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

2012

ZOOLOGY (Honours)

Seventh Paper

Full Marks : 90   Time : Four Hours

The figures in the margin indicate full marks.

Group - A

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

    (a) Name one ovarian hormone and write its function.

    (b) Name the cell types that secrete insulin and glucagon.

    (c) State the location of

        (i) Sertoli cell and

        (ii) Leydig cell.

    (d) What is the role of hyaluronidase in fertilization ?

    (e) Write functions of a neurohormone.

    (f) Name two thyroid hormones.

2. Answer any *four* of the following questions :

                                            4×4=16

    (a) Write the differences between hormone and enzyme.

P.T.O.

(b) What is oxytocin ? State its function.

(c) Write note on feed back loop of regulation of thyroid secretion.

(d) Describe feed back regulation in ovarian function.

(e) What is fertilization membrane ? How is it formed ?

(f) Write fast block polyspermy in mammals.

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

(a) Describe the process of hormonal regulation of blood sugar.

(b) Name the different hormones secreted by the anterior lobe of pituitary. Explain their role in physiology.

(c) Describe the process of sperm penetration and egg cortical reaction during fertilization in mammals.

(d) Describe with suitable diagram of the histological structure of testis and function of adrenal hormones. $(2+3)+5\frac{1}{2}=10\frac{1}{2}$

Group - B

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

(a) Define with example of Alecithal egg.

(b) What is fate map ?

(c) Define Epiboly.

(d) What is somatopleune ?

(e) Define placenta.

(f) What is yolk ? Write its importance.

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

(a) Define cleavage. Write the characteristic features of cleavage division. 1+3=4

(b) Write note on vitellogenesis.

(c) Write a short note on Acrosome reaction.

(d) Write a short note on spermiogenesis.

(e) Write a short note on extraembryonic membrane.

(f) Classify placenta on the involvement of maternal and foetal tissue.

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

(a) Describe the structure and the process of formation of ovum in detail with suitable diagram.

(b) Describe the process of gastrulation in frog with suitable labeled diagram.

(c) Describe briefly the development of heart in chick.

(d) What is gametogenesis ? Describe the process of fertilization in brief. 2+8½=10½

2012

ZOOLOGY (Honours)

Eighth Paper

(Evolution and Behaviour, Environmental Biology and Toxicology and Applied Zoology)

Full Marks : 90   Time : Four Hours

The figures in the margin indicate full marks.

Group - A

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

   (a) State the importance of Hardy-Weinberg Law.

   (b) What is macro evolution ?

   (c) What is sibling species ? Give an example.

   (d) Define catadromous and anadromous migration.

   (e) How mutation pressure influences the evolutionary process ?

   (f) What is panmictic population ?

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

   (a) Write a brief note on spontaneous origin of life.

   (b) Explain how migration can alter gene frequency.

P.T.O.

(c) Mention a few applications of Behavioural studies.

(d) Write a short note on frame shift mutation.

(e) Write a note on the contribution of polyploidy in evolution.

(f) Explain ecological isolation with example.

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

(a) Define random genetic drift with example. Discuss the effect of genetic drift in evolution. What is bottle neck population ? 2+6+2=10

(b) What is biological clock ? Elaborate the molecular basis of circadian clocks in *Drosophila melanogaster*. Write a note on the adaptive significance of biological rhythm. 2+6+2=10

(c) Compare Mullerian and Batesian mimicry. What is the significance of mimicry and colouration in evolution ? 7+3=10

(d) Describe different types of dance performed by honeybees aiding in communication. Comment on the significance of position of sun in communication among honeybees. 5+5=10

Group - B

wer any *three* questions : 2×3=6

'hat are biodegradable pollutants ?

(b) What is LC_{50} value ?

(c) Define Xenobiotics.

(d) Name two conventional chemical insecticides.

(e) What is toxicity ?

5. Answer any *three* questions : $4 \times 3 = 12$

(a) Write a short note on Minamata disease.

(b) Explain biological magnification with example.

(c) Write a short note on acid rain.

(d) Write a short note on global warming.

(e) When do you require to apply T-test and chi-square ?

6. Answer any *two* questions : $10 \times 2 = 20$

(a) Define pollution. Considering automobiles as source of pollutants, briefly state the types of pollutants added to nature and their effect on environment and human health. $2+3+5=10$

(b) What is wild life ? Comment on the wild life resources of North Bengal. What are the major reasons for wild life depletion in the region ? State the ex-situ and in-situ conservation effects in North Bengal. $2+3+2+3=10$

(c) Describe the sources of water pollution and comment on its adverse effect. $5+5=10$

P.T.O.

(d) What are the major forest types in (a) Darjeeling Himalayans, (b) Terai of Darjeeling, Jalpaiguri and Cooch Behar, (c) Malda District ? Compare the forests of North and South Bengal.

6+4=10

Group - C

Answer from any *one* of the following specialization.

(Bioinformatics)

7. Answer any *two* questions : 2×2=4

   (a) What is hard disc ?

   (b) What is RAM ?

   (c) One megabyte (MB) is equal to _____ kilobytes (fill in the blank)

8. Answer any *two* questions : 4×2=8

   (a) Comment on interpreter and compiler.

   (b) How can you create a file in MS WORD ?

   (c) What is the primary advantage of using a data file ?

(Industrial Zoology and Pest Management)

7. Answer any *two* questions : 2×2=4

   (a) What do you mean by 'nectar'?

   (b) What is voltinism ?

   (c) Name two major cattle breed of India.

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

    (a) Write a short note on poultry feed.

    (b) What are the necessary equipments for bee keeping ?

    (c) State two diseases, their symptoms and control measures of silk worm.

(Aquaculture)

7. Answer any *two* questions :   2×2=4

    (a) What is polyculture ?

    (b) What is the active ingredient of Mohua oil cake ?

    (c) What is supplementary feeding in aquaculture ?

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

    (a) Write a short note on importance of aquaculture in the Indian scenario.

    (b) Distinguish between extensive and intensive culture.

    (c) Write a short note on "Bheri culture of Prawn".

(Medical Zoology)

7. Answer any *two* questions :   2×2=4

    (a) Define intermediate host with example.

    (b) Name two pathogenic bacteria in man.

P.T.O.

(c) What do you mean by biological control of mosquito ?

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

(a) Describe the structure of HIV.

(b) How does a parasite differ from a pest ?

(c) Describe the mode of infection and control of *L. donovani*.

(Biotechnology)

7. Answer any *two* questions :   2×2=4

(a) What is restriction endonuclease ?

(b) Define a marker.

(c) What is stem cell ?

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

(a) Write briefly about cDNA Library.

(b) Mention two applications of rDNA technology in industrial microbiology.

(c) Write a short note on 'Southern blotting technique'.