2013

ZOOLOGY (Honours)

Sixth Paper

Full Marks : 90 Time : Four Hours

The figures in the margin indicate full marks.

Group - A

(Biochemistry and Molecular Biology)

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

   (a) What are essential fatty acids?

   (b) What is coenzyme?

   (c) What is mutarotation?

   (d) What is Shirie-Dalgarno sequence?

   (e) What is DHU Loop in tRNA?

   (f) Define Sat-Chromosome.

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

   (a) Write the role of metal ions in enzymes.

   (b) Write about the sources and deficiency symptoms of vitamin C and vitamin E.

   (c) Describe the method of enzyme purification by isoelectric focusing.

P.T.O.

(d) Write a note on initiation of transcription in TATA-Less Promoter.

(e) Write a note on restriction endonuclease.

(f) Write a short note on nucleosome model of a chromosome.

3. Answer any *two* questions : 10½×2=21

(a) Classify amino acids on the basis of side chain with structure.

(b) Give a schematic overview of the lipid metabolism. State its role in cell metabolism. 6½+4

(c) Describe the initiation and elongation process of protein synthesis in prokaryotes.

(d) How lac operon is regulated by environment? Describe the attenuation regulation of trp operon. 3½+7

Group - B

(Physiology)

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

(a) Name four clotting factors.

(b) What is TN complex?

(c) Define molar and molal solution.

(d) What is tidal volume?

(e) What is effective filtration pressure?

(f) What is EPSP?

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

(a) Write a short note on Gibb's Donan membrane equilibrium.

(b) Distinguish between osmoregulation of fresh water and marine water teleosts.

(c) Write the role of vitamin - K in blood coagulation.

(d) Draw and describe the structure of myoneural junction.

(e) Describe briefly the process of digestion of a fat and carbohydrate less piece of goat meat.

(f) Write a short note on sodium pump.

6. Answer any *two* questions : 10½×2=21

(a) Describe the origin and conduction of heart beat. Mention the important events of Cardiac Cycles. 5½+5

(b) Describe the structure of synapse. Write a note on synaptic transmission. Distinguish between chemical synapse and electrical synapse. 3+5+2½

P.T.O.

(c) Draw the structure of a nephron and discuss the process of urine formation. 3+7½

(d) What is osmotic pressure? Discuss its role in maintenance of fluid volume. State the application of osmosis. 2½+4+4

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ZOOLOGY (Honours)

Seventh Paper

Full Marks : 90 Time : Four Hours

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Group - A

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

   (a) Define local hormone. Give one example.

   (b) Why hormones are called chemical messenger?

   (c) Mention two glycoprotein hormones.

   (d) Write the cause of Cushing syndrome.

   (e) What is relaxin? Write its function.

   (f) What is ANF? Mention its functions?

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

   (a) Write a note on embryo transfer technology.

   (b) Describe the relation between nervous system and endocrine system.

   (c) Write a note on slow block polyspermy.

   (d) Explain the role of renin-angiotensin system in water balance.

P.T.O.

(e) What do you mean by hypothalamo-hypophysial gonadal axis?

(f) What is 'G' protein? Explain signal transduction by a protein hormone through second messenger system.

3. Answer any *two* questions : 10½×2=21

(a) Classify hormones on the basis of chemical nature.

(b) Describe the role of sex hormones in regulation of menstrual cycle in primates. How menstrual cycle differs from oestrous cycle? 6½+4=10½

(c) Discuss the histological structure and function of thyroid gland. 6½+4=10½

(d) What is capacitation of sperm? State its importance. Describe acrosomal reaction in mammals. 2+1+7½=10½

Group - B

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

(a) What is blastodisc?

(b) What is vilellogenesis?

(c) State the Sacch's rule.

(d) What are phosphovilin and lipovitelline?

(e) What is amnion?

(f) Define competence.

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

(a) Differentiate the mammalian ovum from avian ovum.

(b) Write a brief note on post fertilization events.

(c) Comment on reciprocal induction during kidney development.

(d) Explain spermiogenesis.

(e) Write the functions of extraembryonic membranes.

(f) Write in brief about the post fertilization events.

6. Answer any *two* questions : 10½×2=21

(a) What do you mean by organizer concept? Discuss the role of organizer in Amphibia.

(b) Discuss the process of kidney development in chick.

(c) Describe the process of gastrulation in *Branchiostoma*.

(d) Draw and describe different types of extraembryonic membranes in Chick with functions.

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ZOOLOGY (Honours)

Eighth Paper

Full Marks : 90 Time : Four Hours

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Group - A

(Evolution and Behaviour)

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

   (a) What do you mean by protenoids?

   (b) Write any two principles of binomial nomenclature.

   (c) Define selfishness.

   (d) What is Darwinian fitness?

   (e) Define geographic isolation.

   (f) Define taxon with example.

2. Answer any *three* questions : 4×3=12

   (a) Write a note on protocell.

   (b) Distinguish between continuous and discontinuous variation.

   (c) Why is parental care often provided by females?

P.T.O.

(d) Elaborate the concept of neodarwinism.

(e) Write a note Waggle-dance.

(f) Genetic recombination leads to adaptation—Comment.

3. Answer any *two* questions : 10×2=20

(a) Write different kinds of gene mutations. Discuss their role in evolution. 4+6=10

(b) Distinguish between anadromous and catadromous migration of fish. State the types of migration in birds with suitable examples. 4+6=10

(c) What is parent-offspring conflict? Evaluate the costs and benefit of parents and offsprings in terms of parental care.

(d) What is sympatric speciation? What are the types of isolation that help in sympatric speciation? Discuss the mechanism of sympatric speciation. 2+2+6=10

Group - B

(Environmental Biology and Toxicology)

4. Answer any *three* questions : 2×3=6

(a) What are green house gases?

(b) Define EC_{50}.

(c) Define EIA.

(d) Define non-renewable resource.

(e) What is Cytotoxin?

5. Answer any *three* questions : 4×3=12

(a) Define lethal and sublethal doses with examples.

(b) Write a short note on silicosis.

(c) Write a short note on PAN.

(d) Write a short note on bio-fertilizer.

(e) Enlist anthropogenic sources of radiation.

6. Answer any *two* questions : 10×2=20

(a) State the major causes of soil pollution. Comment on the possible remedial measures of soil pollution. 5+5=10

(b) Write an essay on the eutrophication of aquatic habitat. 10

(c) Define ionizing radiation. Discuss the mechanisms of hazardous effects of such radiation. 2+8=10

(d) Elaborate the concept of bio-magnification and bio-accumulation in respect of any pollutant. Define BoD with dissolve O_2 in aquatic body. 3½+3½+3=10

Group - C

(Applied Zoology)

[Bioinformetics]

7. Answer any *two* questions : 2×2=4

(a) Explain input and output devices in PC in short.

P.T.O.

(b) What do you understand by hardware?

(c) What is windows?

8. Answer any *two* questions : 4×2=8

(a) How many types of programming techniques are commonly used?

(b) How can you protect your M.S. Word?

(c) What is Internet Explorer?

[Industrial Zoology and Pest Management]

7. Answer any *two* questions : 2×2=4

(a) What is IPM?

(b) Define poultry.

(c) Name two major cattle breeds of India.

8. Answer any *two* questions : 4×2=8

(a) State one disease caused by ectoparasite and one disease caused by endo-parasite. Describe the control measures of parasitic infection in poultry birds.

(b) Mention the damages caused by *Banidicota* sp.

(c) State the chemical composition of honey.

[Aquaculture]

7. Answer any *two* questions : 2×2=4

(a) What do you mean by pelagic fishery?

(b) What is EEZ?

(c) What is the optimum dose of lime for aquaculture?

8. Answer any *two* questions : 4×2=8

(a) Distinguish between extensive and intensive culture.

(b) What do you mean by fin-fish and shell-fish?

(c) What do you mean by BoD and mention its importance in aquaculture?

[Medical Zoology]

7. Answer any *two* questions : 2×2=4

(a) Define a vector.

(b) Name the causative agents of benign and malignant malaria.

(c) Define obligatory parasite.

8. Answer any *two* questions : 4×2=8

(a) Describe the pathogenicity and control of *Ancylastoma duodenale*.

(b) Describe the clinical symptoms of dengue fever.

(c) How would you distinguish Anopheles, Culex and Aedes-mosquito?

P.T.O.

7. Answer any *two* questions : 2×2=4

   (a) What is cosmid?

   (b) Define multiple cloning site.

   (c) What is replica plating?

8. Answer any *two* questions : 4×2=8

   (a) Write a short note on genomic library.

   (b) How does DNA enter into bacteria through cell wall during transformation?

   (c) Mention two aspects of biotechnology which affects ethical consideration.