

Ist Semester Zoology

CC - I (PROTISTA to PSEODOCOELOMATES)

SECTION - A

1. Which is the infective form of malaria parasite?
2. Who is the primary host of malaria parasite?
3. What is the composition of spicule in *Sycon*?
4. Amoeba was discovered by
5. In *Sycon* radial canals are internally lined with –
6. Nematocytes are the specialized cells found in the members of which phylum?
7. Polymorphic cnidarians are the members of which class?
8. Coral reef forming coelenterates belong to which class?
9. Which is the free swimming stage in the life history of *Fasciola*?
10. The infective stage of *Ascaris* is
11. What is the common name of nemathelminthes?
12. The disease caused by *Fasciola* is
13. Which disease is caused by *Taenia solium*?
14. Elephantiasis is caused by
15. How many types of coral reefs are found?
16. What is corallite?
17. What is apopyle?
18. Fertilisation in sycon is external or internal?
19. What is the function of flame cell?
20. What are skeletal elements of sponges?

SECTION- B

1. Describe the life history of *plasmodium* in man.
2. Give an account of the life history and pathogenicity of the parasite causing amoebic dysentery in man
3. What is canal system? Describe the canal system in Scypha.
4. Give a detailed account on polymorphism in Cnidaria.
5. Write an essay on coral and coral reefs.
6. Describe the life history of *Taenia solium*
7. What is digenetic life cycle? Explain it with reference to the life history of *Fasciola hepatica*.
8. Classify nematode up to classes giving characters and examples.
9. Give an account of life history of *Ascaris*.
10. Give an account of life history of filaria worm and discuss its pathogenic effects.

CC - II (PRINCIPLE OF ECOLOGY)

SECTION - A

1. Herbivores are consumers.
2. Every food chain start with a
3. Atmospheric nitrogen is converted to usable nitrates by
4. Inverted pyramid is generally found in
5. The pyramid of is always upright.
6. The formula of exponential growth is
7. Which type of association is found between *Rhizobium* and root of leguminous plant?
8. Phosphorus has types of cycle.
9. What is meant by species richness and evenness?
10. What is an interaction called when an orchid grows on a mango plant?
11. Define the term ecology?
12. What is carrying capacity?
13. Differentiate between *in situ* and *ex situ* approaches of conservation of biodiversity.
14. What do you understand by mode?
15. Define arithmetic mean and median.
16. What are the four measures of dispersion?
17. What is t-test?
18. What is Null hypothesis?
19. Distinguish between mean deviation and standard deviation.

SECTION – B

1. Describe different components and functions of forest ecosystem.
2. What is meant by a nutrient cycle? Depict diagrammatically nitrogen cycle occurring in nature ?
3. Discuss pond as a fresh water ecosystem.
4. Explain various attributes of population.
5. Give an account of endangered species and their conservation in India.
6. Describe the process of succession on a bare rock.
7. Describe environmental factors and their importance to animals.
8. The following figures represent the height of the group of the students in inches.
64,66,65,64,63,65,60,64,64,63,61,63,62,61
Find out the arithmetic mean, median, mode.
9. 40 students of a class obtained the following marks (out of 50) in Biostatistics paper.
Prepare a frequency distribution table. Hence find out the histogram and frequency polygon.
38,21,33,25,23,35,42,47,43,35,32,30,30,34,37,23,20,22,28,29,37,32,22,24,46,38,36,32,30,
25,37,49,44,40,34,33,20,21,46,38.
10. A sample of 10 measurements of the diameter of WBC gave a mean of 10 micron and a standard deviation was 3 micron. Find the 99% confidence limit for the actual diameter.

IInd Semester Zoology

CC – III (COELOMATES)

SECTION - A

1. Mollusca divided into Classes.
2. Gastropods body istype division.
3. is a locomotory organ in echinoderm.
4. Sea stars belong to Class.
5. Madreporites are present on which surface in sea star.
6. Which class of echinoderm lack arms?
7. Most primitive arthropods belong to which class?
8. Arthropod exoskeleton is made up of
9. What is the difference between torsion and detorsion?
10. The in arthropod is lined with permeable cuticle.
11. What is the basic unit in the eye of insects?
12. What type of circulatory system is found in annelids?
13. Metameric segmentation is the characteristic of which phylum?
14. Evolutionary significance of Onychophora.
15. The maxillulae help in
16. The mandibles are used in
17. Nephridia's are in function.
18. The antennules are in function.
19. Octopus belongs to the class
20. What is the common name of devil fish?

SECTION - B

1. Give an account of nephridia and coelomoducts in Annelids.
2. Describe excretion in annelida.
3. Give an outline classification on phylum Athropoda up to classes.
4. Describe the different types of metamorphosis met within insects and mention the factors that govern the process of metamorphosis.
5. Give an account of torsion and detorsion in Gastropoda.
6. Describe the evolutionary significance of trochophore larva.
7. Describe the water vascular system in asteroid.
8. Give an account of the characters of phylum Echinodermata and classify it up to classes giving examples.
9. Describe larval form in Echinodermata.
10. Give an account of vision in Arthropoda.

CC – IV (CELL BIOLOGY)
SECTION – A

1. The term cell was given by
2. Plasma membrane is made up of
3. Which theory explains that plasma membrane is selectively permeable?
4. Ribosomes are composed of and
5. Cristae in mitochondria serves as sites for
6. The longest stage in the cell cycle is
7. The division of cytoplasm is known as
8. When the activity of one gene is suppressed by the activity of a non- allelic gene, it is known as
9. Chromatin is composed of
10. The point at which polytene chromosomes appear to be attached together is known as
11. In which stage are lampbrush chromosome observed?
12. What is interphase?
13. What is diad?
14. Mention the significance of chiasmata.
15. What is synapse?
16. At which stage of mitosis, chromosomes arrange themselves around the equator?
17. What is meiosis?
18. Which phase follows the S phase in cell cycle?
19. What is karyokinesis?
20. What is quiescent phase (G₀)?

SECTION – B

1. Distinguish between mitosis and meiosis.
2. Describe the stages of mitosis.
3. What is cell division? Discuss the use and biological significance of each type of cell division.
4. Discuss the structure and function of Endoplasmic reticulum.
5. Give an account of ultra structure of mitochondria.
6. Give the structure and function of nucleus.
7. Give an account of cell cycle and its regulation.
8. Describe active and passive transport across membrane.
9. Describe the salient features of the Fluid Mosaic Model of plasma membrane.
10. Comment on the role of the Golgi complex in the process of cellsecretion.

IIIrd Semester Zoology

CC V(DIVERSITY AND DISTRIBUTION OF CHORDATES)

SECTION- A

1. A common trait between tadpole and fish is _____
2. The cartilaginous endoskeleton organism is _____
3. True fishes have fins and gills. This is not a true fish
4. This fish shows dorsal fin modified into suckers known as _____
5. Give an example of living fossil _____
6. Anadromous fish example is _____
7. The distinguishing factor between rays and sharks are _____
8. Type of association between shark and suckerfish is _____
9. Placoid scales are found in _____
10. This is a characteristic feature of fishes _____
11. Dicondylic skull along with ten pairs of cranial nerves is found in _____
12. Even after attaining sexual maturity, larval characters are retained. It is known as?
13. Frogs dwell in water or in the vicinity of water as _____
14. In amphibians, Organ of Jacobson is for _____
15. The differentiating factor of the venous system of frog and rabbit is in the presence of this _____
16. Neck is not found in a frog. This absence helps the frog to ?
17. Reptilian ancestry of birds can be indicated by _____
18. Uricotelism is found in _____
19. Aquatic reptiles are _____
20. Animals that get most affected by the change in the environmental temperature are
21. Which of the following is a living fossil?
22. A common characteristic of kangaroo, parrot and platypus is _____
23. Which of the following animals are uricotelic?
24. The body part, which is absent in birds _____

25. The long hollow bones and connected air sacs are the characteristic features of
26. _____ bones form the wishbone of birds?
27. The soundbox of birds is also known as _____
28. Ostrich, penguin and kiwi are _____
29. _____ contains pneumatic bones?
30. Birds and mammals do not share this property is ?
31. What feature(s) do bats and whales share?
32. Which of the following groups contains mammals that lay eggs?
33. Which of the following animals have incisors that continue to grow its entire life?

SECTION- B

1. Explain the Dipleura concept and Echinoderm theory of origin of chordate
2. Describe General characteristics and outline classification of Chordates
3. Write an essay on evolutionary significance on Dipnoi
4. What is parental care in Amhibia? Add note on origin of tetrapoda
5. Describe affinities of Sphenodon and add brief note on General classification of reptiles.
6. Describe Flight Adaptation of Aves.
7. Notes on
 - Migration of birds
 - Archaeopteryx
 - Biting mechanism in snake
8. What is Zoogeographical realms and add a note on continental drift theory?

IIIrd SEMESTER CC- VI

PHYSIOLOGY: CONTROLLING AND COORDINATING SYSTEM

SECTION- A

1. In connective tissue sheaths, this is the correct sequence stretching from the outermost to the innermost layer is _____
2. Define the difference between a nerve and a neuron
3. The only connective tissue without fibroblasts is _____
4. In these tissue cells, Lacunae are enclosed in _____
5. Mast cells are linked to _____
6. The brain macrophages are _____
7. which is not a function of neuroglia?
8. This cell is not a type of neuroglia found in CNS _____
9. Categorization of epithelial tissue is based on _____
10. The falx cerebri developing from the durometer is present between _____
11. Which of the following is the correct order of meninges from the inner side?
12. Space which separates arachnoid mater and durometer is _____
13. Neurons are aided by following glial cells except for _____
14. Which of the following structure at a synapse has the neurotransmitter?
15. The action potential while the propagation of a nerve impulse is due to the movement of _____
16. In the left hemisphere, Broca's area is related to _____
17. As a stimulant of the CNS, cocaine interferes with the reuptake of _____ at synapses
18. Layer of cells immediately surrounding the ovum but In connective tissue sheaths, this is the correct sequence stretching from the outermost to the innermost layer is _____
19. Define the difference between a nerve and a neuron
20. The only connective tissue without fibroblasts is _____
21. In these tissue cells, Lacunae are enclosed in _____
22. Mast cells are linked to _____
23. The brain macrophages are _____

24. Which is not a function of neuroglia?
25. This cell is not a type of neuroglia found in CNS _____
26. Categorization of epithelial tissue is based on _____
27. The falxcerebri developing from the durometer is present between _____
28. Which of the following is the correct order of meninges from the inner side?
29. Space which separates arachnoid mater and durometer is _____
30. Neurons are aided by following glial cells except for _____
31. Which of the following structure at a synapse has the neurotransmitter?
32. The action potential while the propagation of a nerve impulse is due to the movement of _____
33. In the left hemisphere, Broca's area is related to _____
34. As a stimulant of the CNS, cocaine interferes with the reuptake of _____ at synapses
35. Layer of cells immediately surrounding the ovum b
36. membrane investing the ovum just outside the membranagranulosa is _____
37. In the female rabbit, the expanded proximal part of the oviduct is known as _____
38. If after ovulation, pregnancy does not take place, then the corpus luteum _____
39. Graafian follicle are characteristically found in the _____
40. In female mammals, Bartholin's glands open into the _____
41. After ovulation, the Graafian follicle becomes an endocrine organ called?
42. The stroma of the ovary consists of blood vessels, nerves, muscle fibres and a type of protein called _____
43. The nutritive medium for the ejaculated sperms is given by _____
44. Insulin secreted from _____
45. Action of parathormone in the human body _____
46. Effects of hypothyroidism include all but this Glucagon _____
47. Pituitary hormone triggering the male testes to generate sperm and in females, triggering follicular development on a monthly basis is _____
48. This hormone is responsible for "fight-or-flight" response _____
49. This hormone is not secreted by Hypothalamus _____
50. Corpus luteum is the source of secretion of _____
51. Outside the zonapellucida is called as _____

52. Corpus luteum is the source of secretion of _____
53. The membrane investing the ovum just outside the membrana granulosa is _____
54. In the female rabbit, the expanded proximal part of the oviduct is known as _____
55. If after ovulation, pregnancy does not take place, then the corpus luteum _____
56. Graafian follicle are characteristically found in the _____
57. In female mammals, Bartholin's glands open into the _____
58. After ovulation, the Graafian follicle becomes an endocrine organ called?
59. The stroma of the ovary consists of blood vessels, nerves, muscle fibres and a type of protein called _____
60. The nutritive medium for the ejaculated sperms is given by _____
61. Insulin secreted from _____
62. Action of parathormone in the human body _____
63. Effects of hypothyroidism include all but this Glucagon _____
64. Pituitary hormone triggering the male testes to generate sperm and in females, triggering follicular development on a monthly basis is _____
65. This hormone is responsible for "fight-or-flight" response _____
66. This hormone is not secreted by Hypothalamus _____

SECTION- B

1. Describe the structure, classification, location and function of epithelial tissue.
2. Describe the types of Bones and cartilages. Add note on Ossification
3. Write any two:
 - Muscular tissue
 - Connective tissue
 - Bone growth
4. Write down briefly about Skeletal Muscle and add note on molecular and chemical basis of muscle contraction.
5. What is reflex action? Add note on reflex arc
6. Write any two:
 - Neuromuscular junction
 - Types of synapse
 - Neuron
7. Discuss about the physiology of vision
8. Describe the histology of testis. Add note on pituitary gonadal axis
9. Write any two
 - Ovarian cycle
 - Puberty
 - Placental hormone
10. Describe the Hormone classification add note on mechanism of action
11. Write any two:
 - Pituitary
 - Pancreas
 - thyroid

IIIrd Semester Zoology CC- VII

FUNDAMENTALS OF BIOCHEMISTRY AND MICROBIOLOGY

SECTION- A

1. Strand of RNA is made of _____
2. Which is not included in fat-soluble vitamins?
3. How many amino acids are synthesized by our bodies?
4. The condensed structural formula of Caproic acid is _____
5. In what form is glucose stored in animal muscles and liver cells?
6. When hydrogen is added to an alkene, the process is called?
7. Raffinose is an example of _____
8. Two fatty acids that are components of fats are _____
9. Which factors is not responsible for the denaturation of proteins?
10. Which is responsible for specifying the 3D shape of a protein?
11. _____ is not a classified form of conjugated proteins.
12. What is a bond between amino acids called?
13. Which of the following statements is true about proteins?
14. The nature of an enzyme is _____
15. What is the count of genes that determine the synthesis of one enzyme?
16. Enzyme-driven metabolic pathways can be made more efficient by _____
17. The enzyme COX-1 is vital for human health in this way known as _____

SECTION- B

1. Describe the structure and biological importance of Mono, Di and Polysaccharides
2. What is Lipid? Add note on Steroids
3. Write any two:
 - Glycolipid
 - Tryacylglycerols
 - Unsaturated fatty acid
4. What is Amino acid? Add notes on Alpha amino acids
5. Physiological importance of essential and non-essential amino acids. What are Antigen determinants?
6. Describe the nomenclature and classification of enzymes. Add note on cofactors
7. Derive the Michaelis- Menten equations and explain Lineweaver Burk plot
8. Explain Bacterial Structure and reproduction
9. Write any two
 - Prions
 - Virioids
 - Virus
10. Describe HIV structure and Mode of infection

IVth SEMESTER CC X

Biochemistry of Metabolic Process

SECTION -A

1. Name the pathway for glucose synthesis by non-carbohydrate precursors?
2. Name the enzyme which is responsible for the conversion of pyruvate to phosphoenolpyruvate(PEP)?
3. Gluconeogenesis is also carried out in muscle and brain.
4. Which of the following are major sites for glycogen storage?
5. Which of the following is the precursor of glycogen?
6. The priming function in glycogen synthesis is carried out by _____
7. Name the enzyme which is used for branching of glycogen?
8. Name the hormone which is secreted in an emergency or in stress condition.
9. Erythrocytes Undergo Glycolysis for Production of ATP. The Deficiency of Which Enzyme Leads to Hemolytic Anemia-
10. In the Liver, the Accumulation of which among the Following Metabolites Attenuates the Inhibitory of ATP on Phosphofructokinase?
11. The Most Active Site of Protein Synthesis is the-
12. How many Total Molecules of ATP are Synthesized from ADP via Glycolysis of a Single Molecule of Glucose?
13. The Rate of Absorption of Sugars by the Small Intestine is Highest for -
14. _____ is not a Polymer of Glucose?
15. An Essential for the Conversion of Glucose to Glycogen in Liver is _____
16. Which of the Following Glucose Transporter (GLUT) are Important in Insulin-Dependent Glucose Uptake?
17. Which of the Following Metabolites Negatively Regulates Pyruvate Kinase?
18. Which of the Following Glycolytic Enzymes is Inhibited by Accumulation of Long Chain Fatty Acid in the Liver?
19. Gluconeogenesis Occurs in the Liver and Which Organ -

20. Adrenaline acts on which Enzyme in Glycogenolysis?
21. Which among the Following Hormones decreases Blood Glucose and Increases Uptake of Glucose in Various Tissues like Skeletal Muscle, Adipose Tissues?
22. The First Product of Glycogenolysis is -
23. Gluconeogenesis is the Production of Glucose from Non-Carbohydrate Molecules. Which of the Following is not Substrate for Gluconeogenesis?
24. Enzymes Concerned with the Citric Acid Cycle are Found in the -
25. What high Energy Phosphate Compound is formed in the Citric Acid Cycle through Substrate level Phosphorylation?
26. The Conversion of Glucose-6-Phosphate to Fructose-6-Phosphate is an Example of which of the Following Reactions?
27. The Net Gain of ATP during Conversion of Glucose to Pyruvate is -
28. During the Conversion of Glucose to Pyruvate, Two NADH Molecules are Generated. Which of the Following Steps Generates NADH?
29. _____ is a Monosaccharide?
30. The End Product of Glycolysis under Anaerobic Conditions is -
31. Gluconeogenesis is the Production of Glucose from Non-Carbohydrate Molecules. Which of the Following is not Substrate for Gluconeogenesis?

SECTION -B

1. Explain shuttle system and membrane transporters.
2. Describe Glycogenolysis in detail.
3. Describe Citric Acid Cycle.
4. Explain Glycogenesis in detail.
5. Describe the process of beta Oxidation.
6. Describe the fate of Glucogenic and ketogenic aids.
7. Describe the process of catabolism of Amino Acid.
8. Describe the process of Gluconeogenesis.
9. Explain the electron transport chain. Mention the sites of ATP synthesis.
10. Explain various enzymes, coenzymes and electron carriers involved in biological oxidation.

IVth SEMESTER CC IX

PHYSIOLOGY- LIFE SUSTAINING SYSTEMS

SECTION A

1. Duct leading from parotid gland and opening into vestibule is_____
2. Wharton's duct is associated with?
3. Release of pancreatic juice is stimulated by?
4. Secretin stimulates production of_____
5. Emulsification of fat is carried out by_____
6. In man the zymogen or chief cells are mainly found in_____
7. Pancreatic juice and hormones of pancreas are produced by
8. Where is protein digestion accomplished?
9. Pancreas produces _____
10. Brunner's glands occur in
11. Kupffer's cells occur in_____
12. Secretion of gastric juice is stopped by_____
13. Vitamin K is required for_____
14. Most of the fat digestion occurs in_____
15. Prolonged deficiency of nicotinic acid causes_____
16. What is the function of enterogastrone?
17. Calcium deficiency in the body occurs in the absence of_____
18. A polysaccharide which is synthesized and stored in liver cells is-----
19. In which part of the respiratory system, gaseous exchange takes place in ____
20. _____ is located between two pleural sacs and is the central compartment of the thoracic cavity?
21. The tiny air sacs present in human lungs is called_____.
22. The exchange of gases between the external environment and the lungs_____.
23. The maximum volume of air contained in the lung by a full forced inhalation is called ____
24. Exchange of gases between the bloodstream and tissue cells.

25. In Aves, the exchange of gases occurs within the _____
26. The windpipe is also called the _____
27. An increase in the concentration of plasma potassium causes increase in:
28. Amino acids are almost completely reabsorbed from the glomerular filtrate via active transport in the _____
29. Glomerular filtration rate would be increased by _____
30. The greatest amount of hydrogen ion secreted by the proximal tubule is associated with _____
31. In controlling the synthesis and secretion of aldosterone, which of the following factors is least important?
32. Renal correction of acute hyperkalemia will result in _____
33. Ammonia is an effective important urinary buffer due to _____
reson.
34. The amount of potassium excreted by the kidney will decrease if _____
35. In the presence of ADH, The distal nephron is least permeable to _____
36. The effect of antidiuretic hormone (ADH) on the kidney is to _____
37. The glomerular filtration rate will increase if _____
38. The blood corpuscles are of _____ kinds.
39. Blood is stained with _____ stain.
40. Process of formation of blood corpuscles is called _____
41. Graveyard of RBC is _____
42. Which leucocytes release heparin and histamine in blood?
43. Which blood cells secrete antibody?
44. Absence of which clotting factor leads to Hemophilia-A?
45. What prevents the clotting of blood inside blood vessels?
46. Blood is five times more viscous than distilled water. (True/ false)
47. What is the reason why the SA node acts as heart's pacemaker
48. The reason for the dicrotic notch on the aortic pressure curve is ?
49. Rise in the carotid sinus pressure leads to _____
50. Rise in the carotid sinus pressure leads to _____

51. The ventricular muscles accepts impulses directly from_____
52. This is the similarity between pulmonary and systemic circulation_____
53. On the heart, the impact of adrenaline is all of these except that _____

SECTION B

1. Describe the Structure and associated gland's function in detail?
2. Write down the Carbohydrate absorption process in G I Tract?
3. Write down in detail about the mechanism of respiration
4. Explain the Oxygen and carbon dioxide transport mechanism in blood.
5. Write down Urine Formation in detail .
6. What are the components of blood and add notes on the function of hemoglobin? Explain the Structure of heart and add notes on cardiac cycle.
7. How blood pressure is regulated? add note on Frank Starling law of Heart.

IVth SEMESTER CC VIII

Comparative Anatomy of Vertebrates

SECTION- A

1. The epidermis is of _____ origin.
2. The outer layer of a papilla is _____ tissue and the inside is _____
3. There is no mesodermal participation in the development of hair
4. Name the one epidermal gland found in reptiles.
5. What kind of gland is associated with hair follicles of mammals?
6. Placoid scale found in _____ fish.
7. Short note on Rod cell.
8. Short note on cone cell .
9. _____ no of cranial nerves are present.
10. _____ types of uterus found in Horse.
11. _____ types of uterus found in Monkey.
12. Deciduous type of placenta found in _____
13. Short note on aortic arch.
14. Parotid glands present in _____
15. Bolus is _____
16. Funtion of Pharynx?
17. Note on Mechanoreceptor.
18. SA node present in _____
19. AV node helps _____
20. How many valve present in Human
21. Synonyms of SA node _____

SECTION B

1. Describe the structure and function of integument.
2. What are accessory respiratory organs?
3. Discuss comparative account on alimentary canal and associated glands?
4. Write an Essay on evolution of Heart and aortic arch.
5. Describe different types of Mammalian uteri.
6. Discuss comparative structure of Brain of chordates.
7. Discuss about the Receptor and add note on Chemoreceptor.

Vth Semester CC-XI
Developmental Biology

Section A

1. Epigenesis .
2. Mosaic and regulative development.
3. Pattern formation.
4. Cytoplasmic determinants.
5. Asymmetric cell division.
6. Types of egg.
7. Egg membranes.
8. Monospermy and polyspermy
9. Fate of germ layers.
10. Epimorphosis.
11. In vitro fertilization.
12. Stem cell culture.
13. Amniocentesis.

Section -B

1. Describe different types of Cell-Cell interaction?
2. Explain the process of differentiation and growth?
3. Give an account on differential gene expression?
4. Give an account on gametogenesis (Spermatogenesis or Oogenesis)?
5. Explain the process of fertilization in details?
6. Describe the planes and patterns of cleavage?
7. Describe the early development of frogs up to gastrulation?
8. Describe the early development of chick up to gastrulation?
9. Explain fate maps in details?
10. Describe the process of Embryonic induction?
11. Describe the extra-embryonic membranes in birds?
12. Describe the process of Implantation of embryo in humans?
13. Give an account on structure, types and functions of placenta?
14. Give an account on metamorphosis of amphibians?
15. Describe the different modes of regeneration?
16. Describe the concepts & models of ageing?
17. Describe the teratogenic agents and their effects on embryonic development?

Core Course-XII Molecular Biology

Section –A

1. DNA topology
2. Salient features of DNA double helix.
3. C0t curves.
4. Structure of t RNA.
5. Licensing factors.
6. Semi - conservative replication.
7. Semi-discontinuous replication.
8. RNA priming
9. Replication of telomeres.
10. Transcription unit
11. Genetic code
12. Wobble hypothesis.
13. Difference between prokaryotic and eukaryotic translation.
14. Split genes.
15. Alternative splicing.
16. Exon shuffling .
17. RNA editing.
18. Silencer elements
19. Gene slicing.
20. Genetic imprinting.
21. RNA interference

Section – B

1. Describe the Watson and Crick model of DNA?
2. Describe denaturation and renaturation of DNA?
3. Describe the process of DNA replication in prokaryotes?
4. Describe the process of DNA replication in eukaryotes?
5. Describe the mechanism of transcription in prokaryotes?
6. Describe the mechanism of transcription in eukaryotes?
7. Describe the transcription unit and process of regulation of transcription?
8. Describe the process of proteins synthesis in prokaryotes?
9. Explain the mechanism of splicing?
10. Describe the process of transcriptional regulation in prokaryotes?
11. Describe the process of transcriptional regulation in eukaryotes?
12. Describe the structure and functioning of lacoperon?
13. Describe the structure and functioning of trpoperon?

DISCIPLINARY SPECIFIC ELECTIVE – I
ANIMAL BEHAVIOUR

SECTION –A

1. Origin and history of ethology.
2. Proximate and ultimate behaviour.
3. Objectives of behaviour
4. Behaviour as a basis of evolution.
5. Behaviour as a discipline of science.
6. Instinct.
7. Stimulus filtering.
8. Code breakers.
9. Types of reflexes.
10. Primary and secondary orientation.
11. Habituation.
12. Imprinting.
13. Round and waggle dance in bees.
14. Reciprocal altruism.
15. Asymmetry of sex.
16. Sexual dimorphism.
17. Mate choice .
18. Infanticide.
19. Circadian rhythm
20. Advantages of biological clock.
21. Jet lag and entrainment.

Section –B

1. Give an account on profiles of Karl von ,Konard Lorenz , Niko Tinbergen and Ivan Pavlov?
2. Describe the innate behaviour in detail?
3. Explain the sign stimuli mechanism in animals?
4. What is a reflex path? Describe different characteristics of reflexes?
5. Describe the process of orthokinesis and klinokinesis?
6. Describe different types of taxis with examples?
7. What is associative learning? Describe classical and operant conditioning with examples.
8. Describe the insects society and social organization in honey bees?
9. Explain the foraging behaviour in honey bees?
10. Explain Hamilton's rule and inclusive fitness with suitable examples?
11. Describe intra-sexual and inter-sexual selection in animals?
12. Describe the parental and courtship behaviour in three spine stickleback fish?
13. What is biological clock? Describe the different types of rhythms in organisms?

DISCIPLINARY SPECIFIC ELECTIVE – II

ECONOMIC ZOOLOGY

SECTION –A

1. Brood and storage chambers.
2. Setting up an apiary.
3. Rearing equipments for apiculture.
4. Handling of bees.
5. American and European foulbrood
6. Honey extraction techniques.
7. Physiochemical analysis of honey.
8. Rearing of *Bombyxmori*.
9. Chawki rearing and black boxing.
10. Rearing appliances for sericulture.
11. Harvesting of cocoons.
12. Silk reeling techniques.
13. Brood stock management in fishes.
14. Management of rearing , nursery and stocking ponds.
15. Pearl culture.
16. Culture of air breathing fishes.
17. Indigenous and exotic breeds of poultry and dairy.
18. Commercial importance of poultry and dairy farming.

SECTION- B

1. Describe the different varieties of honeybee and bee pasturage?
2. Describe the different diseases of honeybees and their management?
3. Describe different types of silk and silk worms in India?
4. Describe different types of silkworm diseases and their management?
5. Describe different types of pests and parasites of silkworm and their management?
6. Explain induced breeding technique in fishes?
7. Describe different types of fish diseases?
8. Describe the processes of prawn farming?
9. Describe the different types of diseases of poultry and their management?
10. Describe the different types of diseases of dairy and their management?

VIth Semester CC XIII

IMMUNOLOGY

SECTION –A

1. Early theories of immunology.
2. Haematopoiesis.
3. Differentiate between Cell-mediated and humoral immunity.
4. Differentiate between passive and active immunity.
5. Immune dysfunctions.
6. Differentiate between antigenicity and immunogenicity.
7. Adjuvants
8. Haptens.
9. Factors influencing immunogenicity.
10. B and T – cell epitopes.
11. Monoclonal antibodies.
12. Endogenous pathways of complement activation.
13. Exogenous pathway of complement activation.
14. Recombinant vaccines.
15. DNA vaccines.
16. Gell and Coomb's classification.

SECTION –B

1. Describe the different types of cells of the immune system?
2. Describe the different types of organs of the immune system?
3. Describe the process of inflammation in detail?
4. Give an account on the cells and molecules involved in innate immunity?
5. Describe the structure and function of different classes of immunoglobulins?
6. Describe the mechanism of antigen and antibody interactions?
7. Describe the various types of immunoassays with examples?
8. Describe the components and pathways of complement activation?
9. Describe the properties and functions of cytokines?
10. Briefly describe about various types of hypersensitivities.

VIth Semester CC- XIV

EVOLUTIONARY BIOLOGY

SECTION –A

1. Chemogeny and biogeny
2. Major events in history of life.
3. Inheritance of acquired characters.
4. Neo- Darwinism.
5. Role of extinction in evolution.
6. Dating of fossils.
7. Molecular evidences of evolution.
8. Molecular clock concept.
9. Organic variations.
10. Natural selection.
11. Sexual and artificial selection.
12. Genetic drift.
13. Mutation pressure and gene flow.
14. Polymorphic and polytypic species
15. Modes of speciation.
16. Macro - evolutionary principles.

SECTION- B

1. Describe the theory of Lamarckism with examples?
2. Describe the theory of Darwinism with examples?
3. Describe the causes of mass extinction in detail?
4. What is fossil? Describe its different types?
5. Give an account of phylogeny of horse?
6. Give an account of phylogeny of human?
7. Describe the different types of isolating mechanisms?
8. Describe the different types of natural selection with examples?
9. Explain the Hardy Weinberg's equilibrium with suitable examples ?
10. Explain the biological concept of species?

DISCIPLINARY SPECIFIC ELECTIVE – III
MICROBIOLOGY

SECTION- A

1. History of microbiology.
2. Characters of microbial world
3. Identification of microbes.
4. Economic importance of bacteria.
5. Differentiate between Gram- positive and Gram – negative bacteria.
6. Economic importance of fungi.
7. Economic importance of protista.
8. Tuberculosis
9. Hepatitis.
10. Amoebiasis.
11. Antibiotics and their chemotherapeutic agents.
12. Application of microbes in environment.
13. Differentiate between prokaryotes and eukaryotes.

SECTION- B

1. Give an account on classification of microbes.
2. Describe the general morphology of bacteria?
3. Give an account on classification of bacteria with examples?
4. Describe the general morphology of protista?
5. Describe the general morphology of fungi?
6. Give an account on classification of protista with examples?
7. Give an account on classification of fungi with examples?
8. Describe the structure and genome of virus?
9. Describe the replication cycle of virus?
10. Describe the applications of microbes in the field of food?
11. Describe the applications of microbes in the field of agriculture?
12. Describe the applications of microbes in the field of industry?

GENERIC ELECTIVE- I/III

ANIMAL DIVERSITY

SECTION – A

1. General characters of protozoa
2. General characters of porifera.
3. General characters of cnidarians.
4. General characters of platyhelminthes
5. General characters of nemathelminthes
6. Parasitic adaptations.
7. General characters of annelida
8. General characters of mollusca
9. General characters of ofarthropoda
10. General characters of echinodermata
11. General characters of ofprotochordates
12. General characters of fishes.
13. General characters of amphibians
14. Adaptations for terrestrial life.
15. General characters of reptiles.
16. General characters of aves.
17. Amniotes.
18. General characters of mammals.
19. Origin of reptiles.
20. Terrestrial adaptation in reptiles
21. Origin of birds
22. Early evolution in mammals.
23. Primates

SECTION – B

1. Describe the lifecycle of Plasmodium?
2. Describe the canal system in sponges?
3. Give an account of polymorphism in cnidarians?
4. Describe the life cycle of *Taeniasolium*?
5. Give an account of metamerism in annelida?
6. Describe the social life in insects?
7. Describe the process of torsion in gastropoda?
8. Describe the process of pearl formation?
9. Describe the different larval forms in Echinodermata?
10. Describe the osmoregulation in fishes?
11. Give an account of migration in fishes?
12. Give an account on parental care in amphibia?
13. Give an account of flight adaptation in birds?
14. Give an account of dentition in mammals?

GENERIC ELECTIVE- II/IV
FOOD, NUTRITION AND HEALTH

SECTION – A

1. Food components
2. Food nutrients
3. Balanced diet
4. Fat soluble vitamins
5. Water soluble vitamins
6. Biological functions of iron / calcium/phosphorous/ iodine/ zinc.
7. Definition and concept of health.
8. Vitamin A deficiency disorders
9. Iron deficiency disorders
10. Iodine deficiency disorder
11. Smoking
12. Alcoholism
13. Drug dependence
14. Causes and treatment of cold/cough/ fever.
15. Cholera
16. Typhoid
17. Dysentery
18. Hepatitis
19. Poliomyelitis
20. Amoebiasis
21. Giardiasis
22. Taeniasis
23. Ascariasis

SECTION – B

1. Give an account of nutrient needs and dietary pattern for various groups ?
2. Give an account on definition, classification, dietary source and role of carbohydrates?
3. Give an account on definition, classification, dietary source and role of lipids?
4. Give an account on definition, classification, dietary source and role of proteins?
5. Give an account on protein energy malnutrition?
6. Describe the causes, symptoms, treatment and prevention of hypertension?
7. Describe the causes, symptoms, treatment and prevention of diabetes mellitus?
8. Describe the causes, symptoms, treatment and prevention of obesity?
9. Describe the causes, symptoms, treatment and prevention of AIDS?
10. What are the sources and methods of purification of potable water?
11. Give an account on bacterial infections?
12. Give an account on viral infections?
13. Give an account on protozoan infections?
14. Give an account on parasitic infections?
15. Give an account of causes and preventive measures of food spoilage?
16. Give an account on food and water borne infections?