Total No. of Questions : 8]

SEAT No. :

P2247

[Total No. of Pages : 2

[4829]-11

M.Sc. - I (Semester - I)

ZOOLOGY

ZY-101 : Biochemistry

(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) a) Explain the secondary structure of protein. **[10]**

b) Explain regulatory enzymes with suitable example. **[10]**

Q2) Give the reactions of aminoacids with reference to amino group. **[20]**

Q3) a) Discuss the conversion of pyruvate to lactate and give the importance of the conversion. **[10]**

b) Define Co-enzyme. Explain their role in cell metabolism with suitable example. **[10]**

Q4) Discuss the synthesis of Pyrimidine nucleotide. **[20]**

Q5) a) Give the structure of following. **[10]**

i) Gly-Lys

ii) Maltose

iii) ATP

iv) Glyceraldehyde

b) Explain in brief electron transport chain. **[10]**

P.T.O.

Q6) Write short notes on : **[20]**

i) Chemiosmosis

ii) Describe the role of carnitine in fatty acid metabolism.

iii) Immobilized enzymes.

iv) Enzyme inhibition.

Q7) Explain in detail gluconeogenesis and give its significance. **[20]**

Q8) a) Explain β oxidation of fatty acid. **[10]**

b) Explain the structure and function of Glutamate dehydrogenase. **[10]**

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Total No. of Questions : 8]

SEAT No. :

P2248

[Total No. of Pages : 2

[4829]-12
M.Sc. (Semester - I)
ZOOLOGY
ZY-102(A) : Genetics
(B) : English for Scientists
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books..***
2) ***Attempt any two questions from each section.***
3) ***All questions carry equal marks.***
4) ***Neat diagram must be drawn wherever necessary.***
5) ***Use of calculator is allowed.***

SECTION - I

ZY - 102 (A) : Genetics

Q1) a) Describe Hardy-Weinberg law and its application for autosomal gene.

b) Discuss the influence of environment on the inheritance of quantitative traits.

Q2) a) Discuss the PCR technique and its importance.

b) Distinguish between dominant and recessive epistasis.

Q3) a) What is lac operon? Explain in detail the organization and regulation analysis of lac operon.

b) Highlight the salient features of Mendelian Inheritance.

Q4) Write short notes on any two of the following :

a) Microarray Analysis.

b) Somatic Cell Genetics.

c) Restriction Enzymes.

P.T.O.

SECTION - II

ZY-102 (B) : English for Scientist

Q5) Discuss the various components required for effective organization of english writing while preparing scientific article.

Q6) "Genetic code is the simplest language for intracellular and extracellular communication". Justify the statement.

Q7) Explain the different styles of citation used in a research papers with suitable examples.

Q8) Write short notes on any four of the following :

a) IMRAD format.

b) Mention the common errors in written communication.

c) Mention any five acronyms.

d) Give the importance of syntax.

e) Tautology.

f) Jargon.

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Total No. of Questions : 8]

SEAT No. :

P2249

[Total No. of Pages : 2

[4829]-13
M.Sc. (Semester - I)
ZOOLOGY
ZY-103(A) : Fresh Water Zoology
(B) : Statistical Methods
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Answer any two questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Draw neat labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

ZY - 103 (A) : Fresh Water Zoology

Q1) Describe an adaptations for respiration and locomotion in freshwater insects. **[20]**

Q2) Discuss the significance of major physical properties of water that enable life in freshwater. **[20]**

Q3) What is sewage pollution? Describe the changes in aquatic biota of a river caused by sewage pollution. **[20]**

Q4) Write short notes on (any four) : **[20]**

a) Protective adaptations in rotifers.

b) Life cycle of fairy shrimps.

c) Economic importance of reptiles.

d) Aquatic birds.

e) Ecological significance of tadpoles.

P.T.O.

SECTION - II

ZY-103 (B) : Statistical Methods

Q5) a) Define the term sample. Also discuss different types of sample. **[8]**

b) Describe in brief the method of drawing frequency curve. **[6]**

c) Discuss the difference between absolute and relative measures of dispersion. **[6]**

Q6) a) The table below gives frequency distribution. Compute 71^{th} percentile. **[10]**

Class :	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Frequency	22	29	36	42	27	21

b) State the two equations of regression lines. **[5]**

c) State the probability density function of normal distribution. Also state mean and variance. **[5]**

Q7) a) Define : sample, space, probability, random variable. **[6]**

b) If X ~B (n = 8, p = 0.4) compute P[$2 \leq x \leq 4$]. **[8]**

c) Define : Critical region, Type II error, p - value **[6]**

Q8) Write short notes on <u>any one</u> :

a) Scatter diagram. **[10]**

b) Chi-square test for independence. **[10]**

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Total No. of Questions : 8]

SEAT No. :

P2250

[Total No. of Pages : 2

[4829]-21
M.Sc. (Semester - II)
ZOOLOGY
ZY-201(A) : Developmental Biology
(B) : Comparative Animal Physiology
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Attempt any two questions from each section.***
3) ***All questions carry equal marks.***
4) ***Draw neat labelled diagrams wherever necessary.***

SECTION - I

(A) : Developmental Biology

Q1) Explain the process of orgenesis and comment on synthesis and storage of maternal transcripts.

Q2) Explain the role of Bicoid, Nanos and Hunchback genes in early embryogenesis in Drosophila.

Q3) What is neural competence? Describe the molecular signalling during neural induction.

Q4) Write short notes on any two of the following :

a) Programmed cell death.

b) Regulation of sperm motility.

c) Fate maps in chick embryo.

d) Organizers in frog.

P.T.O.

SECTION - II

(B) : Comparative Animal Physiology

Q5) Explain the basic process in urine formation with respect to mammalian kidney.

Q6) Define critical temperature. Add a note on zone of thermal neutrality.

Q7) Explain the structure of skeletal muscle. Add a note on role of sarcoplasmic reticulum in muscle contraction.

Q8) Write short notes on the following (any four) :

a) Osmolarity and tonicity.

b) Neurohaemal and endocrine organ.

c) Reflexes.

d) Role of respiratory pigments in oxygen transport.

e) Chemical digestion.

Total No. of Questions : 8]

SEAT No. :

P2251

[Total No. of Pages : 2

[4829]-22
M.Sc. - I (Semester - II)
ZOOLOGY
ZY-202(A) : Molecular Biology
(B) : Cell Biology
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Answer any two questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***All questions carry equal marks.***
4) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Molecular Biology

Q1) Explain the process DNA replication in prokaryotes. **[20]**

Q2) Attempt the following. **[20]**

a) Explain in detail post-translational modification.

b) Explain in detail nucleotide excision repair and mismatch repair system.

Q3) Attempt the following. **[20]**

a) Write a brief note on retrotransposons.

b) Explain in brief the structure of 10 nm and 30 nm chromation fiber.

Q4) Explain the following : **[20]**

a) Charging of t-RNA

b) Genetic code

c) Hyperchromicity with respect to DNA

d) Human genome organisation project (HUGO)

P.T.O.

SECTION - II

Cell Biology

Q5) Describe structure and function of Golgi complex. **[20]**

Q6) a) Explain structure and function of nuclear pore complex. **[10]**

b) Give an account of intermediate filament and actin. **[10]**

Q7) What is cell cycle? Give the method of analysis of various phases of cell cycle. **[20]**

Q8) Write short notes on (any two) : **[20]**

a) Functions of ribosomes.

b) Cell fusion and electroporation.

c) G-protein.

d) Protein import in Mitochondria.

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Total No. of Questions :12]

SEAT No. :

P2252

[Total No. of Pages : 2

[4829]-23
M.Sc. - I (Semester - II)
ZOOLOGY
ZY-203(A) : Biochemical Technique / Ichthyology
(B) : Endocrinology
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any two sections.***
2) ***Answer any two questions from each section.***
3) ***Answers to the two sections should be written in separate answer books.***
4) ***All questions carry equal marks.***
5) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

ZY - 203 (A) : Biochemical Technique

Q1) What is retention time? Explain the principle, working and application of gas chromatography. **[20]**

Q2) Attempt the following : **[20]**

a) Explain in detail separation of nucleic acid by using agarose gel electrophoresis and give it's application.

b) Explain in detail principle, working and application of the infrared spectroscopy.

Q3) Attempt the following : **[20]**

a) Explain the principle, working and application of Warburg's apparatus.

b) What is the principle of centrifugation? Explain how you will determine the molecular weight by using centrifuge.

Q4) Explain the following : **[20]**

a) Maxam-Gilbert sequencing method.

b) Merits and demerits of short half-life radioisotopes.

c) Edman's degradation reaction for protein sequencing.

d) Different support media used for electrophoresis.

P.T.O.

OR

ZY-203 (A) : Ichthyology

Q5) Give an account of osmoregulation in fishes. **[20]**

Q6) Give classification of cyclostomata and chondrichthyes with diagnostic characters. **[20]**

Q7) Describe anatomical modifications of digestive system in fishes. Add a note on food and feeding habits of fishes. **[20]**

Q8) Write short notes on (any two) : **[20]**

a) Anadromous migration.
b) Scales in fishes.
c) Parental care in fishes.
d) Lateral line system.

SECTION - II

ZY-203 (B) : Endocrinology

Q9) Explain signal transduction cascade with reference to hormone action. **[20]**

*Q10)*a) Explain the role of hormones in calcium metabolism. **[10]**
b) Enlist various types of hormone receptors. **[10]**

*Q11)*a) Discuss the role of hormones in regulation of yolk synthesis. **[10]**
b) Describe hormonal regulation of carbohydrate metabolism. **[10]**

*Q12)*Write notes : **[20]**

a) TSM.
b) Renin angiotensin complex.
c) Gastrointestinal hormones.
d) Hypothalamic hypophysiotropins.

Total No. of Questions :8]

SEAT No. :

P2253

[Total No. of Pages : 3

[4829]-31
M.Sc. (Part - II) (Semester - III)
ZOOLOGY
ZY-311: Entomology
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***Draw neat labelled diagram wherever necessary.***
3) ***All questions carry equal marks.***

Q1) Describe the interrelationship of insects with other orthropods.

Q2) Give in detail the structure and function of mouth parts modified for liquid uptake. Give the examples and developmental stages in which they are found.

Q3) Describe the fundamental plan of a generalized insect leg and give an account of the various leg modifications found among insects.

Q4) Write distinguishing characters of following insect orders with atleast two examples from two families.

a) Thysanura
b) Hemiptera
c) Lepidoptera
d) Coleoptera

Q5) Give an account of the alimentary canal of any orthopteroid insect and compare it with that of alimentary canal of any sap sucking insect.

Q6) What are the organs of elimination met with the insects? Describe their structure and functions.

Q7) Describe the anatomy of male reproductive system in insects.

Q8) Write notes on (any two) :

a) Exocrine glands.
b) Thoralic spiracles of grasshopper.
c) Eye of insects.
d) Pulsatile organs.

P.T.O.

Total No. of Questions :8]

P2253

[4829]-31
M.Sc. (Part - II) (Semester - III)
ZOOLOGY
ZY-312 : Genetics - I
(2008 Pattern)

Time : 3 Hours] ***[Max. Marks :80***

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labelled diagram wherever necessary.***

Q1) Describe chromosome probes, paints and their uses.

Q2) What is PCR? Describe the procedure of PCR.

Q3) a) Explain difference between metric and non-metric trait.
b) Explain genetic drift mechanism.

Q4) What is speciation? Describe classical and modern concept of speciation.

Q5) a) What is genetic polymorphism? Explain with suitable example.
b) Describe methods of locating gene on chromosome.

Q6) a) Describe Hardy-weinberg's law with suitable example.
b) Explain concept of genetic load and genetic death.

Q7) a) What is phenotypic variance? Explain partioning of phenotypic variations in subcomponents.
b) Explain the following terms :
i) Assortive mating
ii) Stabilizing selection
iii) Allelic frequency
iv) Inbreeding

Q8) a) Explain Ex-vivo and Invivo gene therapy.
b) What is RFLP? Give it's significance in genetic studies.

Total No. of Questions :8]

P2253

[4829]-31
M.Sc. (Part - II) (Semester - III)
ZOOLOGY
ZY-313 : Physiology - I
(2008 Pattern)

Time : 3 Hours] ***[Max. Marks :80***

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***Draw neat labelled diagram wherever necessary.***
3) ***All questions carry equal marks.***

Q1) What is action potential? Explain the properties of action potential. Add a note on role of various ion channels in action potential.

Q2) What is high altitude sickness? Explain various physiological adaptations at high altitude.

Q3) What is photoperiodism? Explain circadian and lunar biological rhythms with suitable examples.

Q4) What is animal electricity? Explain the structure and physiology of electric organ in Torpedo.

Q5) What is excretion? Explain excretory organs used by various animal groups.

Q6) What is buoyancy? Describe various strategies used by animals to achieve neutral buoyancy.

Q7) a) Give an account of problems of diving.
b) Describe the structure and composition of plasma membrane.

Q8) a) How the marine air breathing vertebrates regulate the electrolyte balance.
b) Describe the biochemical and molecular mechanisms of bioluminescence.

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Total No. of Questions :20]

SEAT No. :

P2254

[Total No. of Pages : 3

[4829]-32
M.Sc. (Semester - III)
ZOOLOGY
ZY - 321 : Immunology
ZY - 322 : Environmental Biology
ZY - 323 : Fundamentals of Systematics
ZY - 324 : Aquaculture
ZY - 325 : Insect Ecology

(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any two optional courses from ZY - 321 to ZY - 325.***
2) ***Answers to the two courses should be written in separate answer books.***
3) ***Attempt any two questions from each optional course.***
4) ***All questions carry equal marks.***
5) ***Neat diagrams must be drawn wherever necessary.***

ZY - 321 : Immunology

Q1) What is antibody? Explain structure and functions of various classes of immunoglobins.

Q2) Attempt the following :

a) Explain principle and applications of ELISA and add a note on types of ELISA.

b) Explain in brief monoclonal antibodies and their use.

Q3) Attempt the following.

a) Explain theories of antibody synthesis.

b) Explain in detail B-cell activation.

Q4) Explain the following :

a) Immunogenicity and factors affecting it.

b) Attenuated Vaccine.

c) Class I MHC and class II MHC.

d) Lectin pathway of complement system.

P.T.O.

ZY - 322 : Environmental Biology

Q5) Describe the various components of ecosystem.

Q6) What is pollution? Describe the various types of air pollutants and their effects.

Q7) What is environmental degradation? Describe nature and types of environmental degradation.

Q8) Write short notes on :

a) Forest conservation and managements.

b) Global warming.

c) Sustainable development.

d) Environmental education.

ZY - 323 : Fundamentals of Systematics

Q9) What is taxonomic key? Explain its merits and demerits.

Q10) Explain in detail molecular phylogenetics and give its significance.

Q11) Explain the various theories of biological classification.

Q12) Write notes on :

a) ICZN

b) Collection and preservation methods of insects.

ZY - 324 : Aquaculture

Q13) Give an account of various fish diseases with appropriate examples.

Q14) Give a comparative account of crab and lobster fisheries.

Q15) Describe various technique applied in the harvesting of the fishes.

Q16) Write short notes on :

a) Types of aquaculture.
b) Edible fresh water fishes.
c) Natural breeding in fishes.
d) Harvesting of pearls.

ZY - 325 : Insect Ecology

Q17) Describe early evolution of insects in soil and water.

Q18) Describe Inter-relationship of insect with biotic and physical factors of the environment.

Q19) Describe relationship of insects with vascular plants.

Q20) Write notes on :

a) Soil insect.
b) Insect predators of vertebrates.
c) Monophagous insect.
d) Parasitoid insect.

Total No. of Questions :12]

SEAT No. : ____

P2255

[Total No. of Pages : 2

[4829]-33
M.Sc. (Semester - III)
ZOOLOGY
ZY - 331 : Parasitology
ZY - 332 : Insect Physiology and Biochemistry
ZY - 334 : Genetic Toxicology

(2008 Pattern)

Time : 3 Hours] ***[Max. Marks :80***

Instructions to the candidates:

1) ***Attempt any two sections.***
2) ***Attempt any two questions from each section.***
3) ***All questions carry equal marks.***
4) ***Answers to the two sections should be written in separate answer book.***

SECTION - I

ZY - 331 : Parasitology

Q1) Describe the life cycle, pathogenicity, treatment and control measures of Schistosoma sp. and Trypanosoma sp.

Q2) Discuss manipulation of host behavior and its importance in host-parasitic system.

Q3) What is antibody synthesis? Describe the serological process to demonstrate specific antigens of Entamoeba and Leishmania.

Q4) Write notes on (any two) :

a) Strain variations in Taenia.

b) Ancylostoma sps.

c) VSG

d) Echinococcus sps.

P.T.O.

SECTION - II

ZY - 332 : Insect Physiology and Biochemistry

Q5) What is digestion? Describe mechanism of protein, carbohydrate and fat digestion in insects.

Q6) What is moulting? Describe mechanism of hormonal action and functions of moulting and juvenile hormones.

Q7) What is sclerotization? Describe histological structure, chemistry and functions of insect integument.

Q8) a) Ventilatory mechanism in insects.

b) Water balance and nitrogen excretion in insects.

SECTION - III

ZY - 334 : Genetic Toxicology

Q9) What is Toxicology? Explain its subdivisions and give the scope and importance of genetic toxicology.

Q10) Define mutation. Explain the structural changes occuring in chromosomes and give their consequences.

Q11) Explain the various molecular methodologies to detect mutation.

Q12) Write notes on (any two) :

a) Ame's test.

b) Mutagenic agents.

c) Micronucleus test.

Total No. of Questions :8]

SEAT No. :

P2256

[Total No. of Pages :3

[4829]-41
M.Sc. (Semester - IV)
ZOOLOGY
ZY - 411 : Entomology - II
(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***All questions carry equal marks.***
3) ***Neat and labelled diagrams must be drawn wherever necessary.***

Q1) What is gametogenesis? Describe the process of oogenesis in insects.

Q2) Describe the events in embryonic development upto gastrulation and add a note on blastokinesis in insects.

Q3) Describe the process of oviposition in insects and add a note on control of oviposition.

Q4) Describe in detail post embryonic development in hemimetabolous insects.

Q5) Write short notes on (any two) :

a) Types of pupae.
b) Development of alimentary canal in insects.
c) Hadorn's experiments.
d) Development of heart in insects.

Q6) What is pesticide? Classify the insecticides on the basis of mode of action.

Q7) What is the principle of Biological control? With illustrated examples describe role of Biocontrol agents for controlling agricultural pests.

Q8) Write short notes on (any two) :

a) Pesticide hazards and antidotes.
b) Pheromones and repellants.
c) Economics of pest control.
d) Nature of damage caused by insect pests.

P.T.O.

Total No. of Questions :8]

P2256

[4829]-41
M.Sc. (Semester - IV)
ZOOLOGY
ZY - 412 : Genetics - II
(2008 Pattern)

Time : 3 Hours] ***[Max. Marks :80***

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***Neat labelled diagram must be drawn wherever necessary.***
3) ***All questions carry equal marks.***

Q1) a) Explain the pre-natal diagnostic methods.
b) Elucidate the role of genes in "Learning and memory formation" in Drosophila.

Q2) Explain in brief :
a) Role of Recombination activating genes and recombination signalling sequences.
b) Cell hybrids.

Q3) a) Explain the molecular and biochemical basis of Tay-Sachs disease.
b) Explain the Bone marrow transplantation as a mode of treatment of lysosomal storage disease.

Q4) What are proto-oncogenes and tumor suppressor genes? How do they differ in their mechanism?

Q5) Explain the role of Homeotic genes in pattern formation, with respect to Drosophila.

Q6) a) Explain the molecular genetics of DMD. How are the genes for DMD localized by genetic linkage analysis.
b) What is positional cloning? Explain positional cloning using genetic linkage mapping with respect to cystic fibrosis.

Q7) Explain the genetic basis of cell-division control.

Q8) a) Write notes on :
i) Use of pedigree studies in human genetics.
ii) Penetrance and expressivity.
b) Explain the role of Twin studies and adaption studies in determining the 'Nature' and 'Nurture' factor.

Total No. of Questions :8]

P2256

[4829]-41
M.Sc. (Semester - IV)
ZOOLOGY
ZY - 413 : Physiology - II
(2008 Pattern)

Time : 3 Hours] ***[Max. Marks :80***

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***Draw neat diagrams wherever necessary.***
3) ***All questions carry equal marks.***

Q1) Explain the structure of eye. Add a note on physiology of vision.

Q2) Explain the pathways of ATP formation during muscle contraction.

Q3) What is neurotransmitter? Explain the types and metabolism of neurotransmitter.

Q4) Explain the transport of O_2 and CO_2 through blood. Add a note on abnormalities in blood gas content.

Q5) What is haemostasis? Explain the extrinsic pathway of blood coagulation.

Q6) Explain the electro cardiogram.

Q7) Write a role of extrinsic and intrinsic nerve plexus in regulation of digestion.

Q8) Write notes on :

a) Action potential and its properties.
b) Types of muscle contraction.
c) Receptor types and receptor potential.
d) Gas exchange across pulmonary and systemic capillaries.

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Total No. of Questions :20]

SEAT No. :

P2257

[Total No. of Pages : 3

[4829]-42
M.Sc. - II (Semester - IV)
ZOOLOGY
ZY - 421 : Animal Tissue Culture
ZY - 422 : Pollution Biology
ZY - 423 : Marine Biology
ZY - 424 : Bacterial and Phage Genetics
ZY - 425 : Medical Entomology

(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any two sections.***
2) ***Attempt any two questions from each section.***
3) ***All questions carry equal marks.***
4) ***Answer to the two sections should be written in separate answer book.***

SECTION - I
ZY - 421 : Animal Tissue Culture

Q1) What is cell bank and primary cell culture? Give their importance in Animal tissue culture.

Q2) a) Differentiate between finite and infinite cell lines.

b) Give principle and working of CO_2 incubator.

Q3) a) Write an account of sterilization practices in Animal Tissue Culture.

b) Give principle working and importance of inverted microscope.

Q4) Write short notes on (any two) :

a) Importance of serum.

b) Organ culture.

c) Histotypic culture.

d) Lymphocyte culture.

P.T.O.

SECTION - II

ZY - 422 : Pollution Biology

Q5) Describe the causes and effects of degradation of land with suitable examples.

Q6) What is pollution? Describe the sources and effects of sound pollution.

Q7) What are pesticides? Explain different kinds of pesticides and its impact on living organisms.

Q8) Write short notes on (any two) :

a) Hydrosphere.

b) Eutrophication.

c) Algal bloom.

d) Global warming.

SECTION - III

ZY - 423 : Marine Biology

Q9) Describe marine resources with special reference to culture of marine organisms.

Q10) What is befouling? Elaborate on the economic impact and control measures.

Q11) Describe the marine zones. Add a note on the animal diversity.

Q12) Write notes on :

a) Subdivisions of marine environment.

b) Primary production.

c) Food chain in a marine habitat.

d) Estuarine food web.

SECTION - IV

ZY - 424 : Bacterial and Phage Genetics

Q13) Explain bacterial chromosome and describe mechanism of gene transfer.

Q14) What is bacteriophage lambda genome? Describe its characteristics and add a note on genetic regulation of its life cycle.

Q15) Explain the following (any two) :

a) Bacteriophage T7
b) Complementation test
c) RNA phages.

Q16) Write short notes on :

a) Chromosomal mapping.
b) T even phages.
c) Cistron.
d) Bacteriophage Mu.

SECTION - V

ZY - 425 : Medical Entomology

Q17) What are house hold pests? Describe the importance of ants, cockroaches, wasps and silver fishes from human health point of view.

Q18) What is medical entomology? Describe the life cycle, symptoms, pathogenicity and control measures of Trypanosomiasis and Dengue Fever.

Q19) Define vector. Explain the role of vectors from family muscidae and pediculidae in the transmission of diseases.

Q20) Write notes on :

a) Bubonic plague.
b) Rickettsia.
c) Veterinary entomology.
d) Sand flies.

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Total No. of Questions :16]

SEAT No. :

P2258

[Total No. of Pages : 3

[4829]-43
M.Sc. (Semester - IV)
ZOOLOGY
ZY - 431 : Physiology of Mammalian Reproduction
ZY - 432 : Comparative Invertebrate Histology and Histochemistry
ZY - 433 : Biodiversity Assessment
ZY - 435 : Apiculture

(2008 Pattern)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any two sections.***
2) ***Answer any two questions from each section.***
3) ***Answers to the two sections should be written in separate answer book.***
4) ***All questions carry equal marks.***
5) ***Neat labelled diagrams must be drawn wherever necessary.***

SECTION - I

ZY - 431 : Physiology of Mammalian Reproduction

Q1) Explain the structure, function and hormonal regulation of mammary glands during lactation.

Q2) a) Discuss oestrous cycle in mammals.
b) What are the various events in the process of conception and blastocyst formation.

Q3) a) Enlist various hormones involved in maintenance of pregnancy.
b) Explain Hypothalamus - pituitary - gonad axis in detail.

Q4) Write notes on (any two) :
a) Puberty.
b) Artificial insemination.
c) Breeding patterns in animals.
d) Ageing and reproduction.

P.T.O.

SECTION - II

ZY - 432 : Comparative Invertebrate Histology and Histochemistry

Q5) Explain the principle and procedure of PAS staining.

Q6) What is double staining? Explain the procedure of HE staining and write a note on problems encountered while staining.

Q7) Explain the muscular tissue with respect to type, function and location.

Q8) Write note on :

a) Alcian blue.

b) Histochemical detection of Alkaline phosphatase.

SECTION - III

ZY - 433 : Biodiversity Assessment

Q9) What is zoogeography? Describe the various zoogeographical regions with their faunal pecularities.

Q10) Describe the general principles of diversity with reference to lung fishes and flightless birds.

Q11) What are the conservation strategies for the conservation of endangered species in India.

Q12) Write short notes on :

a) Aquatic adaptations.

b) National parks.

c) Natural resources.

d) Species.

SECTION - IV

ZY - 435 : Apiculture

Q13) Describe in detail caste system and division of labour in Honey bees.

Q14) Describe the digestive system of worke bee and add a note on its food and feeding behaviour.

Q15) Describe in detail Langstroth ten Frame hive.

Q16) Write short notes on :

a) Honey.
b) Protozoan diseases of Honey bee.
c) Communication in bees.
d) Bee-plant relationship.

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