

2023

M.Sc.

4th Semester Examination (CCAЕ)

ZOOLOGY

PAPER : ZOO-403B.1 & 403B.2

Full Marks : 40

Time : 2 hours

The figures in the right hand margin indicate marks.

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

Illustrate the answers wherever necessary.

SECTION—I

(ZOO-403B.1)

(SYSTEMS ECOLOGY)

1. Answer *any two* questions from the following :
2×2=4

(a) Define Regulating Ecosystem Service with example.

(2)

- (b) State the difference between Deterministic and Stochastic models.
- (c) Differentiate metapopulation from a population.
- (d) Define, α , β and γ - diversity.

2. Answer *any two* questions from the following :
4×2=8

- (a) Illustrate the types of lakes based on circulation and mixing of water.
- (b) Classify the forests on the basis of crown cover density.
- (c) Write down the merits and demerits of Ecotourism.
- (d) Describe in brief the ecological processes in a tropical forest ecosystem.

3. Answer *any one* question from the following :
8×1=8

- (a) Write short notes on *any two* of the following :
 - (i) Five capitals framework
 - (ii) Thermal Stratification and Thermocline
 - (iii) Species Richness vs. Species Evenness
 - (iv) Difference between lake and pond
- (b) What is ecological restoration? Explain the factors responsible for the fragmentation of a habitat. Explain scientifically the ecorestoration of soil polluted with Phosphamidon, an organophosphate insecticide on soil collembola. 1+2+5=8

(3)

SECTION—II

(ZOO-403B.2)

(HUMAN ECOLOGY)

4. Answer *any two* questions from the following :
2×2=4

(a) What is meant by wasteland restoration?

(b) State the difference between point and non point pollution with examples.

(c) What is ecomark? What is E.I.A? 1+1=2

(d) Enlist different global environmental issues.

5. Answer *any two* questions from the following :
4×2=8

(a) State the significance of carbon sequestration.

(b) What is acid rain? Define photochemical smog.

(c) Discuss the problems associated with bio invasion.

(d) Discuss the impact of indoor pollution on human health.

(4)

6. Answer *any one* question from the following : 8×1=8

(a) Discuss in detail, the effect of urbanization on biodiversity.

(b) (i) Briefly discuss the causes of wasteland formation.

(ii) Describe the concept of watershed management. 4+4=8

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ZOOLOGY

PAPER : ZOO-403D.1 & 403D.2

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Time : 2 hours

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in their own words as far as practicable.*

Illustrate the answers wherever necessary.

SECTION—I

(ZOO-403D.1)

**(VECTOR BIOLOGY AND VECTOR
BORNE PARASITES)**

1. Answer *any two* questions from the following :
2×2=4

- (a) (i) What is pygidium?
(ii) What is flea index?

(2)

- (b) What do you mean by cyclopropagative and cyclodevelopmental transmission? Give examples.
- (c) What do you mean by relapses and recrudescence in malaria?
- (d) What do you mean by paurometabolous and hemimetabolous metamorphosis? Give examples.

2. Answer *any two* questions from the following :

4×2=8

(a) Describe the morphological features of tick.

1+3=4

(b) What is myiasis? Mention the major classification of myiasis.

4

(c) Distinguish between hard tick and soft tick with example.

4

(d) What is trench fever? Describe the process of diagnosis and treatment of this disease.

2+2=4

3. Answer *any one* question from the following :

8×1=8

(a) Describe the lifecycle of black fly. Comment on the pathogenicity and clinical features of the disease caused by black fly. Add a note on its control.

4+2+2=8

(b) Write notes on (*any two*)

4+4=8

(i) Jumping mechanism of flea

(ii) Babesiosis

(iii) Typhus

(iv) Maggot Debridement Therapy (MDT)

(3)
SECTION—II
(ZOO-403D.2)

(MOLECULAR DIAGNOSIS AND
CLINICAL PARASITOLOGY)

4. Answer *any two* questions from the following :
2×2=4
- (a) What are trachyzoites and bradyzoites?
 - (b) Write the clinical features of hookworm anaemia.
 - (c) Write few applications of ELISA and RIA.
 - (d) Write different components (ingredients) used to setup a PCR.
5. Answer *any two* questions from the following :
4×2=8
- (a) Write the principle and procedure of RT-PCR.
4
 - (b) Describe the labelling of DNA by random priming method. How is biotin labelled probe detected?
3+1=4
 - (c) Describe the diagnosis methods of amoebiasis in the laboratory. 4
 - (d) Describe the life cycle of *Toxoplasma Sp.* 4

(4)

6. Answer *any one* question from the following :

8×1=8

(a) Describe the life cycle, pathogenicity and Prophylaxis of *Hymenolepis nana*. 8

(b) (i) Why is DNA denatured in the agarose gel before its transfer to the membrane during southern blotting? Name the denaturing agent used in southern blotting.

(ii) Write the Principle of Counter Current Immunoelectrophoresis. 3+5=8

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