Total No. of Questions : 8]

SEAT No. :

P719

[Total No. of Pages : 2

[4131] - 101

M.Sc. - I (Sem. - I)

ZOOLOGY (2005 Pattern)

ZY - 101 : Biochemistry

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

Instructions to the candidates:

1) ***Attempt any four questions.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

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

a) With suitable examples differentiate structural polysaccharides from storage polysaccharides.

b) What are sterols? Give their significance.

c) What are cyclic nucleotides?

d) Explain the term enzyme turn over.

e) What are high energy bonds? Give their significance.

Q2) Write notes on: **[20]**

a) Protein modifications.

b) Uncouplers of oxidative phosphorylation.

c) Zymogen activation.

d) Ketogenic and Glucogenic amino acids.

Q3) a) Explain the structural basis and significance of Isozymes. **[10]**

b) What is deamination? Explain it with suitable examples. **[10]**

P.T.O

Q4) a) What is glycolysis? Explain the glycolytic regulation at the phosphofructokinase level. **[10]**

b) Explain the reactions of T C A cycle. **[10]**

Q5) Attempt the following: **[20]**

a) Describe the importance of enzyme kinetic studies.

b) Explain the pentose phosphate pathway.

c) What are glycosaminoglycans? Give their biological significance.

d) Draw the structure of the following polypeptide:

Gly – Val – Ala – Pro.

Q6) a) Comment on rate limiting enzymes and feedback regulation in metabolic pathways. **[10]**

b) What are ketone bodies? How they are formed? **[10]**

Q7) a) Explain the steps involved in purine synthesis. **[10]**

b) Explain the transport of ammonia through Glutamine and Alanine to Liver. **[10]**

Q8) a) Describe the process of gluconeogenesis and give its significance. **[10]**

b) Explain the synthesis of deoxyribonucleotides. **[10]**

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Total No. of Questions : 8]

SEAT No. :

P720

[Total No. of Pages : 2

[4131] - 102

M.Sc. - I (Sem. - I)

ZOOLOGY (2005 Pattern)

ZY - 102 : A) Genetics

B) English for Scientists

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 diagrams must be drawn wherever necessary.***

SECTION - I

A) Genetics

Q1) What are linkage groups? Explain with any suitable example, how cross - overs are useful in determining gene order in recombination maps in diploids.

Q2) a) Explain gene manipulation technique with suitable example.

b) Explain the organization of Arabinose operon.

Q3) a) Derive Hardy – Weinberg's equation to show that gene frequencies remains constant in absensce of evolutionary forces with any suitable data.

b) Among a sample of 236 Indians the frequency of "L^M" allele was found to be 0.76. Calculate the percentage of individuals having MN type blood.

Q4) Write notes on any two of the following :

a) Concept of a gene.

b) Genetic basis of polygenic inheritance

c) Somatic cell hybridization.

P.T.O.

SECTION - II

B) English for Scientists

Q5) What consideration are observed while preparing effective write up of materials and methods of a research paper? Explain it with suitable example.

Q6) How you will prepare a project proposal? Discuss each section with justification.

Q7) a) Explain the importance of survey of literature in defining the research problem.

b) Explain the IMRAD sandwich format for writing scientific paper.

Q8) Attempt any four from the following.

a) Explain the importance of tables & graphs in the text of scientific paper.

b) Write the significance of abstract writing.

c) Prepare a letter to a publisher for accepting the research paper.

d) Mention any five achronyms.

e) Give the importance of syntax.

f) Write a note on acknowledgement.

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Total No. of Questions : 8]

SEAT No. :

P721

[Total No. of Pages : 3

[4131] - 103

M.Sc. (Sem. - I)

ZOOLOGY (2005 Pattern)

Zy - 103 : A) Freshwater Zoology

B) Statistical Methods (or)

Quantitative methods in Biology

Time : 3 Hours] ***[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 questions carry equal marks.***
4) ***Draw neat labelled diagrams wherever necessary.***

SECTION - I

A) Freshwater Zoology

Q1) Explain the protective adaptations, food and feeding habits of freshwater fishes and Aves.

Q2) Explain the types of aquatic environment with reference to Lotic and Lentic biomes.

Q3) What is "sewage pollution"? Explain its effects on freshwater animals.

Q4) Write notes on any four from the following:

a) Physico chemical properties of water.

b) Life cycle of strepto cephalus.

c) Freshwater snails and bivalves as vectors.

d) Effects of mercury on aquatic life.

e) Adaptations of freshwater Lizard.

P.T.O

SECTION - II

B) Statistical Methods (or) Quantitative methods in Biology

Q5) Attempt any two of the following

a) PB concentration in 108 soil samples is given in the following data

PB Concentration	No. of Soil Samples
02 – 03	6
03 – 04	17
04 – 05	29
05 – 06	29
06 – 07	18
07 – 08	6
08 – 09	0
09 – 10	1
10 – 11	2

Draw less than ogive curve and find the PB concentration below which there are 50% soil samples.

b) Define the following terms.

i) Mode ii) Deciles iii) Range

c) Wind speed in kmph for 10 metrological weeks is given below

8.1, 5.9, 11.2, 10.2, 10.0, 11.6, 5.8, 9.1, 8.6, 7.4

compute the standard deviation of wind sperd.

Q6) Attempt any two of the following

a) The data on chlorophyll concentration as a function of phosphorus load in a series of lakes is given below. To approximate linear relationship both variables are transformed to natural logarithm

x : Log phosphorous y : Log chlorophyll

x : 1.97 2.07 2.45 2.55 2.77 2.93 3.30 3.65

y : 1.92 2.36 2.64 1.17 2.07 2.22 3.78 6.30

Fit a line of regression of y on x.

b) Distinguish between correlation coefficient and regression coefficients. Also state their properties.

c) The data on hatching mass (g) and snout-vent length(mm) in wall lizards after eggs were incubated at 32ºC is given below.

Length :	22.87	23.45	23.49	23.65	23.76
Mass :	0.294	0.302	0.265	0.297	0.294

Compute coefficient of variation of length and mass and comment on it.

Q7) Attempt any two of the following

a) Define following terms:

i) Sample space ii) Event

iii) Probability iv) Conditional Probability

v) Sure event

b) State the probability mass function of poisson distribution and probability density function of normal distribution.

c) It is observed that 4 in 10 female B6C3F, mice are exposed to liver tumor. What is the probability in a sample of 6 mice, 3 mice will be exposed to liver tumor?

Q8) Attempt any two of the following:

a) Describe the test procedure to test equality of two means on the basis of two independent samples.

b) The following data deals with two forms of treatment applied to 30 laboratory animals which had previously been inoculated with a virus.

	Result	
Treatment	Recovered	Died
# 1	7	8
# 2	6	9

Test whether treatments are effective to recover the laboratory animals.

c) What is mean by confidence limits. How to construct confidence limits.

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Total No. of Questions : 8]

SEAT No. :

P722

[Total No. of Pages : 2

[4131] - 201

M.Sc. (Sem. - II)

ZOOLOGY (2005 Pattern)

ZY- 201 : A) Developmental Biology

B) Comparative Animal Physiology

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) Describe the mechanism of prevention of polyspermy and add a note on capacitation.

Q2) Explain the role played by bicod; nanos and hunchback in early development of Drosophila

Q3) What is cell ageing? Discuss with reference to Hayflick's experiment on fibroblasts.

Q4) Write notes on any two of the following :

a) Fate maps in chick embryo.

b) Neural competence.

c) Lampbrush chromosomes.

d) Mesoderm induction.

P.T.O.

SECTION - II

B) Comparative Animal Physiology

Q5) Explain the process of urine formation in mammalian kidney.

Q6) What are respiratory pigments? Explain the role of haemoglobin in the transport of gases.

Q7) a) Describe the various hormones secreted by pituitary gland and give their functions.

b) Explain excretory modes of various animals and add a note on urea cycle.

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

a) Dietary requirements in mammals.

b) Reflex action.

c) Feed back mechanism of hormone.

d) Poikilotherms and Homeotherms.

e) Synapse.

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Total No. of Questions : 8]

SEAT No. : ____

P723

[Total No. of Pages : 2

[4131] - 202

M.Sc. (Sem. - II)

ZOOLOGY (2005 Pattern)

ZY - 202 : A) Molecular Biology
B) Cell Biology

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) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

A) Molecular Biology

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

Q2) a) Explain how the production of functional mRNA in prokaryotes differ from that of eukaryotes. **[10]**

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

Q3) a) What will happen to DNA if it is exposed to **[10]**

i) High temperature i.e 100ºC and

ii) Alkaline condition (pH > 11).

b) Write in brief ultrastructure of nucleosome. **[10]**

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

a) Transposable elements.

b) Role of promoters and entrancers in transcription.

c) DNA damage and repair.

d) Inhibitors of protein synthesis.

P.T.O

SECTION - II

B) Cell Biology

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

Q6) Explain the role of cytoskeleton in cell architecture and cell motility. **[20]**

Q7) Describe the genetic system & mechanism of protein import in mitochondria. **[20]**

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

a) Functions of Golgi complex.

b) Molecular organization of centriole.

c) Peroxisomes.

d) Go phase of cell cycle.

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Total No. of Questions : 12]

SEAT No. :

P724

[Total No. of Pages : 2

[4131] - 203

M.Sc. (Sem. - II)

ZOOLOGY (2005 Pattern)

ZY - 203 : A) Biochemical Techniques

OR

A) Ichthyology

B) Endocrinology

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) ***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) RF ii) Quire

iii) Radio isotope iv) Partition coefficient

v) Void volume

b) State the principle, working and application of UV visible spectrophotometer. **[10]**

Q2) a) Define RQ. Describe the method for the determination of RQ. **[10]**

b) State the principle, types and application of ion exchange chromatography. **[10]**

Q3) a) Describe in detail DNA-Agarose gel electrophoresis. **[10]**

b) Discuss the principle, working and application of ISO-electric focusing. **[10]**

P.T.O.

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

a) Isotope dilution analysis.
b) Adsorption chromatography.
c) Ultra centrifugation.
d) Affinity chromatography.

OR

A) Ichthyology

Q5) Describe food and feeding habits of fishes. Add a note on anotomical modifications of the alimentary canal of fishes. **[20]**

Q6) Write an essay on phylogeny of fishes. **[20]**

Q7) Describe nervous system of fishes and add a note on lateral line organs and chemoreceptors. **[20]**

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

a) Pituitary
b) Swim bladder
c) Osmoregulation in marine teleosts.
d) Holobranch

SECTION - II

B) Endocrinology

Q9) Explain in details role of ADH and mineralo corticoids in osmoregulation. Add a note on renin - angiotensin system. **[20]**

Q10) a) Explain the role of pituitary and pineal gland in regulation of colour change. **[10]**

b) Role of gastro intestinal hormones in digestion. **[10]**

Q11) Describe the role of pancreatic and glucocorticoid hormones in intermediary metabolism of carbohydrates, proteins and lipids. **[20]**

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

a) Signal transduction.
b) Hormone receptors
c) Adenohypophysial hormones
d) Role of hormones in calcium metabolism.

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Total No. of Questions : 8]

SEAT No. :

P725

[Total No. of Pages : 2

[4131] - 301

M.Sc. (Sem. - III)

ZOOLOGY (2005 Pattern)

ZY - 311 : Entomology - I

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

Instructions to the candidates:

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

Q1) a) Give the modification in insect legs with example.

b) Describe the hypothetical wing veination in insect. Add a note on wing modifications.

Q2) Describe the morphology of insect head. Add a note on its orientation and articulation.

Q3) Trace the origin of insects and explain the theories of insect evolution.

Q4) Write important taxonomic characters of any four of the following insect order with atleast two examples from two families.

a) Orthoptera

b) Isoptera

c) Hemiptera

d) Collembola

e) Protura

Q5) Give an account of circulatory organs in insects. Add a note haemolymph.

Q6) Describe the structure and functioning of respiratory system in generalised insect.

P.T.O

Q7) Describe the anotomy of central nervous system in insects.

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

a) Chewing and lapping mouth parts.

b) Filter chamber.

c) Endocrine glands.

d) Fat bodies.

e) Fossorial leg.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P725

[4131]-301

M.Sc. (Sem. - III)

ZOOLOGY (2005 Pattern)

ZY - 312 : Genetics - I

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

Instructions to the candidates:

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

Q1) What are the different modes of selection and their effect on the frequencies of genes in a population? Describe selective conditions which can maintain balanced polymorphism.

Q2) Why do researcher use molecular information in understanding phylogenetic relationships? What are the advantages in using either amino acid sequences or nucleic acid sequences for phylogenetic studies?

Q3) Write note on following techniques.

a) FISH
b) Flow sorting
c) RFLP
d) PCR

Q4) a) Distinguish between non metric and metric traits. Give suitable examples.
b) Define 'heritability'. How is heritability estimated?

Q5) Explain genetic consequences of the following.

a) Inbreeding
b) Assortive mating
c) Genetic load
d) Genetic drift

Q6) a) How does sympatric speciation differ from allopatric speciation?
b) What is the evolutionary significance of neutral mutation?

Q7) Give an account of recent progresses in gene therapy. Describe two examples of gene delivery systems.

Q8) Write note on:

a) Applications of reverse genetics
b) Applications of quantitative genetics.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

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[4131]-301
M.Sc. (Sem. - III)
ZOOLOGY (2005 Pattern)
ZY - 313 : Physiology - I

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) What is buoyancy? Explain the physiological role of swim bladder in floating.

Q2) Describe the structure and functioning of electric organs in fishes.

Q3) What is basal metabolic rate? Explain relation between metabolic rate and body size of birds and mammals.

Q4) a) Explain the countercurrent heat exchangers.
b) Explain the countercurrent multiplier hypothesis.

Q5) Describe the thermoregulation in mammals. Add a note on role of hypothalamus.

Q6) Write notes on <u>any four</u> of the following:
a) Hydrothermal vents in deep sea. b) Uricotelism
c) Goldman - Hodkin - katz potential d) Energy cost of running
e) Homeostatis and its regulation

Q7) Describe the physiological changes of internal environment during fluctuations of external environment in aquatic animals.

Q8) a) Explain the structure and functioning of malpighian tubules.
b) Explain why Pineal body is called as "Biological Clock".

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Total No. of Questions : 20]

SEAT No. :

[Total No. of Pages : 3

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[4131]-302
M.Sc. (Sem. - III)
ZOOLOGY (2005 Pattern)

ZY - 321 : Immunology
ZY - 322 : Environmental Biology
ZY - 323 : Fundamentals of Systematics
ZY - 324 : Aquaculture
ZY - 325 : Insect Ecology

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

Instructions to the candidates:

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

SECTION - I

ZY - 321 : Immunology

Q1) Describe the structure and classes of Immunoglobulins. Add a note on iso and idio types.

Q2) What is Immunogenetics? Explain the concept of blood antigens with reference to blood typing.

Q3) Explain the concept of self and non self. Add a note on immunological tolerence and autoimmune diseases.

Q4) Write notes on any two of the following:

a) Monoclonal antibodies and their applications.

b) Principle and Applications of Immunoelectrophoresis.

c) Cell mediated immunity.

P.T.O.

SECTION - II

ZY - 322 : Environmental Biology

Q5) Discuss the objectives and guiding principles of Environmental education in India.

Q6) Explain the impact of human activities on environment.

Q7) What is pollution? Explain the effects of Air pollution on environment.

Q8) Write notes on <u>any two</u> from the following :

a) Forest ecosystem.

b) Energy crisis.

c) Types of natural resources.

SECTION - III

ZY - 323 : Fundamentals of Systematics

Q9) What is systematics? Explain various theories of animal classification.

Q10) Write an essay on International code of Zoological Nomenclature.

Q11) Explain the concept of molecular systematics.

Q12) Write short notes on (any two) :

a) Sibling species & race.

b) Phylogeography

c) Importance of Type specimen.

SECTION - IV

ZY - 324 : Aquaculture

Q13) Explain different harvesting methods used in fishery.

Q14) What species of oysters are economically important? Add a note on rearing of oysters.

Q15) Define aquaculture. Discuss the importance, aims and objectives of aquaculture.

Q16) Write short notes on (any two):

a) Induced breeding technique.

b) Coastal & offshore fisheries.

c) Fish preservation methods.

d) Brood stock management.

SECTION - V

ZY - 325 : Insect Ecology

Q17) Describe interspecific relationship in insects.

Q18) a) Explain insect parasites.

b) Beneficial insects.

Q19) Describe the relationship of insects with vascular plants.

Q20) Write short notes (any four):

a) Effect of temperature on insects.

b) Early evolution of insects in soil.

c) Parasitoid insects.

d) Parental care in insects.

e) Insectivorous plants.

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Total No. of Questions : 12]

SEAT No. :

[Total No. of Pages : 2

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[4131]-303

M.Sc. (Sem. - III)

ZOOLOGY (2005 Pattern)

ZY - 331 : Parasitology

ZY - 332 : Insect Physiology and Biochemistry

ZY - 334 : Genetic Toxicology

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) Give an account of structural and physiological preadaptations of parasites to ifect the host.

Q2) What is inseminative behaviour, describe it with referance to platyhelminthes.

Q3) a) Give an account of reaction exibited by host to parasitic infection.

b) Describe interspecific and strain variation in plasmodium.

Q4) Write note on (any four) :

a) Molecular characteristic of surface coat of Trypanosoma.

b) ELISA test.

c) Genetic control of parasite

d) Immunodiagonstic assays.

e) Resistance of maleria to drugs.

P.T.O.

SECTION - II

ZY - 332 : Insect Physiology and Biochemistry

Q5) Describe the integration of carbohydrate, fat and amino acids metabolism in insects.

Q6) Describe the structure and functions of different types of haemocytes.

Q7) a) Explain the sclerotization of cuticle.

b) Explain hormonal control of metamorphosis.

Q8) Describe the structure and function of malpighian tubules.

SECTION - III

ZY - 334 : Genetic Toxicology

Q9) Describe the mechanism of mutagenesis.

Q10) Explain the principle and procedure employed in Ames test to assess genotoxicity of test substance.

Q11) a) Explain any one method used in detection of genotoxicity in Drosophila.

b) Explain the scope & importance of genetic toxicology.

Q12) a) "Tautomeric shift of nitrogen bases of DNA leads to mutations". Justify.

b) Explain the consquences of mutations induced by genotoxic agent.

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Total No. of Questions : 8]

SEAT No. : ____

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[Total No. of Pages : 1

[4131] - 401

M.Sc. - II (Sem. - IV)

ZOOLOGY (2005 Pattern)

ZY - 411 : Entomology - II

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

Q2) Describe the process of blastokinesis and embryonic envelops in insect.

Q3) Describe the development of Nervous system in insect embryo.

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

a) Polyembryony
b) Vitellogenesis
c) Dorsal Closure
d) Gastrulation in insects.

Q5) How do radiation and chemosterilization bring about sterility in insects.

Q6) Discuss the economics of pest control.

Q7) Describe integrated pest control and its importance.

Q8) Write short on any two of the following :

a) Biological control.
b) Pesticidal hazards and antidotes.
c) Stomach poisons.
d) Repellants.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

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[4131]-401

M.Sc. - II (Sem. - IV)

ZOOLOGY (2005 Pattern)

ZY - 412 : Genetics - II

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) What is Dosage compensation? Explain the mechanism of Dosage compensation in Humans How does it differ from Drosophila?

Q2) Discuss the role of genes in "Learning" and "Memory", with suitable examples from Drosophila.

Q3) Explain all the check points that occur throughout the cell cycle and explain the genetic regulation.

Q4) What is inborn errors of Metabolism? Discuss with 3 suitable examples, where metabolic blocks are caused by the effect of inherited defects.

Q5) Comment and explain the following methodologies which are valuable tools in human genetics studies

a) Pedigree analysis b) Twin studies

Q6) Explain in brief

a) HLA associated diseases. b) Genetic Markers.

Q7) a) Explain the genetic basis of schizophrenia.

b) Explain the cytogenetic studies with reference to oncology.

Q8) Write short notes on:

a) Chromosome walking

b) Parametric and Non parametric analysis.

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Total No. of Questions : 8] **[Total No. of Pages : 1**

P728

[4131]-401
M.Sc. - II (Sem. - IV)
ZOOLOGY (2005 Pattern)
ZY - 413 : Physiology - II

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) Describe the anatomy of respiratory system of man. Explain neuronal control of respiration with reference to central and peripheral receptors.

Q2) Explain various events of cardiac cycle and add a note on electrical activity of heart.

Q3) Describe the types of chemical senses. Explain their mechanism of stimulation and adaptation.

Q4) Describe the contractile machinery of smooth muscles. Explain how it differs from skeletal muscles.

Q5) Explain the transmission of impulse through synapse and add a note on neurotransmitters.

Q6) What is nutrition? Describe nutritive types and need of nutrients in animals. Add a note on general mechanism of digestion.

Q7) a) Pathway of ATP contraction during contraction.
b) Components of digestive system.

Q8) Write notes on:
a) Structure of ear.
b) Pace maker.
c) Hypertension.
d) Electrocardiography.

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Total No. of Questions : 20]

SEAT No. :

P729

[Total No. of Pages : 3

[4131] - 402

M.Sc. (Sem. - IV)

ZOOLOGY (2005 Pattern)

ZY - 421 : Animal Tissue Culture

ZY - 422 : Pollution Biology

ZY - 423 : Marine Biology

ZY - 424 : Bacterial and Phage Genetics

ZY - 425 : Medical Entomology

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 books.***

SECTION - I

ZY - 421 : Animal Tissue Culture

Q1) a) What are cell lines? Add a note on their maintenance. **[12]**

b) Write a note on sterilization of liquid reagents and media. **[8]**

Q2) a) Differentiate between Finite and Continuous cell lines. **[5]**

b) Explain cytogenetic characterisation of cell lines. **[15]**

Q3) Describe application of animal cell culture. **[20]**

Q4) Give an account of various equipments used in animal tissue culture. **[20]**

P.T.O.

SECTION - II

ZY - 422 : Pollution Biology

Q5) Describe the functional attributes of atmosphere. Explain how it contribute to facilitate life on earth.

Q6) Enlist the e-waste pollutants and describe their effect on the various forms of life.

Q7) Discuss the concept of pesticides and its relevance with respect to G.M. crops.

Q8) Write notes on :

a) Radioactive pollutants.

b) Noise pollution.

c) Eutrophication.

d) Plant origin pesticides.

SECTION - III

ZY - 423 : Marine Biology

Q9) What are marine resources? Describe Algal and mineral resources.

Q10) Describe in detail the components of a sea floor with the help of a flow chart diagram.

Q11) What is a marine environment? Classify and describe the oceanic zones.

Q12) Write notes on the following :

a) Factors for primary production in ocean.

b) Control measures of biofouling.

c) Production of marine sediments.

d) Marine animal diversity.

SECTION - IV
ZY - 424 : Bacterial and Phage Genetics

Q13) What are T phages? Give the organization of genes and replication of T_7 bacteriophage.

Q14) How is the genetic switch from lysogeny to lytic cycle effected in Lambda bacteriophage? Explain the role of repressor protein in maintenance of lysogenic state.

Q15) Explain the following (any two) :

a) Isolation of autotrophic mutants.
b) Rolling circle model of DNA replication.
c) One step growth curve of viral replication.

Q16) Write short notes on :

a) MS2 replication
b) Reverse transcriptase.
c) Chromosomal mapping.
d) Conditional lethal mutants.

SECTION - V
ZY - 425 : Medical Entomology

Q17) Give an account of importance of insects in relation to human health.

Q18) Describe the causative agent pathogenecity and control measures of yellow fever and relapsing fever.

Q19) Describe the morphological features of black flies, sand flies, pthirus pubis and pediculus humanus. Add a note on their role as vectors.

Q20) Write notes on :

a) Furniture beetle.
b) Rickettsia.
c) Sand flies.
d) Carrions diseases.

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Total No. of Questions : 16]

SEAT No. : ____

P730

[Total No. of Pages : 3

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M.Sc. (Sem. - IV)

ZOOLOGY (2005 Pattern)

ZY - 431 : Physiology of Mammalian Reproduction

ZY - 432 : Comparative Invertebrate Histology and Histochemistry

ZY - 433 : Biodiversity Assessment

ZY - 435 : Apiculture

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.***

SECTION - I

ZY - 431 : Physiology of Mammalian Reproduction

Q1) Describe hormonal regulation in physiology of mammalian reproduction.

Q2) Write a detailed account of pregnancy in mammals.

Q3) Write short notes on :

a) Infertility-its causes and treatment.

b) Parturition.

c) Placenta-types and functions.

d) Reproductive dysfuctions.

Q4) Describe sexual cycles in mammals.

P.T.O.

SECTION - II

ZY - 432 : Comparative Invertebrate Histology and Histochemistry

Q5) Describe various tissue staining methods.

Q6) Explain the procedure of histochemical detection of lipids.

Q7) Describe the types of connective tissue with reference to location, structure and function.

Q8) Write notes on :

a) Fixatives.

b) Nervous tissue.

SECTION - III

ZY - 433 : Biodiversity Assessment

Q9) Enlist all the invertebrate phyla. Explain in detail the classification of Phylum Annelida with suitable examples.

Q10) Give a detailed account of endangered flora and fauna of India. Add a note on its management strategies.

Q11) Describe characterization, generation and maintenance of biosphere.

Q12) Write notes on :

a) Parasitism.

b) Major phyla with their characteristics.

c) National parks and sanctuaries.

d) Aquatic adaptations.

SECTION - IV

ZY - 435 : Apiculture

Q13) Describe the Male Reproductive System of honey bee with suitable diagram. Add a note on the role of drones in nuptial flight.

Q14) Describe Planned Pollination Services. Explain its need and importance in Indian context.

Q15) Elaborate upon the Economic importance of Bee Keeping.

Q16) Write notes on :

a) *Apis florea*

b) Predators of honey bee.

c) Honey extractor.

d) Swarming.

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