M.Sc. 3rd Semester Examination, 2022

ZOOLOGY

PAPER – ZOO-303(B_1, B_2 / D_1, D_2)(CCAE)

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

PAPER – ZOO-303(B_1)

(*Special Paper* : *Ecology*)

(*Biodiversity and Conservation Ecology*)

[*Marks* : 20]

1. Answer any *two* of the following : 2×2

(*a*) What is the importance of wild life census ?

(*b*) Discuss the benefits of wild life conservation.

(*c*) State the characteristic features of Biodiversity hot spots.

(*d*) What do you mean by Red data book ?

2. Answer any *two* of the following : 4×2

(*a*) Mention the principles & goals of CBD.

(*b*) Discuss the role of wild life DNA Forensics in identification of endangered species.

(*c*) Write a note on JFM.

(*d*) Write down the impact of urbanisation on Biodiversity.

3. Answer any *one* of the following : 8×1

(*a*) Write a note on Man-Elephant conflict.

(*b*) Write down the measures taken for tiger conservation.

PAPER – ZOO-303(B_2)

(*Ecology Special*)

(*Aquatic Ecology*)

[*Marks* : 20]

4. Answer any *two* of the following : 2×2

   (*a*) Define Pycnocline.

   (*b*) Differentiate Obligate and facultative wetlands.

   (*c*) Define Surf.

   (*d*) Distinguish between marsh and swamp.

5. Answer any *two* of the following : 4×2

   (*a*) Enlist the various ecological roles of mangroves.

   (*b*) Illustrate different zones within intertidal belt.

   (*c*) What is the fate of nutrients in an estuary ?

(*d*) Describe the niche of hermatypic corals.

6. Answer any *one* of the following : 8×1

(*a*) What problems do estuarine organisms face and how do they adapt to their environments ? $4 + 4$

(*b*) (*i*) What is a dead zone ? State the causes and effects of dead zone.

(*ii*) Compare Neuston and periphyton. $2+2+2+2$

PAPER – ZOO-303(D_1)

(*Special Paper : Parasitology*)

(*Diversity and Biology of Parasite*)

[*Marks* : 20]

1. Answer any *two* of the following : 2×2

(*a*) What is calabar swelling ?

(*b*) Mention the name of hosts through which *D. latum* completes its lifecycle.

(*c*) What is hydatid cyst ?

(*d*) What is a paratenic host ? What purpose does it serve in parasitic transmission.

2. Answer any *two* of the following : 4×2

(*a*) Draw a labelled diagram of an apicomplexan structure. Mention the functional significance of $2\frac{1}{2}+1\frac{1}{2}$

(*i*) Rhoptries
(*ii*) Micropores
(*iii*) Subpellicular microtubules.

(*b*) Mention the name and functions of different glands found in the cercariae of blood fluke. 4

(*c*) What are the different types of scolex found in Cestoda ? Explain with a labelled diagram. $2+2$

(*d*) Write notes on Primary Amoebic Meningo-encephalitis (PAM). 4

3. Answer any *one* of the following : 8 × 1

(*a*) Discuss in brief about the life cycle, pathogenecity and prophylaxis of *Echinococcus granulosus*. 5 + 2 + 1

(*b*) How are medically important protozoa classified ? What are the common characteristics of class Sporozoa. Discuss energy metabolism in Nematodes. 2 + 2 + 4

PAPER – ZOO-303(D_2)

(*Immunoparasitology*)

[*Marks* : 20]

4. Answer any *two* of the following : 2 × 2

(*a*) Explain why serum IgM cannot activate complement prior to antigen binding ?

(*b*) How does allergen differ from antigen ?

(*c*) State the role of proteases in complement activation.

(*d*) How does C_4 differ in its binding affinity with C_{4b} ?

5. Answer any *two* of the following : 4×2

(*a*) In a laboratory a number of mouse strains, each of which Lacks a specific gene. How might the type-I hypersensitivity response of each knockout strain differ from a wild type mouse ? Explain your answer. $2 + 2$

(*i*) Mouse is unable to generate a high affinity FC$\in$RI receptor.

(*ii*) Mouse is deficient in the ability to generate the complement attack complex.

(*b*) Illustrate with diagram how does early response paved the path for onset of late *response* in asthma. 4

(*c*) State the cellular consequences of C3a and C5a cross linking with respective receptor after complement activation. 2 + 2

(*d*) In what ways mannose receptor help innate immune activation ? In what ways the host ensure that inadvertent activation of the alternative pathways on its own healthy cells does not lead to autoimmune destruction ? 2 + 2

6. Answer any *one* of the following : 8 × 1

(*a*) Briefly explain the mechanism of action of the following complement regulatory proteins. Indicate which pathway(s) and how each protein regulates. 2 × 4

(*i*) C1 inhibitor (C1INH)

(*ii*) Decay-accelerating factor (DAF)

(*iii*) Profectin (CD59)

(*iv*) C4b-binding protein.

(*b*) A human intestinal epithelial cells secret IL-8 alter infection of the cells with *E.coli*. Illustrate the signaling pathway with proper diagram. 8