Total No. of Questions : 8]

SEAT No. :

P2886

[Total No. of Pages : 2

[5533]-11
M.Sc. - I
ZOOLOGY
ZY-101 : Biochemistry
(2008 Pattern) (Semester - I) (Credit System)

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

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat and labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) Answer the following : **[20]**

a) What are Homopolysaccharides? Explain the structure of starch and give its functions.

b) What are allosteric enzymes? Explain their cooperative behaviour.

Q2) a) What are lipids? Explain phospholipids with examples.

b) Explain the role of branching enzymes in glycogen synthesis.

[20]

Q3) Write short notes on the following : **[20]**

a) Ketone Bodies.

b) Fate of Pyruvate.

c) Alpha helix structure of protein.

d) Electron Transport chain.

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Q4) a) Explain the process of gluconeogenesis.

b) Explain the importance of rate limiting enzymes with suitable examples.

[20]

Q5) a) Explain in detail the β-oxidation of fatty acids.

b) Explain the mechanism of transport and detoxification of ammonia in liver.

[20]

Q6) a) Explain in detail the prochinal nature of Citrate.

b) Describe the process of transdeamination.

[20]

Q7) a) Write the applications of recombinant DNA technology.

b) Describe the role of different types of bonds responsible for the stability of protein structure.

[20]

Q8) Give following reactions : **[20]**

a) Ninhydrin.

b) Reaction with phenylhydrazine.

c) Dansyl Chloride reaction.

d) Phenyl isothiocyanide.

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Total No. of Questions : 8]

SEAT No. :

P2887

[Total No. of Pages : 2

[5533]-12
M.Sc.
ZOOLOGY
ZY-102 (a) Genetics, ZY-102 (b)English For Scientists
(2008 Pattern) (Semester -I)

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 sections.***
3) ***All questions carry equal marks.***
4) ***Use of calculator is allowed.***

SECTION-I

a) Genetics

Q1) Explain crossing over. Describe the types of crossing over. Add a note on linkage. What do you mean by chromosome mapping. **[20]**

Q2) a) What do mean by population genetics. State Hardy Weinberg law giving its application. Explain the factors affecting Hardy Weinberg law. **[10]**

b) Describe the types of restriction enzymes with respect to their properties. **[10]**

Q3) a) Explain the process of somatic cell hybridisation. Add a note on its applications. **[10]**

b) Discuss the organization and regulation of Arabinose operon. **[10]**

Q4) Answer any two of the following. **[20]**

a) Microarray analysis.

b) Explain epistasis giving suitable examples.

c) Inheritance of quantitative traits.

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SECTION-II

zy-102b:English for scientists

Q5) How to write the ' Introduction' of a scientific paper? Explain defining the problem & justification. **[20]**

Q6) How to find references from journals, books and data bases? Write note on styles of citation. **[20]**

Q7) a) Ennumerate the differences between double negative and double positive with suitable examples. **[10]**

b) How to write research project proposal? **[10]**

Q8) Attempt any four from the following. **[20]**

a) Explain jargans.

b) Explain keywords.

c) State any five synonyms.

d) Explain outline of scientific paper.

e) Explain summary or abstract of scientific paper.

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Total No. of Questions :8]

SEAT No. :

P2888

[Total No. of Pages :3

[5533]-13
M.Sc.-I
ZOOLOGY
ZY-103: A) Freshwater Zoology
B) Statistical Methods
(2008 Pattern) (Semester - I) (Credit system)

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

Instructions to the candidates:

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

SECTION-I

(A) Freshwater Zoology)

Q1) Discuss the respiratory and Locomotory adaptations in freshwater insects and their larvae. **[20]**

Q2) Enlist the different diagnostic characters of fairy shrimps. Add a note on is life cycle with a suitable diagram. **[20]**

Q3) Explain the protective adaptations of Fishes. Discuss their food and feeding habits. **[20]**

Q4) Write notes on any four **[20]**

a) Economic importance of molluscans.

b) Eutrophication and its effect on freshwater organisms.

c) Lotic ecosystems

d) Thermal stratification in freshwater lakes.

e) Tadpole as important herbivore in freshwater ecosystems.

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SECTION-II

(B) Statistical Methods)

Q5) a) Define the following terms: **[6]**

i) Class mark

ii) class frequency

iii) range.

b) The following data gives blood serum cholesterol levels of 10 patients: 235, 224, 250, 284, 250,241,263,245,250,257. Compute arithmetic mean and mode. **[8]**

c) The probability that a seed germinates is 0.7. Out of 8 such seeds sown, find the probability that

i) exactly 5

ii) more than 6 seeds will be germinated. **[6]**

Q6) a) Define a Poisson distribution and state its mean and standard deviation. **[6]**

b) The following data is about height of plants (inches) in a garden:

Height of plant:	0-10	10-20	20-30	30-40	40-50
Number of plants:	14	18	23	17	8

Draw less than ogive curve and more than ogive curve. **[6]**

c) The following data gives amount injected (x) in gms and peak area observed (Y) in sq mm. in a compound when chromatographed on GC column:

X:	0.1	0.3	0.4	0.5	0.6	0.8	0.9
Y:	19	27	35	42	53	64	79

Find Karl Pearson's coefficient of correlation and comment. **[8]**

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Q7) a) Explain the concept of linear regression. **[6]**

b) A machine is designed to produce pouches of 250 gms of washing powder. A random sample of 10 pouches produced from this machine have weights in gms: 244, 251, 250, 248, 248, 245, 246, 252, 249, 247. Test whether the machine is working properly at 5% level of significance. **[8]**

c) Among 160 off springs of a certain cross between guinea pigs, 86 were red, 36 were black and 38 were white. According to the genetic model these ratio should be 9:3:4. Are these data consistent with the model, test at 5% level of significance. **[6]**

Q8) a) Draw Pie diagram for the data given below of cost of living index. **[10]**

Item	food	clothing	housing	medical	others
Expense(%)	25	15	15	10	25

b) Let $X \sim N(8,2^2)$. Compute

(i) $P(X<9.5)$

ii) $P(7.5<X<12.5)$. **[10]**

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Total No. of Questions : 8]

SEAT No. :

P2889

[Total No. of Pages : 2

[5533]-21
M.Sc. - II
ZOOLOGY
ZY - 201 : A) Developmental Biology
B) Comparative Animal Physiology
(2008 Course) (Semester - II)

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

Instructions to the candidates:

1) ***Attempt 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) ***Draw neat labelled diagram wherever necessary.***

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SECTION - I

A) Developmental Biology

Q1) Discuss the role played by bicoid, nanos and hunchback in early development of Drosophila. **[20]**

Q2) Explain the process of mesoderm induction in Xenopus. **[20]**

Q3) Describe the changes in the sperm head during acrosome reaction and comment on molecular strategy to ensure monospermy. **[20]**

Q4) Write notes on any two of the following: **[20]**

a) Neural competence

b) Fate maps in chick embryo

c) Neural competence

d) Cell ageing

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SECTION - II

B) Comparative Animal Physiology

Q5) What is respiration? Describe the role of blood pigment in oxygen transport. **[20]**

Q6) Explain structure of skeletal muscle. Add a note on proteins of myofilaments. **[20]**

Q7) a) Describe neurogenic and myogenic heart. **[10]**

b) Explain comparative biochemistry of nitrogen excretion in animals. **[10]**

Q8) Write short notes on any four of the following. **[20]**

a) Ascorbic acid synthesis in animals

b) Hyper and hyposmotic regulators

c) Thermoregulation in homeotherms

d) Vertebrate hormones

e) Sense organs

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Total No. of Questions : 8]

SEAT No. :

P2890

[Total No. of Pages : 2

[5533]-22
M. Sc.
ZOOLOGY
ZY : 202 A : Molecular Biology
B : Cell Biology
(2008 Pattern) (Semester -II)

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

Instructions to the candidates:

1) ***Answer any two questions from each section.***
2) ***Answer to the two sections should be written in separate answer book.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to right indicates full marks.***

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SECTION - I
A) MOLECULAR BIOLOGY

Q1) a) Explain the process of termination of translation in E. coli. Add a note on RF I, RF II and RF III. **[10]**

b) Describe structure of DNA proposed by Watson and Crick. **[10]**

Q2) a) Explain the process of transcription by RNA polymerase II. **[20]**

Q3) a) Explain in detail formation of replication fork in prokaryotic cell. **[10]**

b) Explain the mechanism of SOS repair in E. coli. **[10]**

Q4) Write short notes on any two **[20]**

a) Activation of amino acid.
b) HUGO
c) Splicing
d) Hypo and Hyperchromicity.

P.T.O.

SECTION - II

ZY - 202 b : CELL BIOLOGY

Q5) Describe the ultrastructure of nucleus. Add a note on structure of nuclear pore complex and organization of nuclear lamina. **[20]**

Q6) Give the structure and functions of ribosomes. **[20]**

Q7) Describe the role of cytoskeleton in cell architecture and cell motility. **[20]**

Q8) Write short notes on: **[20]**

a) Genetic system of mitochondria.

b) Go phase of cell cycle.

c) Functions of golgi complex.

d) Synaptic transmission.

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Total No. of Questions : 12]

SEAT No. :

P2891

[Total No. of Pages : 2

[5533]-23
M.Sc. - I
ZOOLOGY
ZY - 203 A): Biochemical Techniques
OR
A): Ichthyology
B): Endocrinology
(2005 Pattern) (Semester - II)

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

Instructions to the candidates:

1) ***Answer any two questions from each section.***
2) ***Answer to the two sections should be writtern in separate answer book.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

(A) Biochemical Techniques

Q1) a) Explain the following **[10]**

i) Adsorption chromatography

ii) RQ

iii) Ion exchanger

iv) DNA sequencing

b) Give the application and importance of manometric technique. **[10]**

Q2) Give principle, working, application and limitations of Gel chromatography. **[20]**

Q3) a) Describe the working and application of Ion exchange chromatography. **[10]**

b) Give principle and application of IR spectroscopy. **[10]**

Q4) Write notes on. **[20]**

a) Protein sequencing

b) Activation analysis

c) Ultra centrifuge

d) Electro magnetic spectrum

OR

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(A) Ichthyology

Q5) Describe the lateral line organs and chemoreceptors. **[20]**

Q6) Describe the structure of gonads of fish. Add a note on gametogenic cycle. **[20]**

Q7) Describe the role of fat and swim bladder in buoyancy mechanism. **[20]**

Q8) Write short notes on any two of the following. **[20]**

a) Cyclostomata.

b) Locomotion in fishes.

c) Steno and euryhaline fishes.

d) Parental care in fishes.

SECTION - II

(B) Endocrinology

Q9) Explain the role of x and y organ in moulting and metabolism in crustaceans. **[20]**

Q10)a) Describe mechanism of Renin - angiotensin complex. **[10]**

b) Describe hormonal signal transduction. **[10]**

Q11)Describe various hormones receptors. **[20]**

Q12)write notes on: **[20]**

a) Antidiuretic hormone

b) Pancreatic hormones

c) Pineal gland

d) Hormonal regulation of lipid metabolism

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Total No. of Questions : 7]

SEAT No :

P 2892

[Total No. of Pages : 6

[5533]-31
M.Sc. - II
ZOOLOGY
ZY - 311 : Entomology - I
(2005 Pattern) (Semester - III) (Credit System)

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) Trace the origin of insects and explain the theories of insect evolution.

Q2) Give an account of hypothetical wing venation of insect wing. Add a note on wing modification and wing coupling mechanism.

Q3) Write the distinguishing characters of the following insect orders with at least two suitable examples (any four) :

a) Odonata.

b) Lepidoptera.

c) Coleoptera.

d) Protura.

e) Thysanura.

Q4) Describe the abdomen of a generalized insect and mention modifications of this region that are found in different insect.

Q5) Describe the structure of dorsal vessel in insect. Add a note on mechanism of blood circulation.

Q6) Describe the structure and functions of central nervous system in insects.

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Q7) Describe endocrine glands and state the role played by these glands.

Q8) Write short notes on (any four) :

a) Structure of ommatidium.

b) Mouth parts of butterfly.

c) Malpighian tubules.

d) Paedogenesis.

e) Tentorium.

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Total No. of Questions : 8]

P 2892

[5533]-31
M.Sc. - II
ZOOLOGY
ZY - 312 : Genetics - I
(2005 Pattern) (Semester - III) (Credit System)

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

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagrams must be drawn wherever necessary.***
4) ***Use of calculator is allowed.***

Q1) What are the different modes of selection and their effect on the frequencies of genes in a population?

Q2) Write note on the following :

a) Inbreeding.

b) Reverse genetics.

Q3) Write notes on :

a) Chromosome painting.

b) Heterozygote advantage.

Q4) Explain the methodologies employed in gene localization on chromosome.

Q5) On which populations do 'r' and 'k' selection strategies operate? Explain the characteristics of the two strategies.

Q6) Explain the concept of phenotypic variance and its partitioning in various subcomponents.

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Q7) "Genetic Polymorphism leads to evolution" - Justify the statement with respect to chromosomal variations.

Q8) Explain the following concepts :

a) Genetic load & genetic death.

b) Continuous variations.

c) Gene Isolation.

d) Speciation.

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Total No. of Questions : 8]

P 2892

[5533]-31
M.Sc. - II
ZOOLOGY
ZY - 313 : Physiology - I
(2005 Pattern) (Semester - III) (Credit System)

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

Instructions to the candidates:

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

Q1) Explain concept of action potential. Add a note on various ion channels.

Q2) a) Explain osmoregulation in aquatic vertebrates.

b) Write a note on energy cost of locomotion.

Q3) a) Describe different types of gas floats with examples.

b) Explain the significance of antifreeze substances in fish.

Q4) Differentiate between external and internal environment. Write a note on intracellular environment.

Q5) a) What is Bioluminescence? Explain the structure and function of bioluminescent organ.

b) What is Biological rhythm? Explain circadian and circannual rhythm.

Q6) a) Write a note on Du-Bios thermal balance mechanism and give its significance.

b) Write a note on mechanism of urea excretion with various examples.

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Q7) Write notes on :

a) Resting membrane Potential.

b) Acclimation and Acclimatization.

c) Energy cost of running.

d) Homeostasis and its regulation.

Q8) Explain problems of diving and strategies to reduce them.

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Total No. of Questions :20]

SEAT No. :

P2893

[Total No. of Pages :3

[5533]-32
M.Sc. - II
ZOOLOGY
ZY - 321 : Immunology
ZY - 322 : Environmental Biology
ZY - 323: Fundamental of Systematics
ZY - 324 : Aquaculture
ZY - 325 : Insect Ecology
(2005Pattern) (Semester - III) (Old)

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

Instructions to the candidates:

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

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SECTION - I
(ZY-321 : Immunology)

Q1) Explain in detail humoral immunity. **[20]**

Q2) Explain the structure and functions of T-cell receptors. **[20]**

Q3) a) Explain the classical pathway of complement fixation. **[10]**

b) What is autoimmune disease? Explain any two autoimmune diseases. **[10]**

Q4) Write notes on any two : **[20]**

a) Allergy

b) Monoclonal antibodies

c) ELISA

P.T.O.

SECTION - II

ZY-322:Environmental Biology

Q5) What is pollution? Describe water pollution. **[20]**

Q6) Describe the component of ecosystem. Add a note on energy flow. **[20]**

Q7) Describe basic concepts of sustainable development. Add a note on waste disposal. **[20]**

Q8) Write notes on any four of the following. **[20]**

a) Ecology

b) Human impact on climate

c) Deforestation

d) Objectives of environmental education

e) Wild life conservation

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SECTION - III

ZY-323:Fundamentals of Systematics

Q9) Explain the five kingdom classification with suitable examples. **[20]**

Q10) Write an essay on International code of Zoological Nomenclature. **[20]**

Q11) Explain the concept of molecular systematic. **[20]**

Q12) Write short notes on (any two): **[20]**

a) Chemotaxonomy

b) Phylogeography

c) Sibling species & race

SECTION - IV

ZY-324:Aquaculture

Q13) Explain in detail economics of aquaculture. **[20]**

Q14) Describe natural and induced breeding of fishes. **[20]**

Q15) Explain pearl culture in detail. Add a note on composition and quality of pearls. **[20]**

Q16) Write short notes on any two of the following : **[20]**

a) Lobster fisheries

b) Preservation of fishes

c) Fish ponds

d) Fish diseases

SECTION - V

ZY-325:Insect Ecology

Q17) Describe interspecific relationship in insects. **[20]**

Q18) What is meant by entomophagy? Give an account of various entamophagous insects. **[20]**

Q19) Write an essay on aquatic and soil insects. **[20]**

Q20) Write short notes on (any four): **[20]**

a) Insect parasites

b) Beneficial insects

c) Insects as agents of pollination

d) Parasitoide insects

e) Effect of humidity in insect development

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Total No. of Questions :12]

SEAT No. :

P2894

[Total No. of Pages :2

[5533]-33
M.Sc.-II
ZOOLOGY
ZY-331: Parasitology
ZY-332: Insect Physiology and Biochemistry
ZY-334: Genetic Toxicology
(Semester - III)

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

Instructions to the candidates:

1) ***Attempt any two sections.***
2) ***Attempt 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.***

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SECTION-I

ZY-331: Parasitology

Q1) Describe the life cycle, pathogenicity, treatment and prophylaxis of Schistosoma sps. and Leishmania sps.

Q2) Give an account of parasites and social behaviour of hosts.

Q3) What is Immunodiagnostic assays? Explain immuno diffusion technique and indirect haemagglutination test.

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

a) Myiasis

b) Inseminative behaviour of platyhelminthes

c) Parasitism and altruism

P.T.O.

SECTION-II

ZY-332: Insect Physiology & Biochemistry

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

Q6) Explain the structure, physiology and biochemistry of insect fight muscle.

Q7) Describe the microsomal enzymes involved in insecticide degradation and detoxification.

Q8) a) Structure of insect integument.

b) Hormones of endocrine glands.

SECTION-III

ZY-334: Genetic Toxicology

Q9) Explain the mechanisms of mutagenesis.

Q10) What is genetic toxicology? Explain its scope and importance.

Q11) Explain the CLB method for detecting mutations.

Q12) How will you determine the genotoxic potential of a given compound using mammalian system.

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Total No. of Questions : 8]

SEAT No. :

P2895

[Total No. of Pages : 3

[5533] - 41
M.Sc. - II
ZOOLOGY
ZY - 411 : Entomology - II
(2008 Pattern) (Semester - IV)

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

Instructions to the candidates:

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

Q1) Describe the histology of a sperm tube and comment on spermatogenesis.

Q2) Describe the process of oviposition in insects and add a note on control of oviposition.

Q3) Describe the process of gastrulation in insects and add a note on various theories of gastrulation.

Q4) Write notes on (any two):

a) Polytrophic ovariole.
b) Polyembryony.
c) Embryonic development of heart.
d) Types of larvae.

Q5) Discuss the economics of pest control.

Q6) Write an essay on Biological control.

Q7) What is insecticide? Classify the insecticides according to mode of action.

Q8) Write notes on (any two):

a) Hadorn's experiments.
b) Regeneration in insects.
c) Nature of damage caused by insect pests.
d) Antidotes and their importance.

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Total No. of Questions : 8]

[5533] - 41
M.Sc.
ZOOLOGY
ZY - 412 : Genetics - II
(2008 Pattern) (Semester - IV)

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 diagrams wherever necessary.***

Q1) Explain the role of Homeotic gene in pattern formation with respect to Drosophila. **[20]**

Q2) What are the Hemoglobinopathies? Explain any two disorders related to hemoglobin. **[20]**

Q3) What are proto - oncogenes and Tumour suppressor genes? How do they differ in their mechanism. **[20]**

Q4) What are pre-natal diagnostic tests? Add a note on their importance. **[20]**

Q5) Explain in brief: **[20]**

i) Cell hydrids

ii) QTL analysis

Q6) Explain the mutations that lead to formation of hyper cholesterolemia. **[20]**

Q7) Explain a) Lysosomal storage disorder. **[10]**

b) Defects in Purine metabolism with respect ot Lesch - Nyahn syndrome. **[10]**

Q8) A) Explain the role of Twin studies and Adoption studies in determining the 'Nature' and Nurture factor. **[10]**

B) Explain different banding patterns used for chromosomal identifications in cytological studies. **[10]**

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Total No. of Questions : 8]

[5533] - 41
M.Sc.
ZOOLOGY
ZY - 413 : Animal Physiology - II
(2008 Pattern) (Semester - IV)

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

Instructions to the candidates:

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

Q1) Explain the structure of skeletal muscle. Add a note on pathways of ATP formation during muscle contraction.

Q2) Explain the structure of heart. Add a note on mechanism of Cardiac cycle.

Q3) Explain the structure of eye. Add a note on role of rhodopsin in sense of vision.

Q4) What is pulmonary respiration? Explain the mechanism of gas exchange across the pulmonary and systemic capillaries.

Q5) How resting membrane potential is achieved? Prove the Goldman - Hodgk in Katz equation.

Q6) a) Explain the molecular mechanism of blood clotting process.
b) Explain the calorimetry and BMR. Add a note on its significance.

Q7) a) Explain the process of twitch, summation and tetanus.

b) Explain the mechanism of olfactory receptors.

Q8) Write notes on:
a) Haematopoiesis
b) Metabolism of neurotransmitters
c) Autonomous smooth muscle function
d) Hypotension.

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Total No. of Questions : 20]

SEAT No. :

P2896

[Total No. of Pages : 3

[5533]-42
M.Sc.
ZOOLOGY
ZY- 421 - Animal tissue culture/ZY - 422 - Pollution Biology/ ZY - 423 - Marine Biology/ZY - 424 - Bacterial and Phage Genetics/ ZY - 425 - Medical Entonology
(2008 Pattern) (Semester - IV)

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 labelled diagrams must be drawn wherever necessary.***

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SECTION - I

ZY - 421 : Animal Tissue Culture

Q1) a) Explain the principle and importance of animal tissue culture. **[10]**

b) What is cell line? Give its types with example. **[10]**

Q2) a) Differntiate between primary and secondary cell culture. How cell lines prepared from primary culture. **[20]**

Q3) a) Give the importance and limitations of serum media. **[10]**

b) What is karyotyping? Give its application. **[10]**

Q4) Write short Notes on: **[20]**

a) Insect cell line.

b) Lympholyte culture

c) Organ culture

d) Cell subculture

SECTION - II

ZY - 422 : Pollution Biology

Q5) Describe the sources and effect of radioactive pollution. **[20]**

Q6) What is Biomagnification? Explain its causes and consequences. **[20]**

Q7) What are pesticides? Explain sources and consequences. **[20]**

Q8) Write short notes on: **[20]**

a) Bioassay.

b) Atmosphere.

c) Effects of sound pollution.

d) Eutrophication.

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SECTION - III

ZY - 423 : Marine Biology

Q9) What is biofouling? Explain the economic impact and control measures of it. **[20]**

Q10) Describe in detail the animal and mineral marine resources. **[20]**

Q11) Explain Littoral and benthic marine zones. **[20]**

Q12) Write short notes on **[20]**

a) Estuarine food web.

b) Subdivision of marine environment.

c) Food chain in Marine habitat.

d) Culture of marine animals.

SECTION - IV

ZY - 424 : Bacterial and Phage Genetics

Q13) Write notes on **[20]**

a) Complementation groups

b) Bacteriophages

c) Use of three point crosses in Chromosomal mapping.

d) Bacterial Chromosome

Q14) Explain the regulation involved in the switch for lytic or lysogenic cycle in the Bacteriophage Lambda. Also explain the effect that environmental agents like UV light have on the switch. **[20]**

Q15) a) Explain morphology and structure of nucleic acids in Bacteriophage T7. **[10]**

b) What are RNA phages? Add a note on its mechanism of replication with suitable example. **[10]**

Q16) Write a note on life cycle and nucleic acid structure of T2 and T4 phage. **[20]**

SECTION - V

ZY - 425 : Medical Entomology

Q17) What is medical entomology? Describe the life cycle, symptoms, pathogenicity and control measures of Trypanosomiasis and Dengue Fever. **[20]**

Q18) Describe causative agent, pathogenicity and control measures of Leishmaniasis and malaria. **[20]**

Q19) Define vector. Explain the role of vectors from family muscidae and pediculidae in the transmission of diseases. **[20]**

Q20) Write short notes on: **[20]**

a) Veterinary entomology

b) Trypanosomiasis

c) *Pediculus humanus*

d) Rickettsia

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Total No. of Questions : 16]

SEAT No. :

P2897

[Total No. of Pages : 3

[5533]-43
M.Sc
ZOOLOGY
ZY - 431 : Physiology of Mammalian Reproduction
ZY - 432 : Comparative Invertebrate Histology and Histochemistry
ZY - 433 : Biodiversity Assessment
ZY - 435 : Apiculture
(2008 Pattern) (Semester - IV)

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 labeled diagrams must be drawn wherever necessary.***

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SECTION - I

ZY - 431 : Physiology of Mammalian Reproduction

Q1) Describe the role of pituitary and hypothalamus in gonadal regulation. **[20]**

Q2) Explain the process of lactation and add a note on milk synthesis and secretion. **[20]**

Q3) Describe in detail various methods of contraception in male and female. **[20]**

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

a) Menarche

b) Testicular hormones

c) Continuous breeders

d) Delayed implantation

P.T.O.

SECTION - II

ZY - 432 : Comparative Invertebrate Histology and Histochemistry

Q5) What is fixation? Explain formaldehyde as a fixative and comment on its advantages and disadvantages. **[20]**

Q6) What is histochemistry? Explain the principle and procedure of histochemical detection of lipids. **[20]**

Q7) Explain the importance of dehydration and embedding in preparation of permanent histological slide. Comment on double staining. **[20]**

Q8) Write notes on: **[20]**

a) Immunohistochemistry

b) Muscular tissue

SECTION - III

ZY - 433 : Biodiversity Assessment

Q9) Explain in details the classification of phylum Echinodermata. **[20]**

Q10) What is Biosphere? Describe global biodiversity hot spots. **[20]**

Q11) Describe the general principles of diversity with reference to lung fishes and flightless birds. **[20]**

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

a) Endangered species of India.

b) Explain the objectives of conservation.

c) Commensalism.

d) Give the characteristics of class Reptilia.

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SECTION - IV

ZY - 435 : Apiculture

Q13) Describe the digestive system of worker bee. Add a note on food and feeding behaviour. **[20]**

Q14) Describe the distinguishing morphological features of three castes of bees. Add a note on role played by each caste. **[20]**

Q15) Explain Bee keeping equipments. **[20]**

Q16) Write short notes on: **[20]**

a) Polymorphism

b) Beeswax

c) Significance of bee keeping

d) Protozoan diseases of bees

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