice questions (1 mark each)

1. The skeleton of sponges made from.....
 - a) choanocytes
 - b) collagen fibres
 - c) spicules
 - d) gemmules
2. The spicules having only one axis are called
 - a) asters
 - b) sigmas
 - c) monoaxons
 - d) spheres.

3. The spicules have three axes crossing at right angles called.....
a) diactinal b) triaxon c) polyaxon d) amphidisc.
4. Both the ends of rhabdome bears disc is called
a) amphidisc b) diactinal c) calthrops d) none.
5. The spicules in which growth occurs around a centre is called.....
a) spheres b) toxas c) sigmas d) chelas.
6. Spicules with knoblike structures at their ends are called.....
a)oxyasters b) tylasters c) chelas d) amphidisc.
7. Gemmules are produced by.....
a) protozoans b) sponges c) coelenterates d) annelids
8. Gemmules are
a) respiratory organ b) photoreceptor c) auditory organ d) reproductive bodies.
9. Gemmules are produced during
a) unfavorable season b) rainy season
c) favorable condition. d) throughout the year.
10. The minute opening of gemmule is called
a) apopyle b)micropyle c) prosopyle d) none of the above.
11. The interior of gemmule is filled with a mass of
a) choanocyte cells b) odontoblast c) amoebocytes d) archaeocyte cells.
12. The linear arrangement of segments is called
a) metabolism b) metamerism c) chain of zooids d) all.
13. Pearl is produced by
a) arthropods b) echinoderms c) molluscs d) annelids.
14. Pearl is secreted by
a) mantle. b) digestive gland c) foot. d) pulmonary sac.
15. Pedicellariae are characteristics of
a) platyhelminthes. b) mollusca. c) echinodermata. d) arthropoda.

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | | |
|--------------------------------------------------------------------------|--------------------------|---------------------------|
| a) Spicules. | b) Megascleres spicules. | c) Microscleres spicules. |
| d) Monoaxon spicules. | e) Triaxon spicules. | f) Tetraxon spicules. |
| g) Amphidisc spicules. | h) Triradiate spicules. | i) Polyaxon spicules. |
| j) Spheres. | k) Gemmmule | l) Metamerism. |
| m) Pearl. | n) Nacre. | o) Pedicellariae. |
| p) Biting and chewing mouth parts q) Piercing and sucking mouth parts | | |

Question-3: Attempt the following (4 marks each)

- a. What is metamerism? Describe any two theories of metamerism in annelids.
- b. Sketch and label Gemmule

- c. Enlist different types of spicules in sponges
- d. Pedicellariae in Sea-star
- e. Pedicellariae in Sea urchin
- f. Sketch and label piercing and sucking type of mouth parts in insects
- g. Sketch and label biting and chewing types of mouth parts in insects
- h. Sketch and label sponging type of mouth parts in insects
- i. Sketch and label chewing and lapping type of mouth parts in insects
- j. Sketch and label siphoning type of mouth parts in insects
- k. Pearl formation in *Unio*

Question- 4 (a): Attempt the following (3 marks each)

- a) Sketch and label Pearl formation
- b) Sketch and label any three types of spicules
- c) Describe the process of Gemmule formation
- d) Stalked pedicellariae in Sea-star
- e) Sketch and label sessile pedicellariae in Sea-star.
- f) Sketch and label Gemmiform pedicellariae of Sea urchin.
- g) Sketch and label Triradiate pedicellariae of Sea urchin.
- h) Explain the process of pearl formation
- i) Explain briefly piercing and sucking types of mouth parts in insects
- j) Explain briefly sponging types of mouth parts in insects
- k) Explain briefly chewing and lapping types of mouth parts in insects
- l) Explain briefly siphoning types of mouth parts in insects

Question- 5. Attempt the following (8 marks each)

1. What is spicule ? Describe the various types of megascleres spicules in sponges
2. What is metamerism? Describe various theories of metamerism in annelids and its significance.
3. What are pedicellariae? With neat labeled diagram describe different types of pedicellariae in Sea-star.
4. With neat labeled diagram describe any two types of mouth parts in insects.

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Question bank Preparation Committee

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QUESTION BANK

Semester – I

Class: F. Y. B. Sc.

Paper- II

ZOO- 112: PARASITOLOGY

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Unit-1: Introduction, Scope and importance of Parasitology.
(Mark allotted- 6)

Question-1: Multiple choice questions (1 mark each)

- Parasitology is the study of living organisms, which depend on other organisms for their nourishment and
 - respiration
 - excretion
 - reproduction
 - shelter.
- The association between the members of same species is called
 - intraspecific
 - interspecific
 - symbiosis
 - antagonism
- is often found as commensal on the shell of the hermit crab
 - Sea- star
 - Sea- anemone
 - Sea-lily
 - Sea-urchin

Question- 2 and 4 b: Attempt the following (2 marks each)

- Host
- Parasite
- Interspecific association
- Symbiosis
- Intraspecific association
- Vector

Question-3: Attempt the following (4 marks each)

- Describe scope and importance of Parasitology.
- Define animal associations. Describe intraspecific associations in animals.
- Define animal associations. Describe interspecific associations in animals.

Question- 4 (a): Attempt the following (3 marks each)

- Explain mutualism with an appropriate example
- Explain commensalism with an appropriate example
- Explain parasitism with an appropriate example

Unit-2: Types of parasites (Mark allotted- 6)

Question-1: Multiple choice questions (1 mark each)

- is the ectoparasite of human, which makes tunnel in its skin.
 - Tick
 - Itch - mite
 - Louse
 - Bed – bug.
- is the endoparasite, living in the lumen of alimentary canal.
 - Plasmodium*
 - Trypanosoma*
 - Ascaris*
 - Trichinella*
- Theworm is commonly known as lymph parasite
 - malarial
 - fialrial
 - tape
 - hook
- A parasite, which cannot survive without the host is called parasite.
 - facultative parasite
 - obligatory
 - temporary
 - tissue

Question- 2 and 4 b: Attempt the following (2 marks each)

- Facultative parasite
- Obligatory parasite
- Tissue parasite
- Haemoparasite
- Ectoparasite
- Endoparasite
- Gut parasite
- Lymph parasite
- Permanent parasite
- Temporary parasite

Question-3: Attempt the following (4 marks each)

- Explain briefly degree of parasitism
- What are endoparasites? Describe various types of endoparasites.

3. Sketch and label *Trypanosoma gambiense*
4. Sketch and label Itch mite
5. Sketch and label male and female *Ascaris*
6. Sketch and label *Trichinella spiralis*

Unit-3: Types of hosts. (Mark allotted- 10)

Question-1: Multiple choice questions (1 mark each)

1. The host in which a parasite becomes adult, reaches sexual maturity and reproduces sexually is the host.
 - a. Reservoir
 - b. Definitive
 - c. Intermediate
 - d. Carrier
2. A parasite, which infects man and cattle and causes nagana disease.
 - a. *Trypanosoma gambiense*
 - b. *Trypanosoma brucei*
 - c. *Taenia solium*
 - d. *Taenia saginata*
3. mosquito acts as definitive host for malarial parasite.
 - a. *Culex* male
 - b. *Culex* female
 - c. *Anopheles* male
 - d. *Anopheles* female
4. The intermediate host is commonly called Host
 - a. primary
 - b. secondary
 - c. tertiary
 - d. quaternary
5. The host which harbours the adult parasite and do not undergo its further development is the host
 - a. paratenic
 - b. definitive
 - c. accidental
 - d. intermediate
6. Dengue is transmitted to humans by the bite of mosquito.
 - a. *Aedes*
 - b. *Culex*
 - c. *Anopheles*
 - d. None

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | |
|----------------------|-------------------------|
| i. Yellow fever | ii. Hyper parasitism |
| iii. Malaria | iv. Hyper infestation |
| v. Chikungunia | vi. Reservoir host |
| vii. Accidental host | viii. Intermediate host |

Question-3: Attempt the following (4 marks each)

- a. Explain in brief the types of hosts
- b. What is host specificity? Describe various characteristics of host specificity.
- c. Explain the control measures of mosquitoes
- d. Write a note on personal protection against mosquito bite.

Question- 4 (a): Attempt the following (3 marks each)

- | | |
|--------------------|-------------------|
| i. Paratenic host | ii. Parasitic mix |
| iii. Elephantiasis | iv. Dengue fever |

Question- 5. Attempt the following (8 marks each)

1. Define vector. Describe mosquito as a vector in transmission of various diseases.
2. Define host. Describe various types of hosts with suitable examples.

Unit-4: Parasitic adaptations (Mark allotted- 8)

Question-1: Multiple choice questions (1 mark each)

1. Most of the parasites secrete anti-enzymes to protect themselves from the action of digestive enzymes of host
 - a. intestinal
 - b. tissues
 - c. blood
 - d. lymph
2. The female *Ascaris* is prodigious, which gives rise to eggs at one time.
 - a. 1000 - 5000
 - b. 5000 – 10,000
 - c. 10,000 – 15, 000
 - d. 15,000 – 20,000

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Adaptation
- ii. Structural adaptation

Question-3: Attempt the followings (4 marks each)

1. What is adaptation? Explain structural adaptations in endoparasites.
2. What is adaptation? Explain physiological adaptations in endoparasites.

Question- 4 (a): Attempt the following (3 marks each)

- i. Anaerobic respiration
- ii. Antienzymes

Question- 5. Attempt the following (8 marks each)

1. Define adaptation and give brief account of structural adaptations of endoparasites.

Unit-5: Effects of parasites on hosts (Mark allotted- 6)

Question-1: Multiple choice questions (1 mark each)

1. Infestation by leech to human being is called
 - a. Ascariasis
 - b. Filariasis
 - c. Hirudiniasis
 - d. Giardiasis.
2. The infection to small intestine of human being caused by adult tape worm is termed as
 - a. Giardiasis
 - b. Filariasis
 - c. Taeniasis
 - d. Elephantiasis
3. The disease Schistosomiasis is caused by a parasite.....
 - a. Blood fluke
 - b. Liver fluke
 - c. Tape worm
 - d. Round worm
4. causes disease ancylostomiasis to man.
 - a. Round worm
 - b. Hook worm
 - c. Tape worm
 - d. Filarial worm.
5. endocrine gland of crab secretes the moulting hormone.
 - a. X- organ
 - b. Y- organ
 - c. Z- organ
 - d. V- organ

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Symbiosis
- ii. Parasitism
- iii. Parasitic castration
- iv. Feminisation
- v. Ecdysone
- vi. Sprue
- vii. Elephantiasis
- viii. Intestinal amoebiasis.

Question-3: Attempt the following (4 marks each)

- a) Explain obstructive effects of parasites on hosts.
- b) Describe moulting activity in crab
- c) Write nutritional effects of parasites on hosts
- d) Describe mechanical effects of parasites on host body.
- e) Sketch and label parasitised crab by *Sacculina*.

Unit-6: Host reactions to parasites

(Mark allotted- 8)

Question-1: Multiple choice questions (1 mark each)

- A protozoan parasite, *Leishmania donovani* causes
- Kala- azar
 - Gora –azar
 - Yellow- azar
 - Pink –azar
- The phagocytic abilities of cells located in liver are called.....cells
 - Microglial
 - Leucocytic
 - Kupffer
 - Macrophagic
 - The enlargement of liver cells and spleen of human is the symptom of disease
 - Kala- azar
 - elephantiasis
 - dengue fever
 - malarial fever - is the proliferation of parasitised cells in host.
 - Hyperplasia
 - Metaplasia
 - Neoplasia
 - Hypertrophy
 - is referred to as an abnormal growth resulting in the formation of tumour
 - Hyperplasia
 - Metaplasia
 - Neoplasia
 - Hypertrophy
 - defines the change of one type of cell into another type.
 - Hyperplasia
 - Metaplasia
 - Neoplasia
 - Hypertrophy

Question- 2 and 4 b: Attempt the following (2 marks each)

- Compatibility
- Immunity
- Hypertrophy
- Inflammation
- Hyperplasia
- Metaplasia
- Neoplasia.

Question-3: Attempt the following (4 marks each)

- Define immunity. Describe innate and acquired immunity in host-parasite system.
- Describe various abnormal growths of host reactions.

Question-4 (a): Attempt the following (3 marks each)

- Behavioural resistance
- Genetic resistance
- Cellular reactions

Question- 5 Attempt the following (8 marks each)

- Define resistance. Give brief account of different types of resistance in host-parasite system.
- What is mean by tissue reactions? Describe in brief the types of tissues reactions in host-parasite system.

Unit-7: Study of the following parasites (Mark allotted- 16)

Question-1: Multiple choice questions (1 mark each)

- The phase in which *Plasmodium vivax* multiplies asexually in mosquito is called

 - Schizogony
 - Sporogony
 - Gametogony
 - Trophozogy

- The malarial parasite, *Plasmodium vivax* is transmitted bymosquito.
 - Male *Anopheles*
 - Female *Anopheles*
 - Male *Culex*
 - Female *Culex*.
- disease is caused by *Wuchereria bancrofti*.
 - Filariasis
 - Ascariasis
 - Pediculosis
 - Taeniasis
- The flame cells in miracidium are concerned with.....
 - reproduction
 - excretion
 - digestion
 - respiration
- causes the disease liver rot in sheep.
 - Ascaris*
 - Wuchereria*
 - Fasciola*
 - Giardia*
- A disease filariasis is caused by parasite.
 - Plasmodium*
 - Wuchereria*
 - Schistosoma*
 - Fasciola*
- The infestation caused by is called Pediculosis.
 - Head louse
 - Tick
 - Bed-bug
 - Mite.

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | |
|----------------------|-------------------------|
| i. Signet ring stage | ii. Amoeboid stage |
| iii. Oocyst | iv. Sporogony |
| v. Splenomegaly | vi. Schizogony |
| vii. Acetabulum | viii. Pediculosis |
| ix. Sporozoite | x. Trophozoite |
| xi. Elephantiasis | xii. Haemozoin granules |
| xiii. Liver rot | xiv. Febrile paroxysm |
| xv. Microfilariae | |

Question-3: Attempt the following (4 marks each)

- i. Explain pathogenicity of malarial parasite
- ii. Explain pathogenicity of Head louse
- iii. Describe sexual cycle of *Plasmodium* in mosquito
- iv. Sketch and label Sporozoite of *Plasmodium*
- v. Sketch and label Trophozoite of *Plasmodium*
- vi. Sketch and label Miracidium larva
- vii. Sketch and label Sporocyst larva
- viii. Sketch and label Redia larva
- ix. Sketch and label Cercaria larva
- x. Sketch and label Metacercaria larva
- xi. Sketch and label Head louse.
- xii. Sketch and label *Fasciola hepatica*
- xiii. Describe the structure of Miracidium larva
- xiv. Describe the structure of Sporocyst larva
- xv. Describe the structure of Redia larva
- xvi. Describe the structure of Cercaria larva
- xvii. Write prevention and control of *Fasciola hepatica*
- xviii. Write prevention and control of filariasis
- xix. Write prevention and control measures of head louse

Question- 4 (a): Attempts the following (3 marks each)

- i. Sketch and label Oocyst on infected stomach
- ii. Pathogenicity of liver fluke
- iii. Pathogenicity of *Wuchereria bancrofti*
- iv. Habits and habitat of liver fluke
- v. Habits and habitat of filarial worm
- vi. Habits and habitat of Head louse
- vii. Metacercaria larva of liver fluke

Question- 5. Attempt the following (8 marks each)

1. Describe asexual life cycle of *Plasmodium* in human.
2. Sketch and label life cycle of *Plasmodium vivax*.
3. Sketch and label life cycle of *Fasciola hepatica*
4. Describe the prevention and control measures of malarial parasite
5. Describe in brief the life cycle of *Fasciola hepatica*
6. Describe in brief the life cycle of *Wuchereria bancrofti*
7. Describe in brief the life cycle of Head louse.

Question bank prepared by

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F.Y.B.Sc. Zoology (Theory) Question Bank

Paper-I, Sem-II: ZOO 121 (Chordates-I)

Unit-1: Study of Frog with respect to following (Marks - 8)

1.1 External characters and sexual dimorphism

1.2 Digestive system, digestive glands, food, feeding and digestion

Q.1 Multiple choice (Question for 1 mark each)

- Select the proper answer from following
 - male is smaller in size than female
 - female is smaller in size than male
 - both male and female are same in size
 - male and female are not differentiated
- In frog, the
 - fore-limbs are shorter in size
 - hind-limbs are shorter in size
 - fore-limbs are longer
 - hind-limbs are longer in size
- What is secreted from pancreas in frog?
 - 3 digestive enzymes, 3 hormones
 - 2 digestive enzymes, 1 hormone
 - 3 digestive enzymes, 2 hormones
 - 3 digestive enzymes, 1 hormone
- In frog, digestion of proteins is completed in
 - rectum
 - ileum
 - duodenum
 - stomach
- Type of teeth in frog are:
 - homodont
 - acrodont
 - polyphyodont
 - all
- Frog is -----
 - herbivorous
 - carnivorous
 - omnivorous
 - sanguivorous
- Male frog can be identified from female frog by
 - perial setae
 - anal styles
 - vocal sacs
 - none of these
- Vocal sacs are present in
 - female frog
 - male frog
 - male cockroach
 - female cockroach
- The largest gland in the body of frog is
 - liver
 - salivary gland
 - pancreas
 - gastric gland

Q.2 Define/Explain/Comment (Question for 2 marks)

- Sexual dimorphism
- Digestion
- Gastric gland
- Liver
- Polyphyodont

Q.3 Short notes/ Sketch and label (Question for 3 or 4 marks)

- Explain the pancreas of frog.
- Ingestion in frog.

3. Explain the gastric digestion in frog.
4. Explain the intestinal digestion in frog.
5. Explain the buccal digestion in frog.
6. Sketch and label digestive system of frog
7. Sketch and label buccal cavity of male frog

Q.4 Questions for 8 marks

1. Describe the digestive system of frog.
2. Explain the digestion in frog
3. Describe the structure and function of liver in frog.
4. Describe the structure and function of pancreas in frog.

Unit-2 (Marks allotted- 16)

2.1 Respiratory system, Types and process of respiration

2.2 Circulatory system- Heart, Arterial system, Venous system, Blood-Composition and functions.

Q.1 Multiple choice (Question for 1 mark each)

1. Branchial respiration is observed in

a) tadpole larvae	b) adult frog
c) in all stages of development	d) none of these
2. In frog the R.B.Cs. are

a) enucleated	b) nucleated	c) small nucleated	d) none of these
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3. In frog, during hibernation heart beat is controlled by

a) A.V. node	b) S.A. node	c) hormone	d) autonomic nervous system
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4. In frog heart receives -----

a) oxygenated blood	b) venous blood
c) mixed blood	d) deoxygenated blood
5. In the ventricle of heart of frog -----

a) interventricular septum absent	b) interventricular septum present
c) interauricular septum absent	d) interauricular septum present

Q.2 Define/Explain/Comment (Question for 2 marks)

- | | |
|--------------------------|--------------------------|
| 1. Respiration | 2. Cutaneous respiration |
| 3. Pulmonary respiration | 4. Inspiration |
| 5. Expiration | 6. Bronchi |
| 7. Trachea | 8. Pericardium |
| 9. Blood vessels | 10. Right auricle |
| 11. Left auricle | 12. Ventricle |

Q.3 Short notes/ Sketch and label (Question for 3 or 4 marks)

1. Describe the respiratory organs of frog
2. Explain the mechanism of pulmonary respiration in frog
3. Describe sinus venosus of frog
4. Functions of blood of frog
5. Composition of blood in frog
6. Working of heart in frog
7. Course of blood circulation in frog.
8. Sketch and label internal structure of heart of frog.
9. Sketch and label arterial system of frog.
10. Sketch and label venous system of frog.

Q.4 Questions for 8 marks

1. Describe the arterial system of frog.
2. Describe the venous system of frog.
3. Describe the respiratory system of frog.

Unit-3 (Marks allotted- 09)

3.1 Nervous system – Brain, Ventricles and spinal cord

3.2 Sense organs – Eye and Ear

Q.1 Multiple choice (Question for 1 mark each)

1. Frog brain is protected by-----
 - a) two meninges b) three meninges
 - c) four meninges d) meninges absent
2. In an adult frog----- pairs of cranial nerves are present
 - a) 10 b) 12 c) 11 d) 14
3. In frog upper eyelid is-----
 - a) movable b) immovable c) absent d) present
4. The function of iris in the eye of frog is to----
 - a) refraction of light rays b) move the lens forward and backward
 - c) alter the size of pupil d) move the nictitating membrane
5. Select the proper answer from the following
 - a) external ear is present in frog b) middle ear is present in frog
 - c) internal ear is present in frog d) option b and c both are correct
6. Frog has-----
 - a) monocular vision b) binocular vision
 - c) multicular vision d) none of these

Q.2 Define/Explain/Comment (Question for 2 marks each)

1. Meninges
2. Cerebro-spinal fluid

- | | |
|-----------------------------|-------------------|
| 3. Autonomic nervous system | 4. Cranial nerves |
| 5. Spinal cord | 6. Receptors |

Q.3 Short notes/ Sketch and label (Question for 3 or 4 marks each)

1. Sketch and label dorsal view of brain of frog.
2. Sketch and label ventral view of brain of frog
3. Describe the functions of different parts of the brain.
4. Describe the T. S. of spinal cord of frog.
5. Write the functions of medulla oblongata.
6. Describe the V. S. of eye.
7. Describe the membranous labyrinth of frog.
8. Sketch and label ventricles in the brain of frog.
9. Sketch and label the V.S. of frog eye.
10. Sketch and label the internal ear of frog.

Q.4 Questions for 8 marks each

1. Describe the brain of frog.
2. Describe the working of eye in frog.
3. Describe the working of ear in frog.
4. Describe the V. S. of eye of frog.

Unit-4 (Marks allotted- 12)

4.1 Reproductive system – male and female

4.2 Structure of egg and sperm, Amplexus and fertilization

4.3 Metamorphosis

Q.1 Multiple choice (Question for 1 marks each)

1. In male frog testis are located -----

a) inside abdomen	b) outside abdomen
c) at lower body surface	d) all of these
2. In frog fertilization is----

a) external	b) internal	c) in the water	d) a and c are correct
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3. In frog a single female lays about----

a) 100 to 150 eggs	b) 10 to 15 eggs
c) 50 to 60 eggs	d) 70 to 80 eggs
4. In frog ovaries are----

a) pink and oval	b) white and irregular
c) white and spherical	d) pink and spherical
5. Tadpole larva of frog is converted into adult frog is called----

a) micromorphosis	b) megamorphosis
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- c) prometamorphosis d) metamorphosis
6. Amplexus is also called ----
 a) sexual embrace b) copulation c) pseudocopulation d) both a and c
7. The egg of frog is----
 a) telolecithal b) isolecithal c) alecithal d) mesolecithal
8. ----- hormone plays an important role in metamorphosis.
 a) insulin b) thyroxine c) growth hormone d) adrenaline
9. Thyroxine contains ---- which accelerates the metamorphosis.
 a) chloride b) iodine c) calcium d) phosphorus
10. In frog, the breeding season lasts from-----
 a) May to September b) June to September
 c) July to October d) August to November
11. Nuptial pads in male frog develop----
 a) before breeding season b) during breeding season
 c) after breeding season d) all the above

Q.2 Define/Explain/Comment (Question for 2 marks each)

1. Cloaca 2. Wolffian duct
 3. Mesovarium 4. Bidder's canal

Q.3 Short notes/ Sketch and label (Question for 3 or 4 marks)

1. Explain the seminiferous tubules of frog.
2. Explain the structure of egg of frog.
3. Explain the structure of sperm of frog.
4. Describe the amplexus in frog.
5. Explain the fertilization in frog.
6. Sketch and label the female reproductive system of frog.
7. Sketch and label the urinogenital in frog.

Q.4 Questions for 8 marks

1. Describe the urinogenital system in frog.
2. Describe the female reproductive system of frog.
3. Explain metamorphosis in frog.

Unit-5 (Marks allotted- 3)

5.1 Excretory system

Q.1 Multiple choice (Question for 1 marks each)

1. In frog kidney is-----
 a) pronephric b) mesonephric c) metanephric d) all of these
2. Terminal part of rectum is called-----
 a) anus b) urethra c) cloaca d) colon

3. In frog kidney act as-----

- a) haemopoietic organ b) homeostatic organ c) both a and b d) none

Q.2 Define/Explain/Comment (Question for 2 marks each)

1. Excretion
2. Nephron
3. Malpighian body

Q.3 Short notes/ Sketch and label (Question for 3 marks each)

1. Describe the T. S. of kidney of frog.
2. Describe the structure of uriniferous tubule.
3. Sketch and label excretory system of frog.
4. Explain the physiology of excretion.

Unit-6 : General topics (Marks allotted- 12)

6.1 Neoteny

6.2 Migration in birds

6.3 Archaeopteryx, Sphenodon and Extinction of Dinosaures.

Q.1 Multiple choice (Question for 1 marks each)

1. Abundance of nutrition and oxygen supply the larval stage develop gonads like adult called ----
a) neoteny b) paedogenesis c) polyteny d) both a and b
2. Archaeopteryx is a connecting link between----
a) pisces and amphibian b) reptiles and mammals
c) reptiles and aves d) aves and mammals
3. Following organisms are called living fossil-----
a) *Sphenodon* b) *Testudo* c) *Hemidactylus* d) all

Q.2 Define/Explain/Comment (Question for 2 marks each)

1. Neoteny

Q.3 Short notes (Question for 3 or 4 marks each)

1. Explain Neoteny/paedogenesis
2. Archaeopteryx
3. Sphenodon
4. Extinction of Dinosaures

Q.4 Questions for 8 marks

1. Describe various kinds of avian migration.
2. Describe various modes of avian migration.

Question bank preparation committee

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QUESTION BANK
Semester – II Class: F. Y. B. Sc. Paper- II
ZOO- 122: ECOLOGY

Unit-1: Introduction (Marks allotted- 4)

Question-1: Multiple choice question (1 marks each)

1. Ecology is the basic branch of, which deals with the study of organisms.
 - a. Chemistry
 - b. Biology
 - c. Physics
 - d. Geography
2. The study of population of the different species of a ecosystems concerning their birth and death rate is known as ecology.
 - a. Habitat
 - b. Population
 - c. Palaeo-ecology
 - d. taxonomic
3. Ecology is the study of the relationship of plants and to their physical and biological environment.
 - a. animals
 - b. microbes
 - c. decomposers
 - d. none

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Ecology
- ii. Palaeoecology
- iii. Population ecology
- iv. Habitat ecology
- v. Conservation ecology
- vi. Geographic ecology
- vii. Taxonomic ecology
- viii. Space ecology
- ix. Human ecology
- x. Gene ecology

Question-3: Attempt the following (4 marks each)

1. What is ecology? Give an account on scope of ecology
2. What is ecology? Describe importance of ecology
3. Describe different subdivisions of ecology.

Unit-2: Ecosystem (Marks allotted- 7)

Question-1: Multiple choice questions (1 mark each)

1. The autotrophs contain pigment with which they can prepare their own food material.
 - a. Xanthophyll
 - b. Chlorophyll
 - c. Chromophyll
 - d. Leucophyll
2. In food chain, the herbivores are commonly known as
 - a. Primary consumers
 - b. Secondary consumers
 - c. Tertiary consumers
 - d. Top consumers
3. The term ecosystem was first coined by the British ecologist in 1935.
 - a. A. G. Tansley
 - b. E. P. Odum
 - c. E. Hackle
 - d. S.Mathavan
4. The organism like fungi and bacteria, which are responsible for decomposition, are called
 - a. producers
 - b. consumers
 - c. decomposers
 - d. none
5. The producers are also known as because they change radiant energy into chemical forms.
 - a. converters
 - b. decomposers
 - c. producers
 - d. herbivores
6. The prey-predator food chain is also known as food chain.
 - a. Detritus
 - b. Saprophytic
 - c. Grazing
 - d. Parasitic

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Ecosystem
- ii. Producer
- iii. Food web
- iv. Energy flow
- v. Consumer
- vi. Decomposer
- vii. Food chain
- viii. Trophic level

Question- 3: Attempt the following (4 marks each)

1. Define biotic community. Describe the different biotic components of pond ecosystem.

2. Describe concept and characteristics of ecosystem.
3. Explain in brief grazing food chain in grassland ecosystem.
4. Define ecosystem. Enlist biotic and abiotic components of pond ecosystem.
5. Sketch and label pond ecosystem

Question- 4 (a): Attempt the following (3 marks each)

1. Describe prey-predator food chain in grassland ecosystem.
2. Describe prey-predator food chain in forest community
3. Explain in brief parasitic food chain
4. With the help of diagrammatic representation, show the detritus food chain of mangrove ecosystem
5. With the help of diagrammatic representation, show the food web in forest ecosystem.
6. With the help of diagrammatic representation, show the food web in grassland ecosystem.

Unit-3: Abiotic factors (Marks allotted- 10)

Question-1: Multiple choice questions (1 mark each)

1. The lowest layer of atmosphere extending up to 10 km is called

a. Troposphere	b. Tophosphere
c. Hydrosphere	d. Biosphere
2. The process of soil formation is known as

a. Paedogenesis	b. Apodogenesis
c. Podogenesis	d. None of above
3. An open water zone where effective penetration of solar light takes place is called

a. Limnetic zone	b. Profundal zone
c. Abyssal zone	d. Aphotic zone
4. The composition of Nitrogen in unpolluted air by volume is percentage

a. 72	b. 74
c. 76	d. 78
5. The composition of Oxygen in unpolluted air is by volume is percentage

a. 18.94	b. 19.94
c. 20.94	d. 21.94
6. is the important abiotic factor, which acts as driving force of life on earth.

a. Soil	b. Light
c. Water	d. Nitrogen
7. is a semi-enclosed coastal body of water, which connect with the sea

a. River	b. Estuary
c. Pond	d. Lake

Question- 2 and 4 b: Attempt the following (2 marks each)

- | | |
|----------------------|------------------|
| i. Abiotic factors | ii. Soil horizon |
| iii. Temperature | iv. Soil profile |
| v. Humidity | vi. Water |
| vii. Aquatic habitat | viii. Estuaries |

Question- 3: Attempt the following (4 marks each)

1. Explain effects of light on plants
2. Explain effects of light on animals
3. What is habitat? Describe fresh water habitat
4. Give a brief account on soil organism
5. Sketch and label a diagram of soil profile

Question-4 (a): Attempts the following (3 marks each)

1. Intensity of light
2. Atmospheric gaseous composition
3. Temperature ranges
4. Enlist lotic and lentic water bodies
5. Soil composition
6. Marine habitat
7. Estuarine habitat

Question- 5: Attempt the following (8 marks each)

1. Describe in brief the effects of temperature on animals and plants.

2. What is soil profile? With help of diagram briefly explain soil profile.

Unit-4: Biogeochemical cycles. (Marks allotted- 8)

Question-1: Multiple choice questions (1 mark each)

- The inorganic nitrogen can be utilized by green plants for synthesis of
 - Proteins
 - Carbohydrates
 - Lipids
 - Vitamins
- Evaporation of 1 gram of water requires about calories of heat.
 - 200
 - 400
 - 600
 - 700
- is the by-product of photosynthesis
 - Oxygen
 - Carbon dioxide
 - Carbon monoxide
 - Nitrogen oxide
- The cycle begin with the utilization of CO₂ in the formation of carbohydrates in plants
 - Water
 - Carbon
 - Nitrogen
 - Oxygen
- Nitrogen is found in proteins and nucleic acids, but its primary source is
 - hydrosphere
 - biosphere
 - atmosphere
 - lithosphere
- About the total annual rainfall over the country, % of water is lost by evaporation.
 - 20
 - 25
 - 35
 - 45

Question- 2 and 4 b: Attempt the following (2 marks each)

- Biogeochemical cycle
- Ammonification
- Nitrogen fixation
- Nitrification

Question- 3: Attempt the following (4 marks each)

- Write short notes on water cycle
- Write short notes on oxygen cycle
- Write short notes on carbon cycle
- Describe nitrogen cycle with suitable example.

Unit-5: Energy crises and non-conventional sources.

(Marks allotted- 12)

Question-1: Multiple choice question (1 mark each)

- Coal, petroleum and are the common sources of conventional energy.
 - Wind energy
 - Natural gas
 - Solar energy
 - Geothermal energy
- Solar, wind and are the common sources of non-conventional energy.
 - Coal
 - Lignite
 - Biogas
 - Petroleum
- The fossil fuels like coal, oil and natural gas are at present supplying % of the commercial energy
 - 85
 - 88
 - 90
 - 95
- In the country, where the per capita energy consumption is very high
 - India
 - Japan
 - U. S. A.
 - China
- energy is the unpolluted and unlimited source of energy.
 - Coal
 - Solar
 - Biomass
 - Ocean
- The petro-crops are latex containing plants with higher amount of
 - hydrocarbons
 - carbohydrates
 - alkaloids
 - tannin

Question- 2 and 4 b: Attempt the following (2 marks each)

- Solar furnace
- Biodiesel
- Energy crises
- Gasohol
- Renewable resources
- Non-renewable resources
- Biomass energy
- Petro crops

Question- 3: Attempt the following (4 marks each)

- a. Write short notes on solar cells
- b. Write short note on solar cooker
- c. Discuss need of energy for growing economics
- d. Give brief account on any two solar energy harvesting devices.
- e. Non-conventional energy sources
- f. Sketch and label biogas plant
- g. Sketch and label solar cooker
- h. Sketch and label solar cells
- i. Agricultural waste biomass
- j. Write short notes on wind energy
- k. Write short notes on tidal energy
- l. Write short notes on geothermal energy
- m. Explain hydrogen as a fuel
- n. Explain alcohol as a fuel

Question-4 (a): Attempts the following (3 marks each)

- i. Solar heat collector
- ii. Solar water heater
- iii. Energy plantations

Question- 5 : Attempt the following (8 marks each)

1. What are non-conventional resources? Give brief account on solar energy.
2. What are natural resources? Discuss some solar energy harvesting devices
3. What is biogas? Discuss the structure and functions of biogas plant
4. Define biomass energy. Explain brief account on types of biomass energy.

Unit-6: Adaptations. (Marks allotted- 07)

Question-1: Multiple choice question (1 mark each)

1. The animals which are living in are called aquatic animals.
 - a. soil
 - b. water
 - c. desert
 - d. mud
2. The adjustments made by organism in response to specific environmental conditions are called
 - a. Adaptations
 - b. Adaptor
 - c. Aestivation
 - d. Assimilation
3. The skin of desert animal is type, that has ability to absorb the moisture from the air.
 - a. agrosopic
 - b. hygroscopic
 - c. hydroscopic
 - d. xeroscopic

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Adaptations
- ii. Cursorial adaptation
- iii. Fossorial adaptation
- iv. Aquatic adaptation
- v. Arboreal adaptation
- vi. Aerial adaptation
- vii. Desert adaptation.

Question- 3: Attempt the following (4 marks each)

- i. Explain cursorial adaptations with suitable example.
- ii. Explain fossorial adaptations with suitable example
- iii. Explain aquatic adaptations with suitable example
- iv. Explain arboreal adaptations with suitable example
- v. Explain aerial adaptations with suitable example
- vi. Explain desert adaptations with suitable example

Question-4 (a): Attempts the following (3 marks each)

- i. Explain secondary aquatic adaptations in amphibians
- ii. Explain secondary aquatic adaptations in mammals
- iii. Explain aerial adaptations in insects
- iv. Explain aerial adaptations in mammals

Unit-7: Global warming and climate change. (Marks allotted- 07)

Question-1: Multiple choice question (1 mark each)

1. is one of the green house gas, responsible for global warming
 - a. CO
 - b. CO₂
 - c. NO₂
 - d. H₂S
2. is the green house gas, it takes over a century for degradation.

- a. CO₂ b. Methane
c. Ozone d. Chloro-fluro-carbons
3. Acid rain pollution is a form of pollution
a. water b. air
c. soil d. sound
4. In the year, USA air force released an atomic bomb on Nagasaki.
a. 1942 b. 1945
c. 1948 d. 1949
5. The worst nuclear power accident was took place in 1986
a. bhopalbyl b. chernobyl
c. manesarbyl d. carnobyl

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Global warming ii. Natural disaster iii.
Green house effect iv. Nuclear accident
v. IGPC vi. CFC's
vii. Acid rain

Question- 3: Attempt the following (4 marks each)

- i. Describe climatic effects of global warming
ii. Describe causes and effects of acid rain
iii. Enlist the consequences of global warming
iv. Chernobyl-nuclear accident
v. Discuss the role of IGPC on climate changes

Question-4 (a): Attempts the following (3 marks each)

- i. Explain effects of global warming on human health
ii. Explain causes of global warming

Unit-8: Wild life conservation in India. (Marks allotted- 05)

Question-1: Multiple choice question (1 mark each)

1. According to Red Data Book, during last 2000 years, about 106 species of become extinct.
a. Plants b. Animals
c. Bacteria d. Fungi
2. The Kaziranga wild life sanctuary is famous for conservation of
a. Rhinoceros b. Wild buffalo
c. Lion d. Tiger
3. Hazaribagh national park is located in State.
a. Haryana b. Uttarpradesh
c. Bihar d. Meghalaya
4. Shikari Devi wild life sanctuary is located in
a. Uttar Pradesh b. Himachal Pradesh
c. Madhya Pradesh d. Andhra Pradesh.

Question- 2 and 4 b: Attempt the following (2 marks each)

- i. Wild life conservation
ii. Wild life management
iii. Enlist national parks and sanctuaries

Question- 3: Attempt the following (4 marks each)

- i. What is IBWL? State its functions.

Question-4 (a): Attempt the following (3 marks each)

- i. Bharatpur bird sanctuary
ii. Corbett national park
iii. Kaziranga wild life sanctuary

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