3. Zoology (Non-Chordata) (Zol 311), 2066

Time : 3 hrs. Full Marks : 100

Attempt any TWO questions from each Group A & B . Group C and D are compulsory.

Group "A" [2×10=20]

1. Describe the structure of Vorticella. Mention its habit as well.
2. Write an illustrative account of the life-cycle of Ascaris.
3. Discuss the structure of alimentary canal of Hirudinaria in detail.

Group "B" [2×10=20]

4. Write an account of the caste system in Apis. How they are differentiated ? Mention.
5. Write an essay on economic values of the mollusks to man.
6. What is retrogressive metamorphosis ? Discuss the process in brief in the context of development of Herdmania.

Group "C" [8×5=40]

7. Write an ecological note on Porifera.
8. Describe the structure of reproductive zooids in Obelia.
9. Name the helminthes which are parasitic to man and mention the diseases caused by them.
10. Discuss the concept of 'Syncytial Theory' of origin of Metazoa.
11. How is the structure of statocyst in Prawn ? Discuss.
12. Mention the list of characteristics of Gastropoda with their order names and examples.
13. Compare the mouth parts of butterfly and housefly.
14. Highlight upon the annelid fauna of Nepal.

Group "D" [8×2.5=20]

15. Give the very short answers of the following:
    i. Give the affinities of Branchiostoma with Herdmania.
    ii. Explain feeding mechanism of Balanoglossus.
    iii. Write the structure of 'Organ of Bojanus' in Unio.
    iv. Differentiate between ticks and mites.
    v. Draw labeled sketch of Antennule of Prawn.
    vi. Mention the symptoms of Kala-azar disease.
    vii. How corals are formed ? Discuss.
    viii. Describe the cysticercus present in the life cycle of Taenia

Zoology (Non-Chordata) (Zol 311), 206

Full Marks: 100

Group 'A' [2x12.5=25]

Attempt any TWO questions.

1. Give an account of the structure and life cycle of *Giardia insestinalils.*
2. What is canal system in sponges? describe the sycon type of canal system.

3. What are the parasitic adaptations found in Taenia solium?

Group 'B' [2x 12.5=25]

Attempt any TWO questions.

4. Enumerate economic importance of Arthropoda.
5. Describe the water vascular system of starfish.
6. Discuss tile systematic position and affinities of branchiostoma.

Group 'C' [8x5=40]

Attempt All questions.

7. Give the symptoms and pathogenesis of amoebiasis.
8. Highlight upon the molluscan fauna of Nepal

OR

What are corals Give the structure of a coral polyp.

9. Describe the food, feeding mechanism and physiology of digestion in leech.
10. Write a brief description of cephalic appendages of prawn.
11. Give the structure and function of osphradium of pila.
12. List out the class characteristics of Cestoda and Trematoda.
13. Give an account of clinical manifestation of Ancylostoma duodenale.

OR

Give an account of ecological features of echinoderms.

14. Describe the external features of *Balanoglossus.*
15. Write short notes on any TWO: [2x5=10]
    a. a Structure and types of spicules in sponges
    b. Differences between tick and mites
    c. Shell of *Unio.*

Zoology (Non-Chordata) (Zol 311), 2068

Bachelor Level / Science & Tech /I Year Full Marks: 100

Time: 3 hrs.

GROUP "A" [2x 12.5 25]

Attempt any TWO questions.

1. What causes kala-azar? Give *an* account of the structure and life cycle of the causative agent.
2. Give an account of Polymorphism in Hydrozoa.
3. Describe the reproductive organs of male and female *Ascar.* Mention differences between two.

GROUP "B" [2x 12,5=25]

Attempt any TWO questions.'

4. Describe the life history and economic importance of the honey bee.
5. Describe the radular apparatus and digestive organs of *Pila.*
6. Discuss the systematic position and affinities of *Balanoglossus.*

GROUP "C" [8x5=40]

Attempt ALL questions.

7. Describe the process of conjugation in *Vorticella.*

8. Highlight upon the Annelids in Nepal.

OR

What is meant by 'metagenesis? Explain it with reference to the life cycle of *Obelia.*

9. Name the diseases caused by *Wuchereria bancrofti.* Mention its diagnosis, pathogenecity and control measures.
10. Describe the piercing and sucking type of mouthparts of insects.
11. Give an illustrated account of the external features of star fish.
12. List out the class characteristics of Polychaeta and-pftochaeta.
13. Economic importance of Mollusca.

OR

Give an account of ecological features of Poriferans.

14. Give a brief account of Testicular Nephridia in leech.
15. Write short notes on any TWO: [5+5]
    a. Parasitic adaptations in *Taenia solium.*
    b. Glochidium larva
    c. Miracidium larva

Zoology (Non-Chordata) (Zol. 311), 2069

Bachelor Level/Science & Tech./I Year — Full Marks : 100
(For: Regular Examinee only) — Time : 3 hrs.

GROUP 'A' [2×12.5=25]

Attempt any TWO questions.

1. Describe the structure and reproduction in Vorticella.
2. Describe the life cycle of obelia with suitable diagrams.
3. Discuss different larval forms found in the life cycle of Fasciola hepatica with suitable diagrams.

GROUP 'B' [2×12.5=25]

Attempt any TWO questions.

4. Discuss different types of mouth, parts found in insects.
5. Describe respiratory organs of Pila with suitable diagrams.
6. What is the significance of Metamorphosis? Discuss Retrogressive Metamorphosis in Herdmania.

GROUP 'C' [8×5=40]

Attempt ALL questions:

7. Give the economic importance of Protozoa.
8. Give the significance of Hirudin in feeding mechanism of leech.

Or

What is Coral Reef? Mention it significance.

9. Discuss syconoid type of canal system in Porifera
10. Give an account of social life of Termites.
11. Write about the structure, types and functions of Pedicilliarae found in Star Fish.

12. Discuss diagnosis, pathogenicity and control measures of Trochomonas vaginalis.
13. What is Filariasis? Write about causative agent, pathogenicity and its control measures.

Or

Draw a well labelled diagram of Water Vascular System in Star Fish (Description not required).

14. Discuss the importance of bee products in human life.
15. Write short notes on any TWO: [5+5]
    (a) Thoracic Appendages in Prawn
    (b) Give the affinities of Branchiostoma with vertebrate
    (c) Coelom in annelids

Zoology (Non-Chordaia & Protochordata) (Zool.101), 2070 (New course)

Four Year Bachelor Level/Science & Tech./I Year — Full Marks: 100
Time: 3 hrs.

Illustrate your answers with suitable diagrams wherever necessary.

GROUP "A" [2×10=20]

Attempt any TWO questions.

1. Give an account of habit, habitat and structure of Vorticella.
2. What is canal system? Describe Asconoid and Syconoid type of canal system in sponges.
3. Describe the reproductive system of Hirudinaria.

GROUP "B" [2×10=20]

Attempt any TWO questions.

4. Enumerate the appendages of Prawn, Describe the abdominal appendages.
5. Describe the life cycle of Taenia solium with suitable diagrams.
6. Discuss retrogressive metamorphosis in Herdmania.

GROUP "C" [8×5=40]

Attempt any EIGHT questions.

7. Discuss morphological and ecological trends of taxonomy.
8. Explain alternation of generations in Eimeria tenella.
9. Discuss human intrusion in coralreefs.
10. Write an account of economic values of Porifera.
11. Give an account of the pathogenicity, lab, diagnosis and control measures of Enterobius vermicular is.
12. Discuss briefly nephridia in annelids.
13. Name mouth parts of cockroach and write the function of each of them.
14. List out the class characteristics of Crustacea and Insecta.
15. Give a brief account of respiration in Pila globosa.
16. Describe in brief the mechanism of ciliary feeding in Balanoglossus.

GROUP "D" [8×2.5=20]

17. Give very short answers of any EIGHT of the followings:
    a. Binomial nomenclature
    b. Mode of infection and pathogenesis of Trichomonas vaginalis
    c. Four morphological adaptation[s] of Fasciola
    d. Meloidogyne incognita
    e. Pedicellariae in starfish
    f. Bipinna[ria] larva
    g. [illegible] Giant Land Snail
    h. [illegible]ects and significance of torsion
    i. Differentiate between polyp and medusa
    j. Control measures of Echinococcus granulosus

Zoolo[illegible]on-Chordata & Protochordata)
(Zool. 101), 2071

Bachelor Level (4 Yrs.)/ I Year/Science & Tech. Full Marks: 100
Time: 3 hrs.

Illustrate your answers with suitable diagrams wherever necessary.

GROUP "A" [2×10=20]

Attempt any TWO questions.

1. Write an account on the life cycle, pathogenicity and lab. diagnosis of *Leishmania donovani*.
2. Describe the habit, habitat and structure of *Scypha*.
3. Give an account on the life history of Wuchereria bancrofti and discuss its pathogenic effects.

GROUP "B" [2×10=20]

Attempt any TWO questions.

4. Give an account of the life cycle, economic importance and control measures of *Culex quinquefasciatus*.
5. Give an account of the alimentary canal of Pila globosa.
6. Discuss the affinities of Balanoglossus with other animal groups and comment on its systematic position.

GROUP "C" [8×5=40]

Attempt any EIGHT questions.

7. Mention drawbacks and significance of biological species concept?
8. Write on pathogenicity and lab. diagnosis of Entamoeba histolytica.
9. Discuss formation of cocoon in Hirudinaria.
10. Write an account of economic values of Coelentrates.
11. Give an account of the habitat, structure and pathogenicity of Schistosoma haematobium.
12. Illustrate the life cycle of Ascaris lumbricoides.

13. Describe the alimentary canal of leech and mention its food and feeding mechanism.
14. List out the class characteristics of Asteroidea and Ophiuroldea of Echinodermata.
15. Write an account of economic importance and control measures of Sitophilus oryzae.
16. Discuss briefly the habits, habitat and external morphology of Amphioxus.

GROUP 'D' [8×2.5=20]

17. Give very short answers Of any EIGHT of the followings:
    a. Distinguish between Protozoa and Metazoa
    b. Micro- and Macro-conjugants in Vorticella
    c. Five important characteristics of Porifera
    d. Vermicomposting
    e. Endoskeleton of Asterias
    f. Pre larval development of Herdmania
    g. Corals
    h. Parasitism
    i. Phytonematodes
    j. Chelate legs of Palaemon

Zoology (Non-Chordata & Protochordata) (Zool.101), 2072

Bachelor Level (4 Yrs. Prog.) I Year/Scice. & Tech. Full Marks: 100
Time: 3 hrs.

Illustrate your answers with suitable diagrams wherever necessary.

GROUP "A" [2×10=20]

Attempt any TWO questions.

1. Give an account of the various types of zooids found on the Obelia colony.
2. Discuss the structure, life cycle, pathogenicity and control measures of Taenia solium.
3. Describe with illustrations the excretory organs of Hirudinaria granulosa.

GROUP "B" [2×10=20]

Attempt any TWO questions.

4. Give an account of the nervous system of Prawn.
5. Describe the respiratory organs of Pila globosa.
6. Give the habit, habitat and external morphology of Balanoglossus.

GROUP 'C' [8×5=40]

Attempt any EIGHT questions.

7. What is a species? Give an account of biological species concept.
8. Give the life cycle and pathogenicity of Eimeria tenella.
9. Discuss different types of spicules found in Scypha.
10. Enumerate the economic importance of coelenterates.
11. Give a brief account of pearl formation.

12. Mention the systematic position habitat pathogenicity and control measures of Enterobius vermicularis.
13. Discuss coelom in Annelida.
14. Describe the biting and chewing type of mouth parts of insects.
15. List out the class characteristics of Holothuroidea and Echinoidea of Echinodermata.
16. Discuss the affinities of Amphioxus (Brachiostoma) with chordates.

GROUP "D" [8×2.5=20]

17. Give very short answers of any EIGHT of the followings:
    a. Ecological trend of taxonomy
    b. Structure of Vorticella
    c. Syconoid type of canal system
    d. Human intrusion in coral reefs
    e. Hydatid cyst
    f. Filariasis
    g. Parasitic adaptations of Hirudinaria granulosa
    h. Phlebotomus argentipus
    i. Statocysts of Pila
    j. Pedicellariae of Asterias

4. Botany I Paper (Bot.311), 2066
(Plant Diversity)

Time : 3 hrs. Full Marks : 100

Attempt ALL the questions.

Group "A" [10×4=40]

1. Classify Algae according to Fristch with suitable examples.

OR

Give an illustrative account of the life cycle of *Chara*.

2. Describe the life cycle of *Anthoceros* with necessary diagrams.

OR

Explain the sterilization of sporogenous tissue in Bryophytes with suitable examples.

3. Explain the alternation of generation in Pteriodophytes with suitable diagrams.
4. Give salient features of Poaceae with floral diagram and floral formula; and mention its economic importance.

Group "B" [5×6=30]

5. Write a brief account of (any SIX):
    a. Range of Hyphae in Fungi.
    b. Vesicular Arbuscular Mycorrhizae (VAM)
    c. Importance of Azolla in agriculture
    d. Heterospory in Pteridophytes
    e. Gymnosperms of Nepal

f. Evolution of Gymnosperms
g. Botanical Nomenclature
h. Merits of Engler and Prantl's system of classification of Angiosperms.

6. Give well labeled diagrams (any TWO: No descriptions required) [5×2=10]
   a. L.S. ovule of Cycas
   b. Floral diagram of *Ranunculus*.
   c. Life cycle of *Alternaria*

7. Distinguish between the following : (any TWO): [5×2=10]
   a. Isogamous and hetetrogamous reproduction in Algae.
   b. Lycopsida and Pteropsida.
   c. Cymose and Racemose Inflorescence in Angiosperms

8. Write short notes on any FIVE: [5×2=10]
   a. Mention the names of two kingdoms from Whittaker's system of classification of living organisms.
   b. Name two types of fossils.
   c. Give the names of two living organisms from the Coenozoic era.
   d. Mention two uses of *Spirulina* for mankind.
   e. Name two examples of Fruticose Lichens.
   f. Provide the names of two photosynthetic protests.
   g. Name two anatomical structures present in foliose lichens.

Botany I Paper (Bot.311-Plant Diversity), 2067

Bachelor Level /Science & Tech / I Year — Full Marks: 100
Time: 3 hrs.

Attempt ALL the questions.

GROUP "A" (4x 10=40)

1. Classify Fungi according to Ainsworth with suitable examples.

   OR

   Give an account of the life cycle of *Albugo* with suitable diagrams.

2. Describe the reproductive of structures of *Ephedra* with necessary diagrams.

   OR

   Write an account on distribution of Gymnosperms in Nepal.

3. Explain the stellar system in Pteridophytes with suitable examples.
4. Give salient features of Gentianaceae with floral diagram and floral formula and mention its economic importance.

GROUP "B" (6x5=30)

5. Write a brief account of (any SIX):
   a. Lichens as bio-indicators of environmental pollution.
   b. Sexual reproductive structures of *Chara*.
   c. Role of Algae in an aquatic food chain.
   d. Sterilization of sporogenous issue in Bryophytes.
   e. Heterospory in Pteridophytes.