

P-II(1+1+1)H/12

2012

ZOOLOGY (Honours)

Third Paper

Full Marks : 90

Time : Four Hours

*The figures in the margin indicate full marks*

**Group - A**

**(Cell-Biology and Histology)**

1. Answer any *four* questions :  $2 \times 4 = 8$

- (a) What is mesosome ?
- (b) What is minimal medium ?
- (c) Define mitogen.
- (d) What is SRP ?
- (e) What is mordant ?
- (f) Name two coagulant fixative.

2. Answer any *four* questions :  $4 \times 4 = 16$

- (a) What is metal shadowing ? State its purpose.
- (b) What is meant by microtomy ?
- (c) Write a note on exchange of chromatid segments in meiosis.
- (d) Distinguish between dye and stain.

P.T.O.

( 2 )

- (e) Write a note on different molecular events occur at different stages of cell cycle.
- (f) "Coenzymes play a central role in Mitochondria"  
— Justify.
3. Answer any *two* questions :  $10\frac{1}{2} \times 2 = 21$
- (a) Describe the structure of  $F_0-F_1$  ATPase. How ATP is formed during electron transport through respiratory chain complexes?  $4+6\frac{1}{2}$
- (b) Give a brief account of the optical paths in a TEM with suitable diagram. Write its differences with that of a compound microscope.  $(4+2\frac{1}{2})+4$
- (c) What do you mean by natural and synthetic dyes? Discuss briefly the tissue processing in histological preparations.  $4\frac{1}{2}+6$
- (d) What is axoneme ? Briefly describe the structure of axoneme of cilium or flagellum with respect to microtubular arrangement.  $2\frac{1}{2}+8$

**Group - B**

**( Genetics and Immunology )**

4. Answer any *four* questions :  $2 \times 4 = 8$
- (a) Law of independent is not universally applicable — Why.
- (b) What is pseudodominance ?
- (c) What is sex influenced character ? Give one example.

( 3 )

(d) Define test cross.

(e) What is haptan ?

(f) What is interferon?

5. Answer any *four* questions :  $4 \times 4 = 16$

(a) Write short note on incomplete dominance.

(b) Prove that in male *Drosophila* no crossing over take place.

(c) Write short note on lethal gene.

(d) Write short note on haemophilia.

(e) Describe the cells and their function responsible for innate immunity.

(f) What is killed vaccine ? Write its applications.

6. Answer any *two* questions :  $10\frac{1}{2} \times 2 = 21$

(a) Define mutation. Describe a method for detection of mutation in *Drosophila*. Discuss in brief the paracentric and pericentric inversion with suitable diagrams.  $2 + 4\frac{1}{2} + 4$

(b) What do you mean by sex linked inheritance ? Explain it with one example in man. Why it is said that "sex linked genes are easier to detect than autosomal gene" — justify with suitable example.  $10\frac{1}{2}$

P.T.O.

( 4 )

- (c) Write the principle of ELISA and explain how quantification of serum Ag/Ab can be done with ELISA. 10½
- (d) Explain how our immune system can remember. Discuss in brief the role of T cell during B-cell activation. 5+5½

P-II(1+1+1)H/12

2012

ZOOLOGY (Honours)

Fourth Paper

Full Marks : 90

Time : Four Hours

*The figures in the margin indicate full marks.*

**Group - A**

**(Ecology)**

1. Answer any *four* questions : 2×4=8

- (a) Define standing crop.
- (b) What is parasitoid ?
- (c) What is mutualism ? Give an example.
- (d) Define permafrost.
- (e) What is ecotone ?
- (f) State Allen's rule.

2. Answer any *four* questions : 4×4=16

- (a) Explain J-shaped curve of population growth.
- (b) Is parasitism and predation harmful from the ecological standpoint ? — Explain.
- (c) Describe the biological characters of a desert biome.

P.T.O.

( 2 )

- (d) Does variability in environmental conditions affect population dynamics? — Explain.
- (e) Write a short note on thermal migration.
- (f) Comment on primary and secondary succession.
3. Answer any *two* questions :  $10\frac{1}{2} \times 2 = 21$
- (a) What is a biome? Mention the important biomes. Discuss the physical and biological characteristics of a tropical rain forest.  
 $1+2+7\frac{1}{2}=10\frac{1}{2}$
- (b) Write a short note on the biotic components of a pond ecosystem. Discuss the mode of succession in a pond.  $3\frac{1}{2}+7=10\frac{1}{2}$
- (c) Discuss the nitrogen cycle with an emphasis on biological fixation of nitrogen.  $10\frac{1}{2}$
- (d) Discuss the different types of morphological adaptations in animals with respect to light and temperature.  $10\frac{1}{2}$

**Group - B**

**(Zoogeography, Wildlife and Biodiversity)**

4. Answer any *four* questions :  $2 \times 4 = 8$
- (a) Mention the parent and daughter atoms in case of radioactive carbon dating of fossils.

( 3 )

(b) Which biological period is called the age of Amphibians ?

(c) Expand WWF and UNEP.

(d) Define wildlife.

(e) Define hotspot. Who developed the concept of hotspot ?

(f) Mention two means of dispersal of animals.

5. Answer any *four* questions :  $4 \times 4 = 16$

(a) Is there any faunal similarities between Oriental and Ethiopian realms ? — Justify.

(b) Is the geological time scale absolute or relative ? Give argument in favour of your answer.

(c) Write a short note on deforestation.

(d) What do you mean by half-life and decay constant of a radioactive isotope ?

(e) Write a short note on environmental monitoring.

(f) Differentiate between ecosystem diversity and species diversity.

6. Answer any *two* questions :  $10 \frac{1}{2} \times 2 = 21$

(a) Discuss the faunal explosion during the Mesozoic era in context to the reptiles.  $10 \frac{1}{2}$

P.T.O.

( 4 )

- (b) Define and explain the concepts of National Park and Wildlife sanctuaries, their aims, objectives and legal protections.  $10\frac{1}{2}$
- (c) Name five projects adopted in India for protection of endangered animals. Give a brief account of the 'Project Tiger' in India.  $5+5\frac{1}{2}=10\frac{1}{2}$
- (d) What do you mean by Biosphere Reserve ? State their role. Name one Biosphere Reserve of West Bengal and describe its faunal composition.  $2+2+1+5\frac{1}{2}=10\frac{1}{2}$