বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

M.Sc. Examinations 2020
Semester IV
Subject: ZOOLOGY
Paper: ZOO- 403 (Special Paper)
(Theory)

Full Marks: 40 **Time: 2 hrs.**

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

Special: ECOLOGY

Group – A **(Systems Ecology)**

1. **Answer one question of the following**

   a) Explain vertical stratification of plants in a tropical forest.

   b) Plot the processes related to Ecorestoration.

   c) Describe Metapopulation structure.

   d) Elucidate different types of mixing of lakes.

Group-B (Human Ecology)

2. Answer one question of the following:

a) Enlist different global environmental issues mentioning their ranks in respect of the intensity of impacts on human-beings. Briefly discuss on the ecosystem services rendered by different sectors of environment. Explain the self regulatory system of the environment for maintaining its own normal functioning.

b) What is E.I.A? Briefly highlight its concept and explain its relevance in view of ongoing environmental perturbation. What are the major steps in the E.I.A.? Add a note on the necessity of public hearing in E.I.A. Briefly discuss on the criteria for the selection of plant species in developing green belt in the industrial area.

c) What is waste? Briefly classify major types of solid wastes. Differentiate the categories of waste generation in developed and developing countries. Discuss different methods of solid waste management practices. Add a note on the underlying scientific principle of Integrated Solid Waste management system.

d) Define urbanization. Mention the criteria to designate a place as to be an urbanized area . Briefly highlight the merits and demerits of urbanization on the biodiversity. Mention the factors leading to the eco-degradation of soil ecosystem. Briefly explain the probable steps to be undertaken for the waste land reclamation.

Special: FISHERY

Group: A (Aquaculture &Fish Technology)

1. Answer one question of the following

a) Write down about the post-harvesting technologies which are commonly used in India.

b) Briefly described the hypophysation technology with its importance in fishery.

c) Mentioned the characteristic features of Mugiliformes with example. Give a brief account on fish by-products.

d) What do you mean by integrated fish farming give some example? Why integrated fish farming technology is important in Aquaculture?

Group: B (Inland and Marine fisheries)

2. Answer one question of the following:

a) What is sewage? How you prepared the sewage water for fish culture?

b) Define reservoir? State the management and conservation strategies of Indian reservoir. .

c) How RS-system works in fishery sector?

d) Write notes on: i. Marine products export from India ii. Public health fishery.

Special: GENETICS AND MOLECULAR BIOLOGY

Group: A (Human diseases & Molecular Analysis)

1. Answer one question of the following

a) Describe one PCR based DNA sequencing method with proper illustrations mentioing the role of every reactanats.

b) Describe in what ways Taqman Probe is advantageous over Syber Green Probe in Real Time PCR. Comment on the application of Realtime PCR under current situation.

c) In what ways state of phosphorylation and mutation are connected to the Alzhimer disease ? Explain your answer.

d) Draw complete map of an expression vector of your choice and mention the role of each every component of the vector.

Group: B (Applied Genetics)

2. Answer one question of the following:

a) Describe the mechanism of V(D)J Recombination.

b) Does class swiching during B lymphocyte differentiation occur at DNA level or RNA level ? By what mechanism does it occur ?

c) What are the esential elements of a YAC vector and BAC vector ?

d) What major conclusions can we draw from the sequnce of human chromosome

Special: PARASITOLOGY

Group: A (Vector biology and vector borne parasites)

1. Answer one question of the following

a) What do you mean by Cyclopropagative and Cyclodevelopmental transmission? Give example. Write the morphology, life cycle and control of Flea with suitable diagram

b) Write the life cycle, pathogenicity and prophylaxis of *Babesia* sp. Write the difference between Hard tick and Soft tick.

c) Define Zoonosis and Myiasis with major types. Write brief notes on Trench fever and Typhus.

d) Differentiate between Amastigote and Promastigote stage of *Leishmania* sp. with suitable diagram. What are VAT and VSG? Explain the mechanism of humoral response in African Trypanosomiasis.

Group: B (Molecular diagnosis & clinical parasitology)

2. Answer one question of the following:

a) Write the lifecycle and pathogenicity of *Hymenolepis nana.* Write the pathogenecity and prophylaxis of Toxoplasmosis.

b) Write the principle, procedure and application of PCR. Differentiate between PCR and Cell based DNA cloning.

c) i. Write the difference between c-ELISA and s-ELISA. State the application of ELISA in Parasitology.

ii. What is RT PCR?

iii. Explain different categories of epidemiology

d) Illustrate transcriptional complexities in *Trypanosoma* sp. with a schematic representation. Describe Antigenic Variations in Variant Surface Glycoprotein (VSGs) among *Trypanosoma* sp.