Shri R.L.T. College of Science, Akola

Department of Zoology

Question Bank:B.Sc.-III (Sem:-V)

Semester: V (ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY)

UNIT– I (Respiration + Circulation)

A)Long answer question ……..…12M

Q.1. Give a detail account of nature of vertebrate respiratory organs.

Q.2. Explain the properties & functions of Respiratory pigments.

Q.3. Explain mechanism of respiration.

Q.4. Give the detail account of composition & function of blood.

Q.5. Explain structure of human heart in detail.

Q.6. Explain factors and mechanism of blood coagulation

Q.7. Describe various events in cardiac cycle.

B) Short answer question ……..……04M

a) gills
b) Lungs
c) Nature of vertebrate gills.
d) Nature of vertebrate Lungs
e) Properties of respiratory pigments.
f) Functions of respiratory pigments.
g) Haemoglobin.
h) Erythrocyte(R.B.Cs)
i) Leucocytes(W.B.Cs)
j) Functions of blood.
k) Internal structure of heart (only diagram)
l) Pace maker
m) Bundle of His
n) Purkingefiber
o) Cardiac cycle
p) Electrocardiography
q) Blood Group
r) Rh factor

UNIT-II (Muscle Physiology)

A) Long answer question.....12M

Q.1. Explain in detail the E. M. Structure of striated muscle.

Q.2. Explain mechanism of muscle contraction.

Q.3. Describe chemical changes during muscle contraction.

B) Short answer questions .....04 M

a) E. M. Structure of striated muscle.
b) Types of muscle protein.
c) Sliding filament theory.
d) Mechanism of muscle contraction.
e) Muscle twitch
f) Tetanus
g) Isometric & isotonic contraction
h) Summation of stimuli
i) All or none law
j) Fatigue
k) Rigor mortis
l) Cori cycle

UNIT- III (Nerve Physiology + chemical co-ordination)

A) Long answer question ……12 M

Q.1. Explain in details the E.M. Structure of neuron and its type.

Q.2. Explain the mechanism of nerve impulse conduction and neurotransmissions.

Q.3. What is neurotransmission, describe its type.

Q.4. Describe the structure of pituitary gland, its hormones and their physiological role

Q.5. Explain the structure of Thyroid gland and their physiological role.

Q.6. Explain the structure of adrenal gland and their physiological role.

Q.7. Describe the types of hormonal disorders.

Q.8. Describe structure of Neuromuscular junction.

Q.9. Describe muscle contraction by sliding filament theory.

Q.10. Describe synapse and synaptic transmission.

B) Short answer question ……04 M

a) Types of neuron
b) Acetylcholine and dopamine
c) Synapse and synaptic transmission
d) Saltatory transmission
e) Conduction of Nerve impulse
f) Structure of pituitary gland
g) Islets of Langerhan's
h) Goiter
i) Cretinism
j) Giagantism
k) Acromegaly
l) Osteoporosis
m) Structure of Adrenal gland
n) Structure of Thyroid gland
o) Parathyroid gland
p) Hormones of Pituitoryglan
q) Haemoglobin
r) Hemocyanin
s) structure of gill
t) function of blood
u) blood plasma
v) structure of lung

UNIT- IV (Reproductive Physiology + Homeostasis)

A) Long answer question ……12 M

Q.1. Describe hormonal control of reproduction in male

Q.2. Describe hormonal control of reproduction in female

Q.3. Describe structure and physiology of mammalian placenta

Q.4. Explain the osmoregulation and ionic regulation in aquatic animals

Q.5. Explain the osmoregulation and ionic regulation in terrestrial animals

Q.6. Describe thermoregulation in Piokilotherms and homotherms

B) Short answer question ……04 M

a) Estrous cycle
b) Menstrual cycle
c) Structure of mammalian placenta
d) Physiology of placenta
e) Ammonotelism
f) Ureotelism
g) Uricitelism
h) Piokilotherms
i) Homeotherms
j) proliferative phase
k) poikilothermic animals
l) Hormonal control of reproduction in male
m)

UNIT- IV (Agriculture Zoology: Eco. Imp of Insects)

A) Long answer question ……12 M

Q.1. Describe Economic importance of rodents, snake and owls

Q.2. Describe economic importance of spider, mantis and ladybugs

Q.3. Describe Apiculture with their economic importance

Q.4. Describe Sericulture and their economic importance

Q.5. Describe about store grain pests, their injuries and control

Q.6. Describe pest of cotton, its damage and control

Q.7. Describe pest of sugarcane, its damage and control

Q.8. Describe pest of jowar, its damage and control

B) Short answer question ……04 M

a) Damsel fly
b) Mealybug destroyer
c) Soldier bug
d) Pest of cotton
e) Pest of sugarcane
f) Pest of Jowar

g) Ichneumon wasp
h) Tachinidfly
i) Trichogramma wasp
j) Green lacewing
k) Syrphidfly
l) Mantis
m) Soldier beetle
n) importance of silk
o) pest of stored foodgrains
p) Importance of Honey
q) Economic importance of spiders
r) Economic importance of snakes

UNIT- IV (Aquaculture)

A) Long answer question ……12 M

Q.1. Describe fresh water fish culture and type of fish ponds
Q.2. Define aquaculture, its type and economic importance
Q.3. Describe type of fish ponds, its design and construction
Q.4. Describe type of fish culture, its products and byproducts
Q.5. Define aquaculture, its scope, economic importance and present status in India

B) Short answer question ……04 M

a) Fresh water fish culture
b) Fish ponds
c) Fertilizers used for fish developmenti)
d) Chinese circular hatchery
e) Fish manure
f) Fish liver oil and body oil
g) Monoculture and Polyculture
n) Inorganic Fertilizers
p) Cage culture
h) Integrated aquaculture
Modern drug used in fish breeding
j) Hatching happa
k) Induces breeding and hypohysation
l) Nursery, rearing and stocking pond
m) Rearing pond
o) Hypophysation

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Question Bank: B.Sc.-III (Sem:-VI)

Semester: VI (MOLECULAR BIOLOGY AND BIOTECHNOLOGY)

UNIT – I (Genetic material)

A)Long answer question ……..12M

Q.1. Explain Griffiths transformation experiment with bacteriophage infections

Q.2. Explain Avery and co-workers experiment to prove DNA as genetic material.

Q.3. Explain Hershey and Chase experiment to prove DNA as genetic material.

Q.4. Explain chemistry, types and function of RNA

Q.5. Explain chemistry and types of DNA

Q.6. Give the chemical structure of DNA and mention it's type.

Q.7. Give types of RNA and describe structure and function of tRNA

B) Short answer question ……04 M

a) Genetic material
b) A DNA
c) B DNA
d) Z DNA
e) mRNA
f) tRNA
g) rRNA
h) Non genetic RNA
i) Mitochondrial DNA
j) Purine bases
k) Chemical composition of RNA
l) Griffith's experiment
m) Avery , Macleod and okcarty expt.
n) Chemical composition of DNA
o) Structure and function of rRNA
p) Avery and co-worker experiment

UNIT – I (DNA Replication)

A)Long answer question ……12M

Q.1. Explain semi conservative method of DNA replication.

Q.2. Describe Messelson and Stahl experiment.

Q.3. Give a brief account of concept and action of cistron.

Q.4. Explain split genes and overlapping genes.

B) Short answer question ……04 M

a) One gene one enzyme hypothesis
b) One gene one polypeptide theory
c) Spinocerebellar ataxia
d) Split genes
e) Overlapping gene
f) jumping genes
g) concept of gene
h) concept and action of cistron
i) semiconservative method of DNA replication.
j) One gene one polypeptide theory with one example.
k) Okazaki fragments
l) DNA polymerase enzyme
m) Messelson and Stahl Experiment

UNIT – III (Genetic Code)

A)Long answer question ……12M

Q.1. Describe genetic code and its feature
Q.2. Describe mechanism of protein synthesis
Q.3. Describe Gene regulation with lac operon model in E.coli
Q.4. Explain genetic regulation in Eukaryotes
Q.5. Explain the process of translation in prokaryotes.
Q.6. Describe processing of mRNA and its significance.

B) Short answer question ……04 M

a) Initiation and termination codon
b) Transcription
c) Translation
d) Promotor and operator
e) Operon model
f) Britten Davidson model
g) Lac operon model
i) mRNA translation
j) wobble hypothesis
k) Role of acetyl t-RNA synthetase.
l) Post translation processing of protein.
m) Properties of Genetic code.

UNIT – IV (Mutation)

A)Long answer question ……12M

Q.1. Define mutation and explain mutation theory of DeVries
Q.2. Describe molecular basis of mutation
Q.3. Describe chromosomal mutation and aberration
Q.4. Describe types of mutations and its significance
Q.5. Describe PCR techniques
Q.6. Explain Southern and Northern blotting techniques.
Q.7. Explain DNA repair process.

B) Short answer question ……04 M

a) Frameshift mutation
b) Chromosomal aberration
c) Numeral type of mutation
d) Natural and induced mutation
i) Southern blotting technique
j) Northern blotting technique
k) Western blotting technique
l) DNA finger printing
e) Euploidy and aneuploidy
f) Significance of mutation
g) Substitution mutation
h) Inversion and translocation
m) Deletion
n) Types of polypeptide
o) Polymerase chain reaction
p) Types of duplication

UNIT – V (Biotechnology: Genetic Engineering)

A)Long answer question ……12M

Q.1. Describe recombinant DNA technology and gene cloning
Q.2. Explain genetic engineering in animals and its practical application with suspected hazards
Q.3. Describe somatic cell hybridization and hybridoma technology
Q.4. Explain the role of enzymes in recombinant DNA technology

B) Short answer question ……04 M

a) Genetic engineering
b) Gene cloning
c) Splicing and cloning of gene
d) Somatic cell hybridization
e) hybridoma technology
f) Monoclonal antibody
g) Plasmid and Phase vectore
h) Gene transfer
i) practical application of biotechnology
k) Restriction endonucleases
l) Bacteriophage as vector
m) Enzymes used in recombinant DNA technology.

UNIT – VI (Immunology)

A)Long answer question ……..……12M

Q.1. Describe immune system and its type
Q.2. What is antibody, describe its type and production
Q.3. Explain the role of cytotoxic T-cell, ELIZA technique and RIA
Q.4. Explain cell mediated immunity and its type
Q.5. Explain Humoral immunity and its mechanism
Q.6. Describe physical methods of gene transfer
Q.7. Describe practical applications and suspected hazards of biotechnology.

B) Short answer question ……..……04 M

a) Innate and adaptive immunity
b) Antigen and haptens
c) Cell mediated immunity
d) T-Cell receptors
e) ELISA technique
f) Lymphocyte activation
g) T-helper cell
h) Antibody and Antigen
i) Complement system
j) RIA
k) Haptens
l) Types of immunoglobulins
m)

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