SLR-JT-390

Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Zoology
BIOSYSTEMATICS

Day & Date: Monday, 18-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagram wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) The Five kingdom arrangements of organisms was proposed by _____.
   a) Whittaker b) John Ray
   c) Carlous Linnaeus d) Mendel

2) Basic taxonomy unit is _____.
   a) Kingdom b) Genus
   c) order d) Species

3) An example for the artificial system of classification _____.
   a) Bentham and Hooker b) Linnaeus system
   c) Engler and prantl d) Hutichson

4) The modern classification is based on _____.
   a) Physiology b) Fossils
   c) Phylogeny d) Morhology

5) 'System naturae 'was written by _____.
   a) Linnaeus b) Charls Darwin
   c) Aristotled d) Wallace

6) The term systematic was proposed by _____.
   a) John Ray b) Adanson
   c) De-Vries d) Julian Huxley

7) Binomial nomenclature means writing the name in two words which designate _____.
   a) Order and family b) Family and genus
   c) Species and variety d) Genus and species

8) A kingdom having unicellular plants and animals are present in _____.
   a) Monera b) Plantae
   c) Fungi d) Protista

9) Origin of species explained by _____.
   a) Lamark b) Carlous Linnaeus
   c) Charles Darwin d) Aristotle

10) The term "New Systematics" was introduced by _____.
   a) Bentham and Hooker b) Linnaeus
   c) Julian Huxley d) A. P. Candolle

11) Static concept of species was put forwarded by _____.
a) De candolle b) Linnaeus
c) threophrastus d) Darwin

12) The present phylogenetic systems are formed by the combination of _____.
a) Artificial and numerica
b) natural and phylogenetic evidence
c) Artificial and phylogenetic
d) Numerical and phylogenetic

13) _____ has described concept of natural classification in his book.
a) Charles Darwin b) Aristotle
c) Lamarck d) simpson

14) Classification given by Bentham and Hooker is _____.
a) Artificial b) Natural
c) Numerical d) Phylogenetic

Q.2 A) Attempt any four of the following question. **08**
1) What is taxonomy?
2) Define species.
3) Define phylogenetics.
4) Define genetic incompatibility.
5) Define apomictic species.

B) Write Notes on (Any Two) **06**
1) Cytotaxonomy.
2) Parsimony methods
3) Process of typification of different Zoological types

Q.3 A) Attempt any two of the following question. **08**
1) Importance and applications of Biosystematics in Biology.
2) Chemotaxonomy.
3) Distance methods.

B) Attempt any one of the following question. **06**
1) International code of Zoological nomenclature.
2) Amino acid sequences.

Q.4 A) Attempt any two of the following question. **10**
1) Systematic publications- different kinds of publications.
2) Taxonomic keys, their merits and demerits.
3) Molecular phylogenetics.

B) Attempt any one of the following question. **04**
1) Historical resume of Systematics.
2) Theories of biological classification, hierarchy of categories

Q.5 Attempt any two of the following question. **14**
a) Reproductive isolation mechanism.
b) Mechanism of speciation in panmictic and apomictic species.
c) How to construct phylogenetic trees?

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Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Zoology
TOOLS AND TECHNIQUES IN BIOLOGY

Day & Date: Tuesday, 05-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) The molecule which accepts the proton is called as _____.
   a) Base b) Acid
   c) Amphoteric d) Neutral

2) The instrument which based on Beer-Lambert law is known as _____.
   a) Nephalometer b) Spectrophotometer
   c) Turbidometer d) Conductivity meter

3) Geiger-muller counter is sensitive for _____.
   a) Gamma rays b) Beta particle
   c) Alpha particle d) All of the above

4) Fluorescence due to excitation by radioactivity is known as _____.
   a) Scattering b) Scintillation
   c) Transmission d) Emission

5) In spectrophotometer the light source mostly used for visible range is____.
   a) Deuterium b) Hydrogen
   c) Tungsten d) Both a and b

6) The phenomenon of natural radioactivity was discovered by _____.
   a) Alfrred Nobel b) Henry Bequerel
   c) Madam Curi d) Ernest Rotherford

7) In flowcytometer most commonly the measurement are based on _____.
   a) Transmission b) Absorbance
   c) Radioactivity d) Fluorescence

8) _____ selective media used for the selection of fused cell in Hybridoma technology.
   a) HAT b) PAT
   c) CAT d) GAT

9) _____antibody is a single type of antibody that is directed against a specific antigenic determinant (epitope).
   a) Polyclonal b) Multiclonal
   c) Aclonal d) Monoclonal

10) For the hepatocyte cell line _____Tissue marker is used for the identification.
   a) Hemoglobine b) Actin
   c) Albumin d) Myosin

11) Phenol red used for visible detection of pH of the media, Phenol red is_____in color at pH 6.5.
a) Red b) Green
c) Orange d) Yellow

12) _____ Ion required for the cell adhesion in animal tissue culture.
a) Phosphorous b) Nitrogen
c) Calcium d) Silver

13) The multiple form of enzyme catalyzing the same reaction are referred to as _____.
a) Proenzyme b) Isozyme
c) Both a and b d) Enzyme

14) The most common cell viability was done by cell staining by _____.
a) Indo red b) Crystal violet
c) Methylene blue d) Trypan blue

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define microscopy.
2) Define suspension culture.
3) What is cell hybrid?
4) Define isoelectric focusing.
5) What is fusogen and add example.

B) Write Notes on (Any Two) **06**
1) Add a note on proteomics.
2) Explain cell viability.
3) Write about autoradiography.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Add a note on spectrophotometer.
2) Write a note on cell transformation.
3) Discuss about agarose gel electrophoresis.

B) Answer the following questions. (Any One) **06**
1) Define centrifuge and add sub cellular fractionation.
2) Add a note on different cell culture types.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Add a note on freeze drying and freeze fracturing.
2) Write about flow cytometer with proper diagram.
3) Explain in detail electron microscope.

B) Answer the following questions. (Any One) **04**
1) Add a note on cell secretion and metabolic harvesting.
2) Explain in detail hybridoma technology.

Q.5 Answer the following questions. (Any Two) **14**
a) Define chromatography and add a note on types of chromatography.
b) What is mean by radioactivity and explain its measurement techniques.
c) Define cryopreservation with proper diagrammatic technical explanation.

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Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Zoology
CELL AND MOLECULAR BIOLOGY

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the banks by choosing correct alternatives given below. **14**

1) Most abundant lipid in Plasma membrane is _____.
   a) Cholesterol b) Sterol
   c) Glycolipid d) Phospholipids

2) Free fatty acid enter cell by _____.
   a) Passive diffusion b) Primary active transport
   c) Cannot enter into the cell d) Secondary active transport

3) Which one of the following organelles is enclosed by a single membrane?
   a) mitochondria b) nucleus
   c) chloroplast d) lysosomes

4) Actin filaments are involved in all of the following except _____.
   a) amoeboid movement b) cytoplasmic streaming
   c) contraction of smooth muscle d) flagellar movement in bacteria

5) Experiments demonstrating the importance of the nucleus in controlling the growth of the cell was performed in _____.
   a) Starfish b) Acetabularia
   c) Neurospora d) Leucocytes

6) One difference between cancer cell and normal cells is that _____.
   a) The cancer cell is unable to synthesize DNA
   b) Cell cycle is arrested at the ‘S’ phase
   c) Cannot function due to density dependent inhibition
   d) Cell continue to divide even when they are tightly packed

7) The dyneins are the motor molecules that are related to the _____.
   a) Microfilament b) Microtubules
   c) Intermediate d) Myosin filament

8) All of the following are the functions of the cell membrane EXCEPT: _____.
   a) participating in chemical reactions
   b) participating in energy transfer
   c) being freely permeable to all substances
   d) regulating the passage of materials

9) Which of the following membrane activities does NOT require the expenditure of energy by the cell?
   a) active transport b) osmosis
   c) endocytosis d) exocytosis

10) A plant cell placed in a hypertonic solution will: _____.
a) remain unchanged b) undergo lysis
c) undergo plasmolysis d) swell slightly

11) Identify the non-membranous organelle from the following _____.
a) Ribosome b) Endoplasmic reticulum
c) Nucleus d) Chloroplast

12) Microfilaments are composed mainly of a protein called _____.
a) actin b) tubulin
c) myosin d) chitin

13) Active transport _____.
a) can move solutes up a concentration gradient
b) requires the cell to expend energy
c) uses ATP as an energy source
d) all of the choices are correct

14) Which of the following is associated with the structure of Golgi Complex?
a) Cristae b) Cisternae
c) Annuli d) Quatasomes

Q.2 A) Answer the following questions (Any Four) 08
1) Give any four functions of lysosomes.
2) What is Symport?
3) What are intermediate filaments?
4) Explain Hemidesmosomes.
5) What are oncogenes?

B) Write Notes on (Any Two) 06
1) Biogenesis of mitochondria
2) Integrins
3) Polymorphism in lysosomes

Q.3 A) Answer the following (Any Two) 08
1) Explain cell matrix and cell matrix adhesion.
2) Draw a neat labeled diagram of Ultra structure of Endoplasmic reticulum.
3) Describe protein synthesis on free and bound polysomes.

B) Write a note on (Any one) 06
1) Passive Transport
2) Microtubules and mitosis

Q.4 A) Answer the following questions (Any Two) 10
1) Cilia: structure and dynamics.
2) Function of nucleus.
3) Cell movement and cytoskeleton.

B) Answer the following questions (Any One) 04
1) Explain Na^+/K^+ pump.
2) Describe lysosomal assembly and functions.

Q.5 Answer the following questions (Any Two) 14
a) What is cancer? Add a note on biology of cancer.
b) What are microtubule organizing centers? Add a note on role of microtubule during mitosis.
c) Explain the structure and function of nuclear pore complex.

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Set P

M.Sc.(Semester – I) (CBCS) Examination Oct/Nov-2019
Zoology
POPULATION GENETICS AND EVOLUTION

Day & Date: Saturday, 09-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions:1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives. **14**

1) The life originated about 3.6 billion years ago in the _____ era.
   a) Precambrian b) Cambrian
   c) Silurian d) Muesozoic

2) Lamarck's theory of organic evolution is based upon _____.
   a) Effect of environment
   b) Use and disuse principle
   c) Inheritance of acquired characters
   d) All of the above

3) In small population the gene frequencies will fluctuate in unpredictable directions. This fluctuation is called as _____.
   a) Genetic shift b) Genetic drift
   c) Mutation d) Meotic drive

4) The _____ of a population consists of all copies of all the genes in that population.
   a) Artificial selection b) Genepool
   c) Micro evolution d) Macro evolution

5) _____ such as polyloidy, deletion, duplication etc also result in variation.
   a) Chromosomal mutation b) Meoticdrive
   c) Bottle neck effect d) Microevolution

6) The percentage of gametes in a gene pool for a pair of alleles depend upon _____.
   a) mutation
   b) recessive allele
   c) genotypic frequencies of parental generation
   d) dominant allele

7) The altered codon leads to insertion of an incorrect amino acid into a protein molecule during translation. This is called _____.
   a) missense mutation b) nonsense mutation
   c) silent mutation d) frame shift mutation

8) In sickle cell anemia glutamic acid of haemoglobin is replaced by _____.
   a) arginine b) serine
   c) valine d) methionine

9) Which of the following is not explained by the theory of natural selection?
   a) The ability to survive and reproduce
   b) Prodigality of production
   c) Competition
   d) Physical strength

10) An example of neutral mutation is _____.
   a) Change in shape of RBC b) Weak bones
   c) Change in eye color d) Change in size of RBC

11) Which of the following is meant by the term Darwin fitness?
   a) The ability to survive and reproduce
   b) Aggressiveness
   c) Healthy appearance
   d) Physical strength

12) The theory of use an disuse was given by _____.
   a) Lamarck b) Mendel
   c) Darwin d) Motokimura

13) The tendency of offspring to differ from parent is called _____.
   a) variation b) heredity
   c) inheritance d) resemblance

14) The term evolution was coined by was given by _____.
   a) Lamarck b) Mendel
   c) Darwin d) Herbert Spencer

Q.2 A) Answer the following (Any Four) **08**
1) Organic evolution
2) Struggle for Existence
3) Nucleotide
4) Micro evolution
5) Adaptation

B) Write Notes on (Any Two) **06**
1) Natural selection
2) Gene evolution
3) Mendelism

Q.3 A) Answer the following (Any Two) **08**
1) Meiotic drive.
2) Lamarckism.
3) Protein Families

B) Answer the following (Any One) **06**
1) Role of Mutation in evolution.
2) Patterns of change in amino acid sequences.

Q.4 A) Answer the following (Any Two) **10**
1) Genetic drift.
2) Ecological significance of molecular variation.
3) Patterns and mechanisms of reproductive isolation.

B) Answer the following (Any One) **04**
1) Migration.
2) Neo-Darwinism.

Q.5 Answer the following (Any two) **14**

a) Discuss Eukaryotic evolution based on different gene families.

b) Describe Models of speciation.

c) Explain Hardy-Weinberg law of genetic equilibrium and deduce the equation.

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Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Zoology
PROTOZOOLOGY

Day & Date: Saturday, 09-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Sabin-Feldman dye test is used in the diagnosis of _____.
   a) *Toxoplasmosis* b) Amoebiasis
   c) Cryptosporidiosis d) Trypanosomiasis

2) Motility of *Trichomonas vaginalis* is described as _____.
   a) Amoeboid b) Jerky
   c) Falling leaf like d) Stately

3) Pellicle is found in _____.
   a) Amoeba b) Euglena
   c) Euglena and paramecium d) All of these

4) Which of the following act as a main reservoir of *Balantidium coli* Infection in human beings _____?
   a) Man b) Monkey
   c) Cow d) Pig

5) Congenital *Toxoplasmosis* manifest as _____.
   a) Microcephaly b) Micro-ophthalmus
   c) Hepatosplenomegaly d) All the above

6) Which of the following acts as a main reservoir of *Balantidium* coli infection in human beings?
   a) Man b) Monkey
   c) None of these d) Pig

7) Single celled eukaryotes are include in _____.
   a) Fungi b) Archae
   c) Monera d) Protista

8) *Trichomonas vaginalis* is _____.
   a) Pseudopodia b) Cilia
   c) Flagella d) None of the above

9) All are pathogenic free living amoeba, EXCEPT _____.
   a) *Entamoeba histolytica* b) *Acanthamoeba*
   c) *Nagleria fowleri* d) *Balamuthiah spp*

10) African sleeping sickness is caused by _____.
   a) *Giardia intestinalis* b) *Leishmania donovani*
   c) *Trypanosome gambiense* d) *Entamoeba histolytics*

11) Protozoa were first discovered by _____.
   a) Pasteur b) Leeuwenhoek
   c) Darwin d) Kudo

12) *Giardia lamblia* infection _____.
   a) may be diagnosed by serological tests
   b) is caused by ingestion of cysts
   c) may be spread by the respiratory route
   d) affects mainly the ileocecal region

13) Medically-important protozoa are _____.
   a) *Leishmania donovani* b) *Trypanosome cruzi*
   c) *Toxoplasma gondii* d) All the above

14) In toxoplasmosis _____.
   a) Immune globulin should be administered to the infected person.
   b) The cat is a primary animal host of Toxoplasma gondii
   c) Infection is contracted via the respiratory route
   d) All the above

Q.2 A) Answer the following questions. (Any Four) **08**
1) Give an account on morphology of parasitic *Entamoeba histolytica*.
2) Write a note on organization and morphology of *Chilomastix mesnili*.
3) Give an account on lifecycle of *Ichthioptherius multifilis*.
4) Give an account on filter feeding in protozoa.
5) Describe the life cycle of *E. gingivalis*.

B) Write Notes. (Any Two) **06**
1) Describe the Life cycle of *Balantidium coli*
2) Give an account on Nutritional requirements in protozoa
3) Give an account on food in protozoa

Q.3 A) Answer the following questions. (Any Two) **08**
1) Morphology of *Trichomonas tenax*.
2) Describe in detail parasitism in ciliophoran.
3) Give an account on diffusion feeding a protozoa.

B) Answer the following questions. (Any One) **06**
1) Give an account on Method of feeding in protozoa.
2) Describe in detail factors influencing the distribution of protozoa: Oxygen, Carbon dioxide and pH.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give an account on Morphology of *Giardia lamblia*.
2) Ecology of free living Protozoa.
3) Give an account on Structure and life cycle pattern of acephaline Gregarines.

B) Answer the following questions. (Any One) **04**
1) Give an account on General classification of protozoa.
2) Give an account on Morphology of Retartomonas intestinalis.

Q.5 Answer the following questions. (Any Two) **14**
a) General organization and morphology of the parasitic flagellates occurring in digestive tract of man.
b) Give an account on Factors influencing the distribution of protozoa mainly Light and pH.
c) Give an account on Coccidia of poultry with special reference treatment and control.

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Set P

M.Sc.(Semester - II) (CBCS) Examination Oct/Nov-2019
Zoology
DEVELOPMENTAL BIOLOGY

Day & Date: Monday, 04-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Multiple Choice Questions. **14**

1) One of the following is not the primary egg membrane _____.
   a) Vitelline membrane b) Zona pellucid
   c) Jelly envelope d) Chorion

2) Centrolecithal eggs are the characteristics of _____.
   a) Placental mammals b) Birds
   c) Insects d) Reptiles

3) The muscle-forming cells of the vertebrate limb come from.
   a) The ectodermal epithelium of the limb bud
   b) Mesodermal cells that migrate into the limb bud from the somites
   c) The progress zone
   d) The polarizing region

4) The developmental stage which immediately follows fertilization is ____.
   a) Gastrulation b) Cleavage
   c) Neurulation d) Growth

5) During organogenesis, hypomere mesoderm flanks the _____.
   a) Gut region b) Neural tube
   c) Notochord d) Intermediate

6) If apoptosis in the developing limb were blocked, what feature of a normal limb would not form _____.
   a) The bones and muscles would not form.
   b) The overlying epidermis would not form.
   c) The proximo-distal patterning would not occur normally.
   d) The digits would be connected by webbing, and would not be separated.

7) The morphogenic movement change the hollow spherical blastula into a ____.
   a) Embryonic disc b) Morula
   c) Gastrula d) All the above

8) Anterior end of neural groove forms future.
   a) Liver b) Spinal cord
   c) Heart d) Brain

9) In telolecithal egg the yolk is found _____.
   a) All over the egg b) On one side
   c) Both the sides d) Centre.

10) Number of pairs of somites present in 26 hrs chick embryo is ____.
a) 4 b) 6
c) 8 d) 5

11) Blood islands present in _____ hrs of chick embryo.
a) 18 b) 24
c) 33 d) 72

12) In human the placenta is _____.
a) Haemochorial b) Endothelial
c) Epithiochorial d) Syndesmochorial

13) During organogenesis, the splanchnic mesoderm lies next to the _____
a) Ectoderm b) Gut epithelium
c) Notochord d) Gut endoderm

14) The cavity formed during the process of gastrulation is called _____.
a) Blastocoel b) Archenteron
c) Sub-germinal cavity d) Blastoderm

Q.2 A) Answer the following questions. (Any Four) **08**
1) Gastrula of Amphioxus.
2) Blastula of chick
3) Egg of Amphioxus.
4) Gastrula of mammals.
5) Fertilization in frog.

B) Write Notes. (Any Two) **06**
1) Note on Fertilization in chick
2) Give an account on Organogenesis
3) Give an account on development of limbs in amphibians.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Give an account on regulation of limb development in chordates.
2) Give an account on cell apoptosis.
3) Give an account on different types of eggs.

B) Answer the following questions. (Any One) **06**
1) Give an account on evolution of sexual reproduction in Eukaryotes.
2) Note on programmed cell death.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give an account on three germ layers formation in Mammals.
2) Describe in detail: Development of anteriority to posteriority in Drosophila.
3) Describe the three germ layers formation in Amphioxus.

B) Answer the following questions. (Any One) **04**
1) Describe in regulation of development in Drosophila.
2) Give an account on three germ layers formation in Frog.

Q.5 Answer the following questions.(Any Two) **14**
a) Give an account on cell apoptosis, its role in development of human limbs.
b) Give an account on development of limbs in fishes.
c) Give an account on Fertilization in mammals.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Zoology
GENERAL AND COMPARATIVE ENDOCRINOLOGY

Day & Date: Wednesday, 06-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) The Pars intermedia is the source of _____ Hormone.
   a) Melanocyte b) LH
   c) Oestrogen d) Androgen Testis

2) Corpus allatum Secretes _____ hormone.
   a) Juvenile b) Ecdysone
   c) Parathormone d) Insulin

3) Secretin is one of many peptide hormone of _____.
   a) Stomach b) Small intestine
   c) Kidney d) Liver

4) _____ hormone stigmulates parental behavior.
   a) TH b) Lactogenic
   c) PTH d) FSH

5) Oxytosin stimulates contraction of _____.
   a) Uterus b) Heart
   c) Intestine d) Pancreas

6) _____ hormone increases fear behavior as well as active and passive type of avoidance behavior.
   a) Glucagon b) Insulin
   c) ACTH d) Gastrin

7) In case of insects chromatophorotropic substance is presented _____ ganglion.
   a) Cerebral b) Thorasic
   c) Abdominal d) Sub esophageal

8) Ecdyosone hormone is secreted by _____ in insects.
   a) Corpus cardiacum b) Sorporallata
   c) Thoracic ganglion d) Abdominal ganglion

9) Vasopressin is secreted by _____ pituitary gland.
   a) Anti-Iobe b) Post-Iobe
   c) Vertical d) Parallel

10) Oxytocin is also known as _____.
   a) Parturition Hormone b) Menstrual Hormone
   c) Fear behavior Hormone d) Migratory Hormone

11) Juvenile Hormone is _____.
a) Digestion Hormone b) Molting Hormone
c) Killing Hormone d) Growth Hormone

12) Cushing syndrome is due to hyper secretion of cortisol by _____.
a) Thyroid gland b) Pancreas
c) Adrenal cortex d) Parathyroid

13) Amylase is secreted by _____ gland.
a) Salivary b) Mammary
c) Adrenal d) Intestinal

14) Gastric gland secretes a hormone called _____.
a) MSH b) Gastrin
c) Amylase d) Hyluronidase

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define protein hormone and give its types.
2) Give functions of melatonin.
3) Mechanism of ecdysone hormone.
4) Structure and function of sertoli cell.
5) Functions of secretion hormone.

B) Write notes. (Any Two) **06**
1) Give functions of leydig cell.
2) Explain role of Juvenile hormone in Insects.
3) Give functions of hormones of MSH.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain structure and function of progesterone.
2) Describe hormones of Islets of Langerhans.
3) Describe Hormones of Medulla.

B) Answer the following questions. (Any One) **06**
1) Explain menstrual cycle in human female.
2) Role of Hormone in migration.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain development and differentiation in gonads.
2) Give structure and functions of estrogen.
3) Explain functions of androgen.

B) Answer the following questions. (Any One) **04**
1) Explain hormonal role in homeostasis.
2) Give functions of parathyroid gland.

Q.5 Answer the following questions. (Any Two) **14**
a) Give mechanism of parturition and its hormones.
b) Give classification of hormones and chemical nature.
c) Describe disorders of thyroid hormone.

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Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Zoology
HELMINTHOLOGY

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) What is the intermediate host for the schistosomes?
   a) Humans b) Soil
   c) Snails d) None of the above

2) One of the following belongs to cestodes _____
   a) Liver Fluke b) Guinea worm
   c) Tapeworm d) Ascaris

3) Pigs or dogs are the source of human infection by each of the following parasites except.
   a) *Echinococcus granulosus* b) *Taenia solium*
   c) *Ascaris lumbricoides* d) *Trichinella spiralis*

4) Each of the following parasite is transmitted by mosquitoes except.
   a) *Leishmania donovani* b) *Wuchereria bancrofti*
   c) *Plasmodium vivax* d) *Plasmodium falciparum*

5) A sexual reproduction of trematodes occurs in _____.
   a) Snail b) Vertebrates
   c) Molluscs d) Both a & c

6) Fasciolopsiosis is caused by _____.
   a) Fasciola hepatica b) Ascaris lumbricoides
   c) Wachereria bancrofti d) Fasciolopsis buski

7) Worldwide, the most prevalent helminth to infect humans is _____.
   a) *Enterobius vermicularis*, the pinworm
   b) *Ascaris lumbricoides*, the large intestinal roundworm
   c) *Taenia saginata*, the beef tapeworm
   d) *Schistosoma mansoni*, one of the blood flukes

8) The adult tapeworm of Echinococcus granulosus is found in the intestine of
   a) Humans b) Sheep
   c) Dogs d) Cattle

9) A 45 year old hunter developed fever, myalgia, and periorbital edema. He has a history of bear meat consumption. The most likely causative agent is
   a) Toxoplasma gondii b) Taenia solium
   c) Hymenolepis nana d) Trichinella spiralis

10) Each of the following statements concerning Ascaris lumbricoides is correct except
   a) Ascaris lumbricoides is one of the largest nematode
   b) Ascaris lumbricoides can cause pneumonia
   c) Both dogs and cats are intermediate host of Ascaris lumbricoides
   d) A lumbricoides is transmitted by ingestion of eggs

11) In an individual infected with ascaris, the larvae can be found in the _____
   a) Liver b) Lungs
   c) Intestines d) All of the above

12) A freshwater snail is always a part of the life cycle in which of the following groups?
   a) Cestodes b) Trematodes
   c) Filarial worms d) Intestinal nematodes

13) Humans can serve as both the intermediate and definitive host in infections caused by.
   a) *Enterobius Vermicularis* b) *Hymenolepis nana*
   c) *Schistosoma japonicum* d) *Ascaris lumbricoides*

14) Praziquantel is used in the treatment of.
   a) Amoebiasis
   b) toxocariasis (visceral larva migrans)
   c) paragonimiasis (lung fluke)
   d) trypanosomiasis (African sleeping sickness)

Q.2 A) Answer the following questions.(Any Four) **08**
1) Intermediate host
2) Praziquentel
3) Hookworm
4) Taenia saginata
5) Enterobius Vermicularis

B) Write Notes on (Any Two) **06**
1) Geographical distribution of Hymenolepis nana.
2) Transmission and pathology of parasitic Dipylidium caninum.
3) Classification of Trematodes.

Q.3 A) Answer the following questions.(Any Two) **08**
1) Give an account on life cycle pattern of Schistosoma hematobium.
2) Note on Antihelminthic drugs.
3) Give an account on pathogenicity of Hymenolepis nana.

B) Answer the following questions.(Any One) **06**
1) Give an account on pathogenicity of Enterobius vermicularis.
2) Note on Life cycle of Hymenolepis nana.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give an account on Nutritional requirements in Cestodes.
2) Give an account on pathogenicity of Echinococcus granulosus.
3) Describe in detail: Recovery of parasite eggs and larvae from faecal specimens.

B) Answer the following questions.(Any One) **04**
1) Give an account on life Cycle of Wuchereria bancrofti.
2) Give an account Hymenolepis nana with special reference treatment and control.

Q.5 Answer the following questions. (Any Two) **14**
a) Give an account on life cycle, pathogenicity, diagnosis and treatment of Fasciola hepatica.
b) General organization and morphology of the parasitic Cestodes occurring in man.
c) Describe in detail organization and Classification of Nematodes.

SLR-JT-399

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Zoology
MOLECULAR CYTOGENETICS

Day & Date: Monday, 18-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) In PKU mutation in both alleles of the gene for phenylalanine hydrolase found on chromosome number_____.
   a) 10 b) 12
   c) 14 d) 15

2) In prokaryotes, chromatin is formed of _____.
   a) Nucleic acid and proteins b) Nucleic acid and carbohydrates
   c) Nucleic acid and lipids d) Only Nucleic acid

3) Monosomic condition is represented by _____.
   a) 2n+1 b) 2n+2
   c) 2n-2 d) 2n-1

4) SINE requires _____ nearby to transpose in a genome.
   a) LINES b) Alu gene
   c) P-element d) Satellite DNA

5) “Buckle out” or compensation loop in normal homologous chromosome is formed during _____.
   a) Duplication b) Deletion
   c) Translocation d) Inversion

6) The sex ratio of a super female in Drosophila is _____.
   a) 0.5 b) 1.0
   c) 1.5 d) 0.2

7) An individual with chromosomes compliment 47,XXY is known as _____ syndrome.
   a) Turner b) Klinefelter
   c) Edwards d) Down

8) The lowest level of chromosomal organization is _____.
   a) 30 nm fibre
   b) Helix-loop structure of chromosome
   c) Nucleosome
   d) Chromatin

9) Dosage compensation in *Drosophila* is achieved by _____.
   a) hyperactivation of both X chromosomes
   b) hyperactivation of Y chromosomes
   c) hyperactivation of maternal chromosomes
   d) Hyperactivation of X chromosome in male

10) Satellite DNA is made up of _____.
   a) repeated DNA sequences
   b) interspersed repeated sequences
   c) tandemly repeated sequences
   d) minichromosomes

11) _____ banding technique is used for staining heterochromatin.
   a) G b) C
   c) Q d) R

12) _____ refers to turning a chromosome segment around 180^0 and rejoining it to lire original chromosome.
   a) Translocation b) Inversion
   c) Deletion d) Duplication

13) _____ enzyme is involved in overwinding or unwinding of DNA specially in replication.
   a) DNA Ligase b) Topoisomerase
   c) Nuclease d) Restriction endonuclease

14) The coding sequences in DNA are called _____.
   a) exons b) recons
   c) histones d) introns

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is C-value paradox?
2) Distinguish between euchromatin and heterochromatin.
3) Explain Methylase enzyme.
4) What is Fluorescent *in situ* hybridization? Give its use.
5) What is mean by gene duplication?

B) Write Notes. (Any Two) **06**
1) Cytogenetic effects of ionizing radiations
2) Glaucoma
3) Lytic cycle

Q.3 A) Answer the following questions. (Any Two) **08**
1) Discuss about telomere and its maintenance.
2) Explain the types of transposable elements.
3) With suitable diagram describe T4 phage.

B) Answer the following questions. (Any One) **06**
1) Explain in detail about thalassemia.
2) Describe in detail numerical alteration in chromosome.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Discuss in detail *cis-trans* complementation test.
2) Explain in brief eukaryotic genome.
3) Illustrate in detail structure of chromatin.

B) Answer the following questions. (Any One) **04**
1) Describe the transposition of transposable element.
2) Explain in detail sex determination in human.

Q.5 Answer the following questions. (Any Two) **14**
a) Write an assay on sickle cell anemia.
b) Explain in detail regulation of cell cycle in yeast.
c) Discuss in detail lysogenic cycle of Bacteriophage.

SLR-JT-400

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Zoology
BIOCHEMISTRY

Day & Date: Tuesday, 05-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) _____ reaction is considered as oxidation.
   a) Fe^{3+} + electron → Fe^{2+} b) Cu^{2+} + electron → Cu^{+}
   c) Fe^{2+} → Fe^{3+} + electron d) Fe^{2+} ← Fe^{3+} + electron

2) The nitrogen atoms of pyrimidine nucleotide are provided by _____.
   a) glutamate b) glutamate and aspartate
   c) glutamine and aspartate d) Glutamine

3) Keratin protein is an example of _____ protein.
   a) structural b) contractile
   c) catalytic d) hormonal

4) The reaction is said to be at equilibrium when its actual free energy change is _____.
   a) negative b) positive
   c) zero d) one

5) Km represents the _____.
   a) substrate concentration at maximum velocity
   b) substrate concentration in active site
   c) substrate concentration at half of maximum velocity
   d) substrate specificity of an enzyme

6) On net gain of ATP on β- oxidation palmitic acid is _____.
   a) 100 b) 106
   c) 120 d) 136

7) _____ is an aromatic amino acid.
   a) Alanine b) Proline
   c) Arginine d) Tyrosine

8) α-D-Glucose and β-D-Glucose are _____ of each others.
   a) structural isomers b) anomers
   c) epimers d) DL forms

9) The catalysts enhance reaction rates by lowering _____ energies.
   a) activation b) binding
   c) Gibb's free d) free

10) The glycogen is stored _____ and _____ in human.
   a) Brain, lung b) skeletal muscle, liver
   c) kidney, liver d) heart, brain

11) The storage form of lipid in human is _____.
a) phospholipid b) triacylglycerol
c) cholesterol d) sphingolipid

12) _____ is a component of bacterial cell wall.
a) Peptidoglycan b) Chitin
c) Pectin d) Cellulose

13) The amount of energy released from ATP hydrolysis is _____.
a) -7.3 Kcal/mol b) -30.5 Kcal/mol
c) +7.3 Kcal/mol d) +30.5 Kcal/mol

14) Calcium alginate is used for _____ method of immobilization.
a) physical b) covalent bonding
c) ionic bonding d) gel entrapment

Q.2 A) Attempt any four of the following question. 08
1) Write a note on hydrogen bonding.
2) Draw a neat and labeled diagram of tRNA.
3) Define a terms.
   i) glucogenic amino acid
   ii) ketogenic amino acid
4) Explain the breakdown of odd number carbon chain fatty acid.
5) What is abzymes?

B) Write Notes. (Any Two) 06
1) Transport of acetyl CoA from mitochondrial matrix to cytosol.
2) Distinguish between A from, B form and Z from DNA.
3) Structure and function of cyclic AMP.

Q.3 A) Attempt any two of the following question. 08
1) Describe in detail allosteric enzymes.
2) Write a note on biosynthesis of phospholipid.
3) Explain in detail redox potential.

B) Attempt any one of the following question. 06
1) What is polysaccharide? Explain with two suitable examples.
2) Write a note on glycogen metabolism.

Q.4 A) Attempt any two of the following question. 10
1) Illustrate in detail the inhibitor of enzyme.
2) Discuss the general reaction of amino acid metabolism.
3) Draw the structure of ATP synthase complex and explain its mechanism.

B) Attempt any one of the following question. 04
1) What is co-operativity of enzyme? Explain its model.
2) Discuss the four steps of β oxidation.

Q.5 Attempt any two of the following question. 14
a) Explain the different structural level of proteins.
b) Discuss the reaction of TCA cycle. Add a note on its energetics.
c) Describe the regulation of enzyme activity by non genetic mechanism.

SLR-JT-401

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Zoology
COMPARATIVE ANIMAL PHYSIOLOGY

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labelled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Oxygen carrying blood pigment in certain Molluscan is _____.
   a) hemoglobin b) hemocyanin
   c) chlorocruorin d) haemoerythrin

2) HCL secretions in stomach are stimulated by _____.
   a) Gastrin b) Acetylcholine
   c) Somatostatin d) None of the above

3) Which of the following is largest endocrine gland?
   a) Thyroid b) Parathyroid
   c) Pancreas d) All of the above

4) What is the covering of an individual muscle fibre _____.
   a) sarcoplasm b) perimycin
   c) endomycin d) sarcolemma

5) What is myosin?
   a) muscle fibres b) myofibrils
   c) myocardium d) myofilament

6) frog is hibernate during _____.
   a) winter b) spring
   c) summer d) autumn

7) Total rate of glomerular filtration of the whole body is normally about _____.
   a) 125 ml per minute b) 150 ml per minute
   c) 200 ml per minute d) 250 ml per minute

8) Thalesemia is caused due to defect in _____.
   a) RBC b) WBC
   c) Platelets d) Plasma deficiency

9) Cardiac muscles are mainly _____.
   a) striated muscles b) non striated muscles
   c) striated and voluntary d) striated and involuntary

10) Anaerobic respiration in animals produces _____.
   a) CO2 b) Lactic acid and H2O
   c) Glucose and 02 d) C2H5OH and CO2

11) Ultra filtration is occur in _____.
   a) Glomerulus b) Pyramid
   c) Collecting duct d) PCT

12) Parental care in males is stimulated by _____.
a) Adrenaline b) Oxytocin
c) Prolactin d) Thyroid

13) In Nereis, gaseous exchange takes place through _____.
a) Skin b) Gills
c) Book lungs d) Parapodia

14) which of the following controls involuntary action _____.
a) circulatory system b) autonomic nervous system
c) respiratory system d) excretory system

Q.2 A) Answer the following questions. (Any Four) **08**
1) Describe different types of food and its specificity.
2) Effect of pH on body fluid.
3) Role of rhodopsin in visual cycle.
4) Chromatophore and its types.
5) Hibernation in frog.

B) Write notes. (Any Two) **06**
1) Osmoregulation in fresh water fishes
2) Write a note on contractile elements.
3) Give an account on Bioluminescence.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe communication in bees.
2) Describe respiratory pigments.
3) Describe circadian rhythm.

B) Answer the following questions. (Any One) **06**
1) Describe Thermoregulation inhomeotherms.
2) Describe role of isoenzymes in cardiac physiology.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe feeding mechanism in invertebrates.
2) Describe cardiac cycle.
3) Describe neurohormonal regulation in mammals.

B) Answer the following questions. (Any One) **04**
1) Describe desert adaptation in kangaroo rat.
2) Describe control of reproductive mechanism.

Q.5 Answer the following questions. (Any Two) **14**
a) Describe patterns of nitrogen excretion.
b) Describe homeostasis.
c) Describe Physiology of Sleep.

SLR-JT-402

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Zoology
ECONOMIC ENTOMOLOGY

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) _____ is the pest of cotton.
   a) grasshopper b) honey bee
   c) spotted bollworm d) pod borer

2) Human louse belongs to order _____.
   a) orthoptera b) hemipetra
   c) lepidoptera d) anoplura

3) C6H6CL6 is the formula of _____.
   a) Aldrin b) chloredane
   c) BHC d) DDT

4) DDT affects on ____ system of insect.
   a) reproductive b) digestive
   c) circulatory d) nervous

5) Larval stage is absent in life cycal of _____.
   a) Head louse b) Blall worm
   c) House fly d) Moth

6) Cottan spotted ball worm is _____ pest.
   a) Medical b) Agricultural
   c) Veternary d) Vegetable

7) _____ is a predator.
   a) ant b) aphid
   c) borer d) pathogen

8) Insect pests are destructed by _____.
   a) juvenile b) ecdysone
   c) pheromone d) kerosene

9) Fringed hand wing is found in _____ insect.
   a) aphid b) bug
   c) pink boll worm d) butterfly

10) longest antenna is found in _____ beetle.
   a) dunge beetle b) cerambycidae
   c) tick d) moth

11) Egg with Iid is found in _____.
   a) louse b) may fly
   c) scorpion d) silk moth

12) Royal jelly is a _____ food of honey bee.
a) standard b) poor
c) very bad d) useless

13) Wax is secreted by ____ gland.
a) coxal b) mirror
c) cuticle d) fat body

14) _____ is largest phylum in the world.
a) arthropoda b) mollusca
c) annelide d) coelenterata

Q.2 A) Answer the following question. (Any Four) **08**
1) Cocoon of mulbery silk worm
2) Queen bee
3) Pheromones
4) Fumigants
5) Pediculushumanus

B) Write Notes. (Any Two) **06**
1) Different types of veterinary pests
2) RoIe of worker bee
3) Nymph of lac insect

Q.3 A) Answer the following question. (Any Two) **08**
1) Demerits of insecticides
2) Plasmodial disease
3) Explain modern bee hive.

B) Answer the following question. (Any One) **06**
1) Economic importance of lac.
2) Role of blow flies

Q.4 A) Answer the following question. (Any Two) **10**
1) Describe any one vegetable pest.
2) Describe in details role of gram pod borer.
3) Reeling process of silk

B) Answer the following question. (Any One) **04**
1) Role of plasmodium
2) Explain the role of Cockroach as a house hold pest.

Q.5 Answer the following question. (Any Two) **14**
1) Biological controlling agents
2) Describe integrated pest management.
3) Role of vegetable pest of crops

SLR-JT-403

Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Zoology
ANIMAL BIOTECHNOLOGY

Day & Date: Monday, 04-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Which of the following media is used for the growth of selected cells?
   a) Nutrient media b) Minimal media
   c) Selective media d) Differential media

2) Early embryonic development up to cleavages is controlled by _____.
   a) maternal effect genes
   b) zygotic genes
   c) an interplay between maternal effect genes and zygotic genes
   d) none of the above

3) The trp operon encodes ____ enzymes needed in the biosynthesis of tryptophan.
   a) 3 b) 4
   c) 5 d) 6

4) Fully processed mRNA in the nucleus remain bound by _____.
   a) Lipids b) proteins
   c) a and b d) none of the above

5) _____is a technique widely used in molecular biology research to detect specific proteins in tissue sample.
   a) Northern blotting b) Southern blotting
   c) Western blotting d) All the above

6) DNA sequencing method using the chemical is generally called as _____method.
   a) Sanger-Coulson b) Maxam-Gilbert
   c) Enzymatic d) Dideoxy

7) In eukaryotes, transcription is initiated by _____.
   a) RNA polymerase I b) RNA polymerase II
   c) RNA polymerase III d) RNA polymerase IV

8) Bacterial RNA polymerase has _____sub-units.
   a) Three b) Four
   c) Five d) Six

9) The lac operon encodes thee enzymes required for the metabolism of _____.
   a) glucose b) maltose
   c) fructose d) lactose

10) A technique which enables selective amplification of DNA sequence is known as the _____.
   a) Amplification technique b) Hybridization technique
   c) PCR d) All the above

11) In the autoclave sterilization is conducted at a pressure of _____.
a) 10 lb b) 15 lb
c) 12 lb d) 16 lb

12) _____ is a technique used in molecular biology research to study gene expression by RNA.
a) Northern blotting b) Southern blotting
c) Western blotting d) All the above

13) Aminopterin present in the HAT medium inhibits _____.
a) de novo pathway of nucleotide synthesis
b) salvage pathway of nucleotide synthesis
c) fatty acid synthesis
d) glycolysis and TCA cycle

14) RNA polymerase III transcribes _____.
a) Small non coding RNAs
b) coding RNAs
c) both coding and noncoding RNAs
d) all the above

Q.2 A) Attempt any four of the following question. **08**
1) Totipotency
2) Ribonucleoprotein
3) RNA Splicing
4) Cell lines
5) Heterochromatin

B) Write Notes on. (Any Two) **06**
1) Gene targeting
2) Somatic hybridisation
3) Cot curve

Q.3 A) Attempt any two of the following question. **08**
1) Lac operon
2) Gene manipulation
3) GISH

B) Answer the following (Any One) **06**
1) Explain PCR.
2) Explain southern blotting technique.

Q.4 A) Answer the following (Any Two) **10**
1) Describe Attenuations.
2) Give in detail mechanism of transposition.
3) Explain the regulation of gene expression in eukaryotes.

B) Answer the following (Any One) **04**
1) Ethical issues in human cloning and biotechnology.
2) Application of genetic engineering in amedicine.

Q.5 Answer the following (Any two) **14**
a) Explain in detail sequencing of nucleic acids and proteins.
b) Explain the mechanism of protoplast fusion.
c) Explain technology to produce monoclonal antibodies.

SLR-JT-404

Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Zoology
APPLIED ZOOLOGY

Day & Date: Wednesday, 06-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) _____ is a common prenatal test in which a small sample of the amniotic fluid surrounding the fetus is removed and examined.
   a) Amniocentesis b) HIV
   c) ELISA d) All above

2) _____ is used as bioweapon.
   a) Bacillus anthracis b) E. Coli
   c) Staphylococcus d) Mycobacterium

3) Rearing of earthworms for composting, organic solid waste is called _____.
   a) sericulture b) pisciculture
   c) apiculture d) vermiculture

4) The basic Ig unit is composed of _____.
   a) 2 identical heavy and 2 identical light chains
   b) 2 identical heavy and 2 different light chains
   c) 2 different heavy and 4 identical light chains
   d) Non-covalently bound polypeptide chains

5) Which of the following is not true about antibody structure?
   a) Antibodies have multiple identical antigen binding sites.
   b) Antibodies are built from equal numbers of large (heavy) and small (light) peptide chains.
   c) Antibodies are secreted and function away from the cell. They are not attached to the cell membrane.
   d) The class of the antibody molecule is determined solely by its heavy chain.

6) Men who have _____ lack sperm.
   a) ICSI b) oligospermia
   c) azoospermia d) spermia

7) Which assisted reproductive technology places collected oocytes and sperm in the woman's fallopian tubes?
   a) artificial insemination b) intracytoplasmic sperm injection
   c) in vitro fertilization d) gamete intrafallopian transfer

8) Oocytes can be frozen in liquid nitrogen. At which phase of the cell cycle are these cells at the time of freezing?
   a) meiosis, metaphase I b) meiosis, metaphase II
   c) mitosis, metaphase d) meiosis or mitosis, interphase

9) Which of the following is NOT a cause of terrorism?
   a) Religious
   b) Bioterrorism
   c) Socio-Economic
   d) Politics

10) Which of the following is NOT a socio-economic cause of terrorism?
   a) Not having political rights and freedoms
   b) Growing up middle class
   c) Not having access to food and water
   d) All the above

11) In the majority of couples experiencing infertility, the problem is primarily in
   a) the male
   b) the female
   c) both the male and the female
   d) the answer is unknown in the majority of cases

12) Which assisted reproductive technology places collected oocytes and sperm in the woman's fallopian tubes?
   a) artificial insemination
   b) intracytoplasmic sperm injection
   c) in vitro fertilization
   d) gamete intrafallopian transfer

13) _____ is the first mammalian clone, created from fully differentiated non-reproductive cell of an adult sheep.
   a) Chimeric mouse
   b) Dolly
   c) Knockout mouse
   d) All above

14) The process of blood clotting and then the subsequent dissolution of the clot, following repair of the injured tissue, is termed _____.
   a) Homeostasis
   b) Coagulation
   c) Fibric clot
   d) Fibrosis

Q.2 A) Answer the following questions. (Any Four) **08**

1) IVF
2) Class I and Il molecules
3) Monoclonal antibody
4) DNA vaccines
5) Economic importance of earthworms

B) Write Notes. (Any Two) **06**

1) Note on Zoonotic diseases.
2) Give an account on Blood group.
3) Note on Modern trends in contraception.

Q.3 A) Answer the following questions. (Any Two) **08**

1) Note on Blood cell Routine tests for hepatitis.
2) Give an account on procedure of amniocentesis.
3) Note on avian diseases.

B) Answer the following questions. (Any One) **06**

1) Give an account on vermiwash.
2) Note on Immunoglobulins

Q.4 A) Answer the following questions. (Any Two) **10**

1) Give an account on tests of blood for hepatitis and ELISA.
2) Give an account on vermitechnology.
3) Describe in detail: Earthworms as protein source.

B) Answer the following questions. (Any One) **04**

1) Give an account on Semen analysis.
2) Give an account on Give an account on T lymphocytes.

Q.5 Answer the following questions. (Any two) **14**

a) What is amniocentesis? Add a note on merits and demerits of amniocentesis.

b) Give an account on fertility control.

c) Describe in detail Resistance mechanism against biological warfare.

SLR-JT-405

Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Zoology
ENVIRONMENTAL BIOLOGY AND TOXICOLOGY

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) The sum total of an organism interaction with the biotic and abiotic resources of its environment is called _____.
   a) Habitat b) logistic growth
   c) Biotic potential d) Ecological Niche

2) The amount of chemical energy in consumers food that is converted to their own new biomass during a given time period is called _____.
   a) Biomass b) Standing crop
   c) primary production d) Secondary production

3) Which of these ecosystems has the lowest net primary production per square meter?
   a) A salt marsh b) An open ocean
   c) Coral reef d) Grass land

4) The phosphorus cycle differs from those of carbon and nitrogen in that _____.
   a) It lacks a gaseous phase
   b) It lacks a liquid phase
   c) Living organisms do not need phosphorous.
   d) The phosphorous cycle does not differ importantatly from the carbon and the nitrogen cycles

5) _____ of the three types of ecological pyramids which pyramid gives the best over all picture of the functional nature of communities.
   a) Pyramids of numbers b) pyramids of energy
   c) Pyramids of biomass d) Both a and c

6) The visible light energy by photosynthesis is converted in to _____.
   a) Heat energy b) Mechanical energy
   c) Chemical energy d) Nuclear energy

7) The organisms which obtain their nutrients by feed open dead organism are referred to as _____.
   a) Primary consumer b) Secondary consumer
   c) Tertiary consumer d) Decomposers

8) A population is made of _____.
   a) All individuals of any kind
   b) Group of individuals of different kinds in an area
   c) All groups of organisms in an area at any one time
   d) Individual of the same kind in an area at given time

9) The maximum solar energy is trapped by _____.
   a) Producer b) Primary consumer
   c) Secondary consumer d) All

10) The ultimate source of food in any ecosystem is _____.
   a) Radiant energy b) Chemical energy
   c) Herbivors d) Abiotic factors

11) The food chain of an ecosystem can be represented as a pyramid divided in to four or more _____.
   a) Tropic level b) Chembers
   c) Organisms d) Compartments

12) Herbivore occupy which tropic level in the pyramid _____?
   a) First b) Second
   c) Third d) Fourth

13) Producer organism is _____.
   a) Hydroplankton b) Phyloplanktons
   c) Zooplanktons d) Bacteria and fungi

14) The natural ecosystem depends upon _____.
   a) Plant b) Animals
   c) Man d) Self operating system

Q.2 A) Answer the following questions. (Any Four) **08**
1) Three miles Island
2) Fresh water ecosystem types and classification
3) Energy flow
4) Minamata disease
5) Food Chain

B) Write Notes. (Any Two) **06**
1) Describe kinds aquatic habitats.
2) Green house effect
3) Productivity of aquatic ecosystem.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Types of rain water harvesting systems with suitable example.
2) Causes and effects of pollutants.
3) Classify types if pollutants.

B) Answer the following questions. (Any One) **06**
1) Describe different types of food adultratives and food colours.
2) Describe different types of air pollutants.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Write a note on population ecology.
2) Describe various types rain water harvesting systems one example.
3) What are soil toxicants give two examples showing their effects.

B) Answer the following questions. (Any One) **04**
1) What is biogeochemical cycle? Describe the cycle of phosphorus.
2) What are biotic components of aquatic ecosystem?

Q.5 Answer the following questions. (Any Two) **14**
a) What is conservation of natural sources?
b) Describe working of dairy industry.
c) Radiation pollution effects.

SLR-JT-406

Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Zoology
ZOOKEEPING AND ANIMAL HOUSE MANAGEMENT

Day & Date: Monday, 11-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Imprinting mechanism is found in _____.
   a) Snakes b) Mammals
   c) Tortoises d) Ducks and Geese

2) Ex-situ conservation means _____.
   a) Conservation of a species by protecting its habitat along with all other species living there
   b) Conservation of forest eco system
   c) Conservation of aspecies outside its natural habitat
   d) Conservation of plants

3) In which one among the following categories of protected areas in India are local people not allowed to collect and use the biomass?
   a) Biosphere Reserves
   b) National Parks
   c) Wetlands declared under Ramsar Convention
   d) Wildlife Sanctuaries

4) Visceral leishmaniasis (VL), also known as _____.
   a) Kala azar b) Sleeping sickness
   c) Bird flu d) Mad cow disease

5) Cryopreservation involves storage of gamets in liquid nitrogen at ____.
   a) -296^0C b) 159^0C
   c) -196^0C d) 100^0C

6) The elephants are found in the hot-wet forests of _____.
   a) Punjab and Haryana b) Assam and Karnataka
   c) West Bengal and Jharkhand d) Rajasthan and Gujarat

7) Which two animals are threaten by poachers and traders.
   a) Elephants ivory b) Rhino horns and Elephant Ivory
   c) Ibex Horns d) Crocodile and Cheetah Skin

8) The study of snakes is called ____.
   a) Ichthyology b) Serpentology
   c) Herpatology d) Entomology

9) Indian courser are the main bird species. Peafowl occurs in some areas of _____.
   a) Cholistan b) Thal
   c) Thar d) None of These

10) World Wildlife Fund is headquartered in _____.
a) The Hague, Netherlands b) Geneva, Switzerland
c) Avenue du Mont-Blanc d) London, United Kingdom

11) A natural area designated to protect the ecological integrity of one or more ecosystems for present and future generations is known as _____.
a) Wildlife Sanctuaries b) Bioreserves
c) Botanical Gardens d) National Parks

12) Consider the following areas.
i) Bandipur
ii) Bhitarkanika
iii) Manas
iv) Sunderbans
Which of the above are Tiger Reserves?
a) 1 and 2 only b) 1,3 and 4 only
c) 2, 3 and 4 only d) 1, 2, 3 and 4

13) What are female elephants called?
a) Mares b) Sows
c) Cows d) Dams

14) A crocodile can be differentiated from alligator by _____.
a) Prominent protruding fourth tooth in upper jaw
b) Broad snout
c) Short Jaw
d) Smaller size

Q.2 A) Answer the following questions. (Any Four) **08**
1) Definitive host
2) Taenia solium
3) Managing birds
4) Vaterinary care of a zoo
5) Bahaviour in crocodile

B) Write Notes. (Any Two) **06**
1) First aid to the zoo animals and visitors
2) Note on Antihelminthic drugs
3) Note on Bird feeds

Q.3 A) Answer the following questions. (Any Two) **08**
1) Give an account on Visitors rule in Zoo.
2) Discuss role of illumination in laboratory rodents, with special reference to albino rats.
3) Give an account on common zoo Mammals. What special precautions are to be taken in keeping Monkeys in Zoo.

B) Answer the following questions.(Any One) **06**
1) Give an account on Public awareness programmes in a zoo.
2) Note on Housing in small birds.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give an account on Nutritional requirements for Reptiles in Zoo.
2) Give an account on Zoo regulations as per Central zoo authority.
3) Describe in detail common mammalian diseases likely to spread from zoo mammals.

B) Answer the following questions. (Any One) **04**

1) Give an account on camel management.
2) Give an account on Diurnal birds.

Q.5 Answer the following questions. (Any Two) **14**

a) What is taxidermy? Give its importance.

b) What are common Reptilian diseases in Zoo? How to prevent infection of Reptilian infections?

c) Describe quarantine procedures to be undertaken to accept wild mammals from canine families in Zoo.