



**WEST BENGAL STATE UNIVERSITY**

B.Sc. Honours Part-II Examination, 2022

**ZOOLOGY**

**PAPER: ZOOA-V**

Time Allotted: 4 Hours

Full Marks: 100

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

**GROUP-A**

**[MARKS-50]**

1. Answer any *five* questions from the following: 2×5 = 10
  - (a) Define systematics and taxonomy.
  - (b) Name one r-selected and one k-selected species.
  - (c) What is edge effect?
  - (d) Expand CBD and CITES.
  - (e) What is beta diversity?
  - (f) Name two nitrogen fixing microbes.
  - (g) What do you mean by plesiomorphic and apomorphic characters?
  - (h) Define ecological niche.
  
2. Answer any *two* questions from the following: 4×2 = 8
  - (a) What is cladistic classification? Draw a cladogram showing clade branch and node. 2+2
  - (b) What is nomenclature? State the rules of Zoological nomenclature. 1+3
  - (c) Explain the merits and demerits of Biological species concept. 2+2
  - (d) What do you mean by Sibling species and subspecies? Cite appropriate examples. 2+2
  
3. Answer any *two* questions from the following: 5×2 = 10
  - (a) What is exponential model of Population growth? Mention its characteristics. 2+3
  - (b) Explain the MacArthur and Wilson model of Island biogeography. 5
  - (c) Explain community and guild with example.  $2\frac{1}{2} + 2\frac{1}{2}$
  - (d) Explain, in brief, the niche-hypervolume concept. Comment on niche overlap and segregation. 3+2

4. Answer any *one* question from the following: 11×1 = 11
- (a) (i) Write a suitable index used to measure species diversity and state its significance. 1+2
- (ii) Explain vertical stratification of a community. 3
- (iii) Why do food chains in real ecosystems hardly include more than 4 trophic levels? 2
- (iv) Differentiate between autogenic and allogenic succession. 3
- (b) (i) What is life table? State its significance. 2+2
- (ii) What is a nutrient cycle? What do you know about short term cycling of Carbon? 1+2
- (iii) What is disclimax? Explain with an example. 1+3
5. Answer any *one* question from the following: 11×1 = 11
- (a) (i) Name and mention the salient features of forest type found in Sundarban and Western Ghat.  $2\frac{1}{2}+2\frac{1}{2}$
- (ii) Write the status of following animals as per IUCN Red data list: Great Indian bustard, Royal Bengal Tiger, Olive ridley sea turtle. 3
- (iii) Write a short note on Project Tiger in West Bengal. 3
- (b) (i) What is biodiversity hot-spot? Name two biodiversity hot-spots in India. 2+2
- (ii) State any two Biodiversity Acts. 3
- (iii) Enumerate the causes of depletion of wild life. Name the laws that regulate wildlife crime of India. 2+2

**GROUP-B**

**[MARKS-50]**

6. Answer any *five* questions from the following: 2×5 = 10
- (a) Distinguish between symbiosis and commensalism.
- (b) What is myiasis? Name one myiasis causing agent.
- (c) Give examples of two chemokines and state their functions.
- (d) What is the portal of entry of polio virus and what are the symptoms of Polio disease?
- (e) Distinguish between mesophilic and thermophilic bacteria with examples.
- (f) What is dendritic cell? Mention its function.
- (g) What makes IgA different from IgG?
- (h) What do you understand by wet and dry sterilization in microbiology?

7. Answer any **one** question from the following: 11×1 = 11
- (a) Define mesosome and nucleoid. Write down the differences between endospore and exospore forming bacteria and give examples. Classify bacteria based on their temperature requirement. Discuss about any chemical method to control microorganism. Define facultative anaerobic bacteria. 2+3+3  
+2+1
- (b) What are the primary indications of tuberculosis? What is the diagnostic test for tuberculosis? Describe the patho-physiology of avian influenza. Discuss the mode of action of cholera toxin. 2+2+4+3
8. Answer any **one** question from the following: 13×1 = 13
- (a) What is neoplasia and hyperplasia in parasitic infection? Give two names of Zoonotic disease caused by Protozoa and helminth. For each mention the pathogen involved and mode of transmission. Comment on the co-evolution of host and parasite. Write down the adaptive features of *Fasciola hepatica*. 2+2+(2+2)  
+2+3
- (b) Schematically show the life cycle of *Ascaris* sp. Draw and describe the feeding and transmission stages of *Entamoeba histolytica*. Name the virulence factors in amoebiasis. What is Polyembryony? Distinguish between facultative and obligatory parasitism. 4+4+2  
+1+2
9. Answer any **two** questions from the following: 8×2 = 16
- (a) Differentiate between Classical and Alternative pathway. How do phagocytes ingest and kill microbes? What is MALT? 3+3+2
- (b) What are the components of the TCR complex? What are MHC molecules? How does APC process exogenous antigens before presenting to T cell? 2+1+5
- (c) Explain isotypic, allotypic and idiotypic determinants in antibodies. What are the differences between T helper and T cytotoxic cell? Write down the steps of Sandwich ELISA. 3+2+3
- (d) Distinguish between B and T cells. Draw and describe the classical structure of an antibody molecule. What is Rh factor? 2+4+2

**N.B. :** Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.

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