11-th STD - BIOLOGY AND ZOOLOGY SPECIAL GUIDE

KRISHNAGIRI DISTRICT

2024-2025

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1. The Living World

I. One Word:-

1. **Ecosystem** is a community of biotic and abiotie factors and their inter relationship.
2. The science of classification is called **Taxonomy.**
3. Father of Modern Taxonomy **Carolous Linnaeus.**
4. Three domain classification was proposed by **Carl Woese.**

II. Short Answers: [2 & 3 Marks]

5. Define the term "Cladogram".

Arranging the organisms on the basis of their similar characters which differ from the ancestral characters.

6. What is Classification?

Grouping the organisms into in convenient categories, based on easily observable characters.

7. Differentiate the Probiotic Bacteria with Pathogenic Bacteria:

Probiotic Bacteria	Pathogenic Bacteria
• These are beneficial bacterial	• These are harmful bacteria
• Ex.: Cyan bacteria	• Typhoid bacteria

8. Differentiate: Binomial & Trinomial Nomenclature.

Binomial Nomenclature	Trinomial Nomenclature
Each name has to components, a generic name and species name	Trinomen means, three names, generic name, species name and sub species name
Ex.: Pavo cristatus (peacock)	Ex.: Corrus Splendens – Splendens (craw)

9. What causes Elephants and Wild animals to enter human habitat?

- Human activities like, deforestation, urbanization has destroyed the habitats of wild animals and Elephants.
- This can force animals to search for food and water in human areas.

III. Brief Questions & Answers:

9. Write the Basic rules of Nomenclature.

- The scientific names should be italicized in printed form, and if handwritten it should be underlined separately
- The generic name's (Genus), first alphabet should be in uppercase.
- The specific name (Species) should be in lower case.
- The scientific names of any two organisms are not similar.

10. Explain about the classical Taxonomical tools. (Any 3)

- **Taxonomical Key:-**
  It based on the comparative analysis of similarities and non similarities of organisms.

- **Museum:-**
  They have collections of preserved plants and animals for study & ready reference.

- **Zoological parks:-**
  These are the protected environment under human care for wild animals, it enables us to study their food habitat & habitual.

11. Concept of Species.

- Species is the basic unit of classification – [Carolous Linnaeus – Book systema naturae]
- Species can be defined as a group of organisms that have similar morphology and physiology and can interbreed to produce fertile off springs.
- Species - as a group of morphologically similar organisms – arising from common ancestors. [Johnray – 1693].

2. Kingdom Animalia

I. One Mark Questions:-

1. Cells that perform similar functions are aggregated to form **Tissues.**

2. **Excretory Organs** - **Present in Phylum**

   a) Flame Cells - Platyhelminthes
   b) Rennet Glands - Aschelminthes
   c) Nephridium - Mollusca
   d) Malpighian tubules - Arthropoda

3. **Bio luminescence** is the ability a living organisms to emit right.

II. Two & Three Marks Questions:-

4. **Compare & Contrast – the open circulatory system with closed circulatory system.**

Open Circulatory System	Closed Circulatory System
In this system, the blood remains filled in tissue spaces, due to the absence of blood vessels.	In this system, the blood is circulated through blood vessels.
Ex.: Arthropods, Moll uses	Ex.: Annelids and Vertebrates

5. **Diploblastic animals & Triploblastic animals.**

Diploblastic Animals	Triploblastic Animals
Animals in which the cells are arranged in two embryonic layer the external ectoderm and internal endoderm.	Animals in which, the developing Embryo has three germinal layers, the outer ectoderm, inner Endoderm and middle Mesoderm.
Ex.: Corals, Jellyfish	Ex.: flatworm to chordates

6. Differentiate: Schizocoelomate and Enterocoelomate.

Schizocoelomate	Enterocoelomate
In these animals, body cavity is formed by splitting of Mesoderm.	In these animals, the body cavity is formed from the mesodermal pouches of Archenteron.
Ex.: Annelids, Arthropod	Ex.: Echinodermata, Chordata

III. Five Marks Questions:-

7. Three fundament distinct features of all chordates:-

- Presence of elongated, rod-like Notochord.
- A dorsal, hollow, tubular – Nerve cord is present.
- Presence of perforated, pharyngeal gill-stets.

8. List out the function of Air-bladder in fishes.

- **Buoyancy:** To maintain their depth in water with the help of the Airbladder.
- **Gaseous Exchange:** Airbladder helps to Respiration.

9. Characteristic features of Body-fishes:

- Skin is covered by scales - [Ganoid, Cycloid (or) Ctenoid]
- Respiration is by four pairs of filamentous gills, which is covered by an operculum.
- Airbladder is present.
- They have ventrally placed two-chambered heart.

3. Tissue Level of Organisation

I. One Mark Questions:-

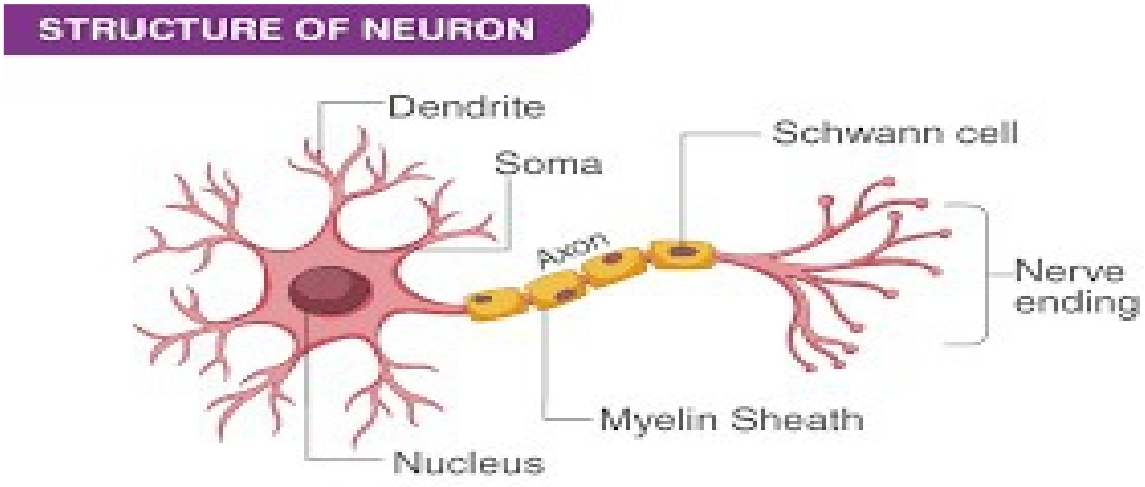
1. The tissues are called as **Living Fabrics** of the body.
2. The study of tissue is called **histology.**
3. Connective tissue develops from the **mesoderm.**
4. **Brown fat** tissue produces heat by non-shivering thermo genesis in neonates.

II. Short Questions:- [2 & 3 Marks]

5. State the functions of Epithelial Tissues.

- Protection
- Absorption
- Filtration
- Excretion
- Secretion and
- Sensory reception

6. Draw and label the parts of Nervous Tissue.



7. Differentiate the 'Brown fat' with the 'White fat'.

Brown fat [BAT]	White fat [WAT]
It Consists of many mitochondria.	It consists of few mitochondria.
It is used to heat the blood stream to warm the body.	It stores Nutrients and surrounds the kidneys, eyeball and heart.

III. Details [5 Marks]:-

7. Write the types of simple epithelial tissues and their functions.

Simple Epithelial Tissues	Located at	Functions
Squamous Epithelium	Kidney - glomeruli, Air sacs of lungs	Diffusion, filtration
Cuboidal Epithelium	Kidney – tubules, surface of the ovary	Secretion, Absorption
Columnar Epithelium	Lines the digestive tract from stomach to rectum	Absorption, Secretion
Ciliated Epithelium	Small bronchioles, fallopian tubes and uterus	Filtration, Secretion
Pseudo-stratified Epithelium	Trachea, upper-respiratory tract	Protection, Secretion and Absorption

LESSON – 4. ORGAN AND ORGAN SYSTEMS IN ANIMALS

One Mark Questions:-

1. **The Clitellum is a distinct part in the body of earthworm Lampito mauritii, it is found in segments 14-17.**
2. **Sexually, earthworms are Hermaphroditic but not self-fertilization.**
3. **The type of vision in Cockroach is Mosaic.**
4. **How many abdominal segments are present in male and female cockroaches? 10, 10.**
5. **Kidney of frog is mesonephros.**
6. **Excretory organs of cockroach malpighian tubules.**
7. **The type of circulatory system in cockroach open type.**
8. **In Earthworm, Lateral hearts seen in 6 to 13th segments.**

Two Marks Questions:-

1. What are earthworm casts?

The undigested particles along with earth are passed out through the anus, is called as worm casting or vermicasts.

2. Why do you called cockroach a pest?

They carry with them harmful germs of various bacterial diseases like Cholera, Diarrhoea, TB and Typhoid and hence are known as 'vectors'.

3. Differentiate Male and Female Frog.

S. No.	Male Frog	Female Frog
1.	Pair of vocal sacs present	Vocal sacs absent
2.	First digit of forelimb presence of nuptial pad	Nuptial pad absent
3.	Body is small	Body is large

4. Differentiate Prostomium and Peristomium.

S. No.	Prostomium	Peristomium
1.	A small flap over hanging in the mouth	It is first segment
2.	It is called upper lip	Mouth is found in the centre

5. Types of excretory nephridia in earthworm.

1. Pharyngeal nephridia
2. Micro nephridia
3. Mega nephridia

6. Why earthworm called as farmer's friend?

1. They live in burrows made by burrowing and swallowing the soil.
2. They can be traced by their faecal depositis known as worm castings on the soil surface. So earthworms considered as Farmer's friend.

7. Types of Respiration in Frog.

1. Cutaneous respiration
2. Buccal respiration
3. Pulmonary respiration

8. What are the compositions of blood in Frog?

1. Plasma – 60%
2. Blood Cells (RBC, WBC, Platelets) – 40%

9. What is Vermiwash?

1. It is a liquid collected after the passage of water through a column of vermibed.

2. It is useful as a foliar spray to enhance plant growth and yield.

10. Differentiate Male and Female Cockroach.

S. No.	Male Cockroach	Female Cockroach
1.	Abdomen is long and narrow	Short and broad
2.	In the abdomen, nine segments are visible	All seven segments are visible
3.	Broad pouch absent	Present
4.	7^{th} tergum covers 8^{th} tergum	7^{th} tergum covers 8^{th} and 9^{th} terga
5.	Anal styles present	Anal styles absent

11. Economic importance of Frog.

1. Frogs helps to maintain our Eco-system.
2. They feed on insects and helps in reducing insect pest population.
3. It is used for controlling blood pressure and anti aging properties.
4. It consumed as delicious food as high nutritive value.

12. Describe the external structure of Frog.

1. The body is streamlined, divisible into head, trunk.
2. Body is covered by slimy skin.
3. The head is almost triangular, has an apex which forms the snout.
4. A pair of tympanic membrane forms the eardrum.
5. A pair of Fore limbs, shorts and stumpy.
6. A pair of Hind limbs, long 5 digits with webbed toes.
7. Animal is at rest, the hind lambs are kept folded 'Z' form.

LESSON – 5. DIGESTION & ABSORPTION

One Mark Questions:-

1. Which of the following is not the function of Liver?

(a) Production of insulin (b) Detoxification
(c) Storage of Glycogen (d) Production of bile

2. Largest gland of the human body is

(a) Pancreas (b) Pituitary (c) Thyroid **(d) Liver**

3. In Human, absorption of simple sugar, alcohol, medicines takes place here.
(a) Mouth (b) Stomach **(c)Small intestine** (d) Large intestine

Two Marks Questions:-

1. Write the Dental formula of Man.

$$\frac{2123}{2123} \times 2$$

2. Name the salivary glands of Human buccal cavity:

* Pair of Parotids Gland
* Pair of Submaxillar Gland
* Pair of Sublingual Gland

3. Define BMI.

Body Mass Index, It is calculated by as body weight in Kg, divided by the square of body height in Meters.

$$BMI = \frac{\text{Body weight}}{[\text{Body height}]^2} \ [Kg/m^2]$$

4. Difference between Kwashiorkor and Maras mus.

Kwashiorkor	Maras mus
Dryskin, Potbelly, Oedema in legs and face, stunted growth, changes in Hair colour, in children	Diarrheea, Lean and weak body [emaciated] with reduced fat and muscle tissue with thin, folded skin in children

Three Marks Questions:-

1. Why are villi present in the intestine and not in the stomach?

In stomach the digestive process not complete and Absorption and assimilation process cannot take place in the stomach region.

2. Obesity – Cause.

* It is caused due to the storage of excess of body fat in adipose tissue.
* It's may be genetic (or) due to excess intake of food.
* Due to Endocrine of metabolic disorder.

Five Marks Questions:-

1. Write the functions of Liver, apart from Secretion.

(i) Destroy aging and defective blood cells.
(ii) Stores 'glucose' in the form of Glycogen.
(iii) Stores fat soluble vitamins and iron.
(iv) Detoxifies toxic substances.
(v) Involves in the synthesis of Non-essential amino acids and urea.

2. Write any 3 Digestive disorders with their symptoms.

Name of the Digestive disorders	Symptoms
Indigestion	Food is not properly digested & feeling of fullness of stomach
Vomiting	It's a reverse peristalsis, due to intake of contaminated food
Appendicitis	It is the inflammation of the vermiform appendixes; delayed appendix may capture and leads to peritonitis.

LESSON – 6. RESPIRATION

One Mark Questions:-

1. High concentration of carbon anhydrase is present in the _____
(a) Plasma (b) WBC **(c) RBC** (d) Plasma Protein

2. The Hormone erythropoietin is secreted by _____
(a) Lungs (b) Liver (c) Pituitary **(d) Kidney**

3. Inflammatory condition of the lungs is called _____
(a) Emphysema (b) Pneumonia (c) Bronchitis (d) Pulmonary edema

4. Methaemoglobin does not bind with _____
(a) CO_2 **(b) O_2** (c) CO (d) SO_2

Two Marks Questions:-

1. Spirometer:

An Instrument, which is used to measure the volume of air involved in breathing movement for clinical assessment of a person's pulmonary function.

2. Pneumonia – Symptoms:

* Sputum production
* Nasal congestion
* Sore throut & shorten of breath

3. Name of enzyme those catalyses the bicarbonate formation in RBC's.

Carbonic – anhydrase

4. Which structure seals the larynx, when we swallow?

Epiglottis – It is a thin, elastic flap which prevents the entry of food into the larynx.

Three Marks Questions:-

1. Methaemoglobin:

(i) If the iron component of the haem is in the ferric state, than the normal ferrous state, it is called Methaemoglobin.

(ii) Methaemoglobin does not bind with O_2

(iii) Normally RBC contains less than 1% methaemoglobin.

2. Allergy:

It is caused by Allergens, which causes sneezing and coughing. Allergens provoke an inflammatory response. A common manifestation of allergy is 'Asthma'.

3. Tuberculosis:-

* It is caused by Mycobacterium tuberculae.
* This infection mainly occurs in the lungs and bones.
* Collection of fluid between the lungs and the chest wall is the main complication of this disease.

Five Marks Questions:-

1. Write the steps involved in Respiration:

* The exchange of air between the atmosphere and the Lungs.
* The exchange of O_2 and CO_2 by the blood.
* Transport of O_2 and CO_2 by the blood.
* Exchange of gases between the blood and the cells.
* Uptake of O_2 by the cells for various activation and release the CO_2.

2. Effect of smoking:

∗ 80% of lungs cancer is due to cigarette smoking. Smoking is inhaling the smoke from burning tobacco, which includes thousands of chemicals like Nicotine, Tar, CO, Ammonia, sulphur di oxide and a small amount of Assentu.

∗ Nicotine is a stimulant, which makes the heart beat faster and narrowing the blood vessels. Results in High BP and CHD.

∗ Tar damages the gassers exchange system.

∗ CO – reduces Oxygen supply and damages cardio vascular system.

LESSON – 7. BODY FLUIDS & CIRCULATION

One Mark Questions:-

1. The waves in an ECG occur due to the _____
   (a) Depolarization (b) Repolarization
   (c) Contraction of the Heart (d) relaxation of Heart

2. The Human O blood group is called "Universal Donor" because they
   (a) lack nucleus **(b) lack antigen** (c) lack antibody

3. Taehycardia means _____
   (a) Single circulation (b) Pulmonary circulation
   (c) Double circulation **(d) Increased heart rate**

Two Marks Questions:-

1. What are the Plasma protein?

Albumin, Globulin, Prothrembin & Fibrinogen.

2. Differentiate between Systole & Diastole.

Systole	Diastole
Contraction of the Heart is called Systole	Relaxation of the Heart in called Diastole

3. Cardiac Cycle:

The events that occur at the beginning of heart beat and lasts until beginning of the next beat is called cardiac cycle.

4. Name of the 3 layers of Heart wall:

* Epicardium
* Myocardium
* Endocardium

5. Aneurysm:

The weakened regions of the wall of the artery or veins bulges to form a balloon like sac, and it may burst causing massive Hemorrhage.

Three Marks Questions:-

1. Name the Hormones which are involved in the regulation of Heart beat:

* Nor-epinephrine, Epinephrine.
* Vasopresin and Angiotensin – II.

2. Give a note on "T-wave":

It represents ventricular – repolarisation. The duration of the T-wave is longer QRS-Complex. The duration of the T-wave is 0.2 – 0.4 sec.

3. Distribution of Antigens and antibodies in different blood groups:

Blood Group	Agglutinogens (antigens) on the RBC	Agglutinin (antibodies) in the Plasma
A	A	Anti B
B	B	Anti A
AB	A and B	No antibodies
O	No antigen	Anti A and Anti B

Five Marks Questions:-

1. Describe the Mechanism by which the human heart beat is initiated and controlled:

The Human heart is Myogenic type.

- The cardiac cells (or) pacemaker cells with fastest rhythm, since they determine the contraction rate of the entire heart.
- These cells are located in Right-Sinus Atrial node [SA-node], and also called pacemaker.
- On the left side of the right-atrium is a node called Auriculo-Ventricular node [AV-node].
- Two special cardiac muscle fibers originate from the AV-node are called the "Bundle of His", which runs down into the inter-ventricular septum.
- The Fibers spread into the ventricles are called the Purkinje-Fiber.
- Pacemaker cells produce the excitation through depolarization of their cell membrane.

LESSON – 8. EXCRETION

One Mark Questions:-

1. Urea is formed in the _____

(a) Liver (b) Mitochondria (c) Endoplasmic Reticulum (d) Spleen

2. For Haemolysis, blood drawn from the _____ of a patient.

(a) Artery (b) Vein (c) Capillaries (d) Venacava

3. Kidney produces about _____ of glomerular filtrate in 24 hrs

(a) 150 ltr (b) 180 ltr (c) 202 ltr (d) 220 ltr

4. Green glands are the excretory organs of

(a) Nematodes (b) Amphioxus (c) Insects (d) Crustaceans

Two Marks Questions:-

1. Glomerular filtrate:

The fluid that leaves the glomerular capillaries and enters the Bowman's capsule is called the glomerular filtrate.

2. Micturition:

The process of release of urine from the bladder is called Micturition (or) Urination.

3. What are the excretory organs other than Kidneys?

Lungs, Liver and Skin are also removing the waste from the body.

4. Name the 3 main Hormones are involved in the regulation of Renal-Function.

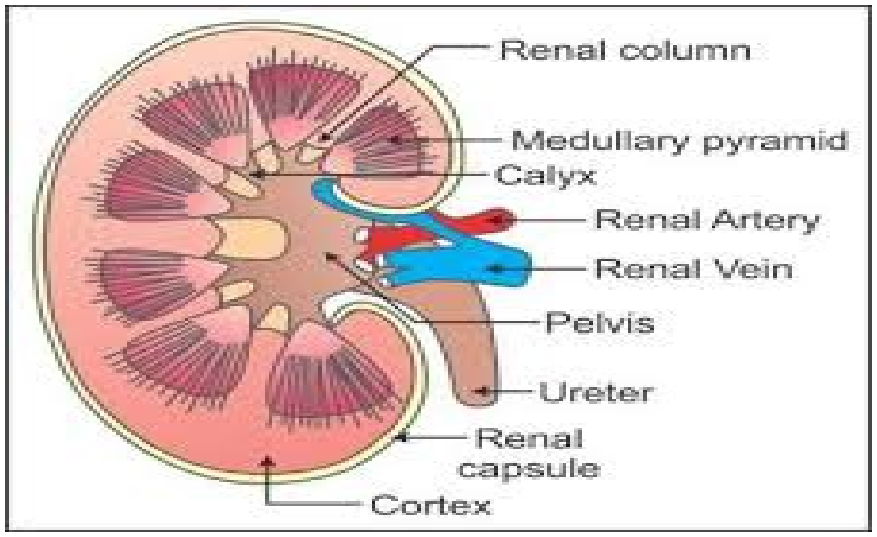
(i) ADH – Anti diuretic Hormone

(ii) Renan – Angiotensin

(iii) Aldosterone

Three Marks Questions:-

1. Draw the L.S. of Kidney and mark the parts:



2. Mention any 3 excretory structures present in the Animal kingdom.

1) Vertebrates - Kidneys
2) Platyhelminthes - Flame cells [cilia]
3) Insects - Malphigian tubules
(Most of them)

3. JMN: Juxta Medullary Nephrons

These Nephrons have very long loop of Henle that run deep into the Medulla of Kidneys.

4. Ornithine cycle:

The Nitrogen waste formed as a result of breakdown of amino acids is converted into urea in the liver by the ornithine cycle [urea-cycle].

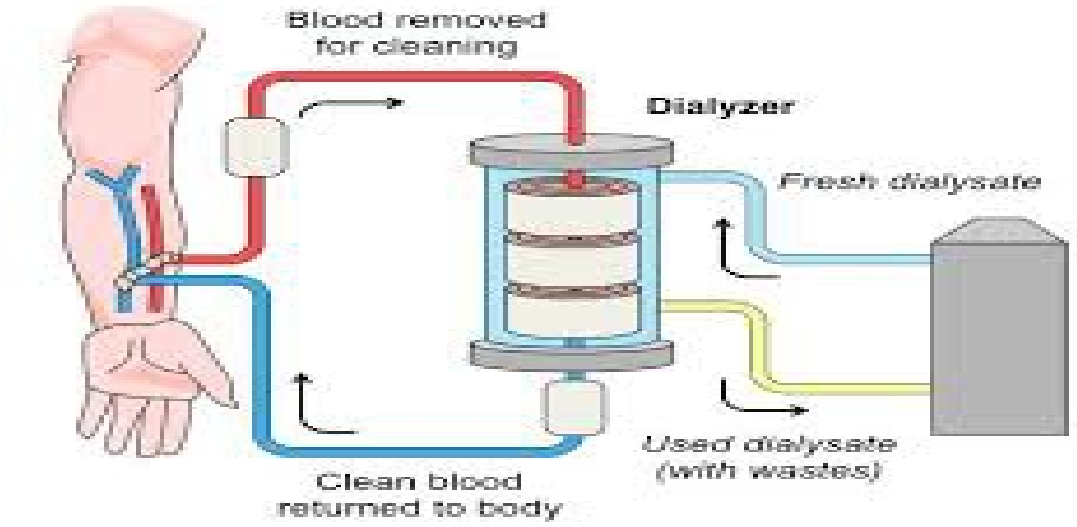
5. Mention the characteristic feature of the Diabetes insipidus:

* Excessive thirst
* Excretion of large quantities of dilute urine – resulting in dehydration
* Fall in Blood pressure

Five Marks Questions:-

1. Explain the Haemodialysis:

In kidney failure patient's toxic urea can be removed from the blood by a process called Haemodialysis. A dialyzing machine or an artificial kidney is connected to the patient's body.A dialyzing machine consists of a long cellulose tube surrounded by the dialyzing fluid in a water bath. The patient's blood is drawn from a convenient artery and pumped into the dialyzing unit after adding an anticoagulant like heparin same as filtration process in glomerulus glucose ,urea, salts to enter the water bath through tiny pores. The cleared blood is then pumped back to the body through a vein .



LESSON – 9. LOCOMOTION AND MOVEMENT

One Mark Questions and Answers:-

1. Muscles are derived from – **Mesoderm**
2. Muscles are formed by – **Myocytes**
3. Muscles attached to the bones are called – **Skeletal muscle**
4. Skeletal muscles are attached to the bones by – **tendon**
5. The bundle of muscle fibers is called – **Fascicle**
6. The pigment present in the muscle fiber to store oxygen is – **Myoglobin**
7. The functional unit of a muscle fiber is – **Sarcomere**
8. The protein present in the thick filament is – **Myosin**
9. The protein present is the thin filament is – **Actin**
10. The region between two successive Z-discs is called a – **Sarcomere**
11. Each skeletal muscle is covered by – **epimysium**

12. Knee joint is a example of – **hinge joint**
13. Name of the joint present between the atlas and axis is – **Pivot joint**
14. ATP is enzyme needed for muscle contraction is located in – **Myosin**
15. Synovial fluid is found in – **Freely movable joints**
16. Inflammation of joints due to accumulation of uric acid crystals is called as – **Gout**
17. Acetabulum is located in – **hip bone**
18. Appendicular skeleton is – **girdles and their limbs**
19. The type of movement exhibits by the macrophages are – **Amoeboid**
20. The pointed portion of the elbow is – **Olecranon process**
21. Ciliary movement exhibits in the organs are – **Respiratory passage and genital tracts**
22. The tye of movement exhibits by the sperm cell are – **Flagellar movement**
23. Sliding filament theory proposed by – **Huxley and Rolf Niedergerke**
24. Example for Isometric contraction – **Pushing against wall**
25. Efficiency of sports person muscles are measured by the test called – **biopsy**
26. Total bones of human skeletal system are – **206**
27. Total bones of vertebral column are – **33**
28. Calcium intake deficiency in females leads to – **Osteomalacia**

Two and Three Marks Questions and Answers:-

1. What are the muscles covers?

Connective tissue covers hole muscle – epimysium
Connective tissue covers each fasciele – perimysium
Muscle fiber is surrounded by – endomysium

2. Contractile proteins present in the skeletal muscle:

(i) Contractile proteins are – action and myosin
(ii) Regulatory proteins are – tropomyosin and troponin

3. Types of skeletal muscle contraction:

(i) Isotonic contraction – the length of the muscle

- Changes but the tension remains constant
- Force produced is unchanged

Example: Lifting dumbbells and weight lifting.

(ii) Isometric contraction – the length of the muscle unchanged but the tension of the muscle change

- The forced produced is changed

Example: Pushing against a wall, holding a heavy bag.

4. Types of skeletal systems:

(i) Hydro skeleton – Earth worm
(ii) Exoskeleton – Cockroach
(iii) Endoskeleton – Human bone

5. Name the bones of skull:

(i) Paired parietal and temporal
(ii) Individual bones – Frontal, sphenoid, occipital and ethmoid

6. What are the middle ear bones?

(i) Malleus (ii) Incus (iii) Stapes

7. How tetany caused?

Rapid muscle spasms occur in the muscles due to deficiency of parathyroid hormone resulting in reduced calcium levels in the body.

8. How is Rigor mortis happened?

- Several hours after death all the muscles of the body attain a state of contracture called R.M.
- This is due to complete depletion of ATP in muscle fibers.

9. Define physiotherapy:

- Physiotherapy is the therapeutic exercise to make the limbs work normally.
- This is carried out by physiotherapists.

10. False ribs – Define:

The 8^{th}, 9^{th} and 10^{th} pairs of ribs do not articulate directly with the sternum but joined with the seventh rib. These are called False ribs.

11. Floating ribs:

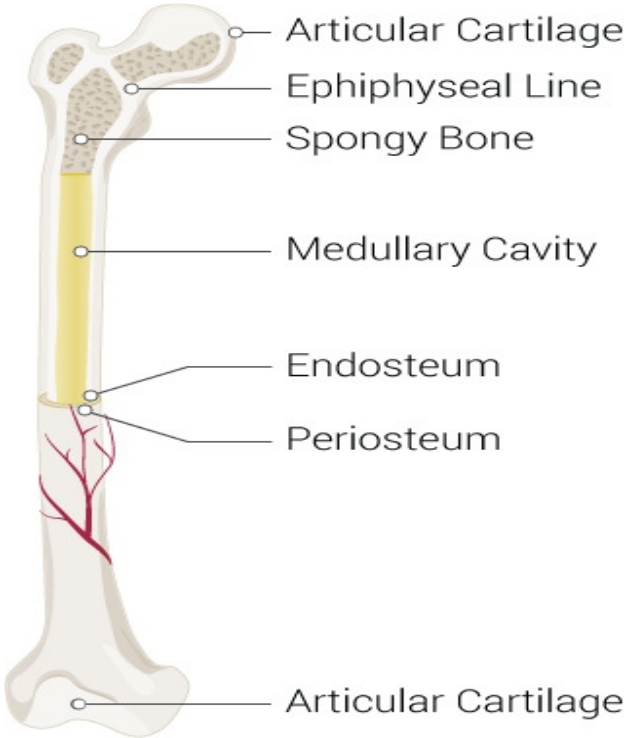
The last 11^{th} and 12^{th} pairs of ribs are not connected ventrally. Therefore they are called as floating ribs.

Five Marks Questions and Answers:-

1. Functions of skeletal system:

- Support – It forms a rigid flame work and support the weight.
- Shape – It provides and maintains the shape of the body.
- Protection – It protects the soft internal organs of the body.
- Acts as reservoir – Stores minerals such as calcium and phosphate.
- Strength – It can withstand heavy weight.
- As a haemopoietic tissue – Red and White blood cells are produced in the bone marrow.

2. Structure of typical long bone:

- Long bone has diaphysis, epiphyses and membranes.
- Tubular diaphysis forms the long axis of the bone.
- Epiphyses are the bone ends contains interior spongy bone with Red marrow.
- Meeting point of Diaphysis and epiphyses is called metaphysic.
- The entire bone is covered by a double layered membrane called periosteum.
- Internal bone surface has endosteum
- 

3. List the disorders of the muscular system:

Myasthenia gravis:

- It is autoimmune disorder affecting the action of acetylcholine at neuromuscular junction.
- It leads to fatigue, weakening and paralysis of skeletal muscles.
- When disease progress make difficult in chewing, swallowing, talking and breathing.

Tetany:

- Rapid muscle spasms occur in the muscles due to deficiency of parathyroid hormone.
- Resulting in reduced calcium level in body.

Muscle fatigue:

- Inability of a muscle to contract after repeated muscle contraction.
- This is due to lack of ATP and accumulation of lactic acid in muscles.

Atrophy:

- Decline of muscular activity condition called atrophy.
- Results in reduction in the size of muscle, and become weak.
- Bedridden patient's loss the muscle activity.

Muscle pulls:

- Muscle pull is actually muscle tear.
- Traumatic pull of the fibers produces tear.
- This can occurs due to sudden stretching of muscle beyond the point of elasticity.

Muscular dystrophy:

- It is a group of disease.
- It associated with the progressive degeneration of skeletal muscle fibers leading to death from lung or heart failure.

4. Disorders of skeletal system:

Major disorders of skeletal system are two. They are (i) Arthritis (ii) Osteoporosis

(i) Arthritis is inflammatory or degenerative disease that damages the joints.
Types: (a) Osteoarthritis, (b) Rheumatoid arthritis, (c) Gout

- **Osteoarthritis** – Due to aging, bone ends of the knees and joints wear away.
- **Rheumatoid arthritis** – The synovial membranes become inflamed and accumulation of fluid in the joints.
  – It leads to extremely painful.
- **Gout** – Inflammation of joints due to accumulation of uric acid crystals.
  – It gets deposited in synovial joints.

(ii) Osteoporosis:

- It occurs due to deficiency of vitamin D and hormonal imbalance.
- Bone becomes soft and fragile.
- It causes rickets in children and osteomalacia in adult female.

5. Benefits of regular exercise:

1. The muscles used in exercise grow larger and stronger
2. The resting heart rate goes down and protect heart from attack.
3. Prevents obesity.
4. Prevents depression, stress, and anxiety.
5. Promotes confidence, esteem.
6. More enzymes Synthesized in muscle fiber.
7. Joints become more flexible.
8. Improves memory power.

6. Types of Bone fracture:

- **Transverse** – Fracture that is at right angle to the bone's long axis.
- **Oblique non displaced** – A fracture that is diagonal to the bone's long axis and fractured bone is not displaced.

- **Oblique displaced** – A fracture that is diagonal to the bone's long axis and fractured bone is displaced.

- **Spiral** – Bone breaks due to excessive twisting forces.
- **Green stick** – Bone breaks incompletely, It is common in children.
- **Comminuted** – Bone breaks in the three or more pieces. It is common in aged people.

7. Mechanism and healing of a bone fracture:

There are four major stages in repairing a simple fracture.

(i) Formation of haematoma.
(ii) Formation of fibrocartilaginous Callus.
(iii) Formation of Bony Callus.
(iv) Remodeling of Bone.

(i) Formation of haematoma.

- When a bone breaks the blood vessels in the bone and surrounding tissues damage result in blood clot. This blood clot called as haematoma.
- The tissues at the site become swollen and painful.

(ii) Formation of fibrocartilaginous Callus.

- Within a few days of bone fracture formation of soft granulation tissue called Callus.
- The Fibroblasts and osteoblast begin to form new bone.
- Fibroblast cells produce Fibers.
- Chondroblast cells produce cartilage.
- Osteoblast cells produce spongy bone.

(iii) Remodeling of Bone.

- Remodeling of Bone takes place several months.
- After that the bony callus is remodeled.

LESSON – 10. NEURAL CONTROL AND COORDINATION

1. Which structure in the ear converts pressure waves to action potentials? – **Oval window**
2. Which part of the human brain is concerned with regulation of body temperature? – **Hypothalamus**
3. The respiratory centre is present in the – **Medulla oblongata**
4. Which ion is abundent in cell cytoplasm – **K^+**
5. Total volume of cerebro spinal fluid in Adult – **150 ml**
6. The volume of cerebro spinal fluid formed per day – **500 ml**
7. The nervous elements involving in carrying out the reflex action is called – **Reflex arc**
8. Cerebro spinal fluid formed in – **Choroid plexus**
9. The rounded body present in mid brain – **Corpora quadrigemina**

10. Which hormone regulates sleeps and wake cycle – **Melatonin**
11. Melatonin hormone secreted by – **Pineal body**
12. The speed of nerve stimulation is – **300 m/sec**
13. Which is the longest nerve in our body – **Lumbar nerve**
14. The conditional reflex was first demonstrated by – **Pavlov**
15. Seat of intelligence – **Cerebrum**
16. Emotional brain – **Limbic System**

Two and Three Mark Questions and Answers:-

1. What are the functions of nervous system?

- Sensory function – Receives sensory input
- Motor function – Transmit motor commands brain to organ
- Autonomic function – Reflex actions

2. Define Neuron.

The structural and functional units of the neural system are neurons that transmit nerve impulses.

3. What are the three cranial meninges?

- The outer thick layer – Duramater
- The median thin layer – Arachnoid mater
- The inner most layer – Piamater

4. Distinguish between Sulci and Gyri.

- **Sulei –** the surface of the cerebrum shows shallow grooves between the gyri are called Sulci.

- Gyri – the surface of the cerebrum shows many folds are called gyri.

5. Functions of cerebral hemisphere lobes:

Fronal – Behaviour, Intelligence, memory, movement
Parietal – Language, Reading, Sensation
Temporal – Speech, hearing, memory
Occipital – Visual processing

6. Define – Reflex action.

Some times when a very quick response is needed the Spinal cord can effect motor initiation as the brain and brings about an effect. This rapid action by spinal cord is called reflex action.

Example: Withdrawal of hand when touching hot pan

7. Distinguish between aqueous humor and vitreous humor.

- **Aqueous humor** – the fluid filled in anterior chamber of eye lies between Cornea and Lens.

- **Vitreous humor** – the fluid filled in posterior chamber of eye lies between Lens and Retina

8. Why is blind spot called so?

- The optic nerves and retinal blood vessels enter the eye slightly below the posterior pole
- This region absence of Rods and Cones.

So this region is called blind Spot.

9. Cornea transplant in human is never rejected why?

Cornea does not have blood vessels. So never rejected.

10. What is Glaucoma?

Increasing Intra – Ocular pressure of aqueous humor is called glaucoma.

11. Define- accommodation:

The ability of the eye to focus objects at varying distance is called accommodation.

12. Which is responsible for sharp vision?

The yellow flat spot at the centre of the posterior region of the retina is called macula lutea is responsible for sharp vision.

13. What are the Defects of ear?

(i) Conductive deafness - Due to

- Blockage of ear wax in the ear canal
- Rupture of ear drum
- Middle ear infection
- Restriction of ossicular movement.

(ii) Sensory-neural deafness - Due to

- Defects in organ of corti
- Defects in auditory nerve
- Defects in ascending auditory pathway

14. What is Vitiligo (or) Leucoderma?

The condition in which the melanin pigment is lost from areas of the skin causes white patches called from Vitiligo.

15. Classify the receptors.

(i) Mechano receptor - Cochlea of the inner ear
(ii) Chemo receptors - Taste buds of tongue, and nasal epithelium
(iii) Thermo receptors - Skin
(iv) Photo receptors - Rod and cone cells of eye

Five Marks Questions and Answers:-

1. The structure of Neuron.

- A neurons is a microscopic structure composed of 3 parts.
  (i) Cell body
  (ii) Dendrites
  (iii) Axon

(i) Cell body

Spherical part of the neuron that contains all the cellular organelles.

(ii) Dendrites

Branched short fibers comes out of the cell body are called dendrites.
– Which transmits impulses to the all body.
– Cell body and dendrites contain Nissl's granules.

(iii) Axon

– Axon is long fiber arise from cell body.
– Plasma membrane covering the neuron is called Neurilemma and axon is called axolemma.
– Axon is surrounded by Schwann cells to form myelin sheath.
– The gap in myelin sheath is called Nodes of Ranvier.
– End of the axon terminates into synaptic knob.

2. L.S of the Human eye:

(i) The wall of the eye ball in Spherical in shape.

(ii) Which consists of three layer

- **Sclera – Fibrous**
- **Choroid – Vascular**
- **Retina – Sensory part**

(iii) Sclera – the outer coat has two regions

- the anterior cornea
- the posterior sclera.
- cornea is non vascular and transparent coat.
- sclera forms the white of the eye ball.
- posterior end of sclera optic nerve emerged.

(iv) Choroid:

- It is the highly vascularized pigmented layer.
- Anterior choroid form ciliary body and colored portion of eye is called Iris.
- The hole at the centre of Iris is pupil.

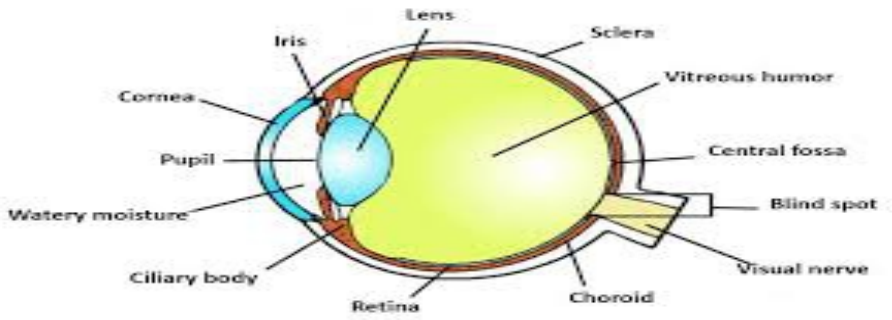
(v) Eye chambers:

- Chamber lies between cornea and lens is filled with Aqueous humor.
- Chamber lies between the lens and retina filled with vitreous humor.

(vi) Retina:

- It forms the inner most layer which consists of photo receptor cells called rods and cones.

(vii) Posters as part consist of optic nerve.



3. Difference between Rods and Cones:

S. No.	Rod Cells	Cone Cells
1.	Rods are responsible for vision in dim light	Cones are responsible for colour vision in bright light
2.	The pigment present in rods is Rhodopsin	The pigment present in cones is photopsisn
3.	Rhodopsin formed of scotopsin protein and Retinal	Photopsin is formed of opsin protein and Retinal
4.	There are about 120 millions cells	There are about 6 to 7 million cells
5.	Rods are present in extra fovea region	Cones are present in fovea region

4. List the functions of CSF (cerebro spinal fluid).

- Choroid plexus Secretes cerebro spinal fluid (CSF).
- It provides buoyancy to the CNS.
- CSF acts as a shock absorber for brain.
- CSF nourishes the brain cells by supply of food and oxygen.
- CSF removes metabolic wastes from brain.
- CSF maintains constant pressure inside the brain.

5. What are the refractive errors of eye?

(i) Myopia
(ii) Hypermetropia
(iii) Presbyopia
(iv) Astigmatism
(v) Cataract

(i) <u>Myopia:</u>

Symptoms : Affected person can see nearby objects but not distant objects.
Reason : elongated eyeball, thickened lens.
Correction : this error can be correcteb by using concave lens.

(ii) <u>Hypermetro pia:</u>

Symptoms : Affected person can see only distant objects clearly but not nearby objects.

Reason : Shortened eye ball and thin lens.

Correction : This error can be corrected by using convex lenses.

(iii) Presbyopia:

Symptoms : Blurred vision.
Reason : Due to aging the lens loses elasticity.
Correction : This error can be corrected by using convex lenses.

(iv) Astigmatism:

Symptoms : Blurred vision.
Reason : Due to irregular curvature of cornea (or) lens.
Correction : This error can be corrected by using cylindrical glasses.

(v) Cataract:

Symptoms : Unclear vision.
Reason : Due to the changes in lens protein, lens becomes opaque.
Correction : this error can be corrected by surgery.

LESSON – 11. CHEMICAL COORDINATION & INTEGRATION

I. One Mark Questions and Answers:-

1. The Maintenance of Constant internal environment is referred as **Homeostasis**
2. Which of the following are exclusive endocrine glands? **Parathyroid and adrenal**
3. Which of the following hormone is not secreted under the influence of pituitary gland? **Insulin**
4. Spermatogensis in Mammalian testes is controlled by **Luteinizing hormone**
5. Serum Calcium Level is regulated by **Thyroid and Parathyroid**
6. Iodized salt is essential to prevent **Goiter**
7. Which of the following gland is related with immunity? **Thymus**
8. Which of the following statement about sex hormone is correct?
   Testosterone is produced by Leydig cells under the influence of Luteinizing hormone
9. Hyper secretion of GH in children leads to **Gigantism**
10. A pregnant female delivers a baby who suffers from stunted growth mental retardation low intelligence quotient and abnormal skin this is the result of **Low secretion of growth hormone**
11. The structure which connects the hypothalamus with anterior Lobe of pituitary gland is the **Hypophyseal Portal System**
12. The main function of thymus, **T - Lymphocytes Produce**

13. The basic Metabolic rate [BMR] controlled by **Thyroxin**
14. Increas in the secrection of insulin, decrease the blood glucose level it is called **Hypo glycemia**

II. Two Marks Questions and Answers:-

1. Comment on homeostasis.

Maintenance of constant internal environment of the body by different coordinating System.

2. Hormones are known as chemical messenger Justify.

Thus hormones as chemical messenger coordinates physical, Physiological mental activities and maintain homeostasis.

3. Specify the Symptoms of acromegaly.

- Acromegaly is due to excessive secretion of growth hormones in adults.
- Over growth of hand bones, feet bones, and jaw bones, malfunctioning of gonads. Enlargement of viscera, tongue, lungs, heart, liver, spleen and endocrine gland like thyroid, adrenal etc.,

4. Write the function of CCK.

- It is a hormones secreted by group of specialized endocrine cells in duodenum in response to the presence of fat and acid in the diet.
- It acts on the gall bladder to release bile into duodenum and stimulates the secretion of pancreatic enzymes and its discharge.

5. List the hormones of the anterior lobe of the pituitary gland?

The anterior lobe of pituitary secrete six tropic hormones such as Growth hormones (GH), Thyroid stimulating hormones (TSH), Aderno corticotropic hormones (ACTH), Follicle stimulating hormones (FSH), Luteinizing hormones (LH), Luteotropic hormones (LTH) and Melanocytes stimulating hormones (MSH).

6. Circadian rhythm.

Circadian rhythm is the 24 hours cycle of biological activities associated with natural periods of Light and darkness.

Example: Sleep wake cycle, body temperature, appetite etc.

7. Old age people are sick often, why?

Due to degeneration of thymus gland, thymosine level decrease, as a result the immunity of old age people becomes weak and causes sickness.

8. Humulin N.

Human insulin is produced by recombinant DNA technology and administered to diabetic patients as injecting and not by oral consumption.

9. Function of testosterone:

- FSH and LH, testosterone initiates maturation of male reproductive organs.
- Secondary sexual character, muscular growth of facial auxiliary hair, masculine voice and male sexual behaviour.

III. Three Mark Questions and Answers:-

1. Write the role of Oestrogens in ovulation.

- It stops production of follicular by the ovaries hormones so that only one egg matures in a cycle.
- It simulates the pituitary gland to release Leutinizing hormones which induce ovulation and maintain corpus Luteum.

2. Comment on Acini of thyroid gland.

- Each lobe is made up of many Lobules. The Lobules consist of follicle called acini.
- Each acinus is lined with glandular, cuboidal (or) squamous epithelial cells.
- Hormones of the thyroid gland are often called the major metabolic hormones.

3. Differentiate Hypoglycaemia from Hyperglycacemia.

Hypoglycaemia:

- It is a disorder caused due to increased secretion of insulin hormones.
- Blood glucose level decreases.

Hyperglycacemia:

- It is disorder caused due to reduced secretion of insulin hormones.
- Blood glucose level increases.

4. Predicts the effects of removal of pancreases from the human body.

- Pancreas is a composite gland which performs both exocrine and endocrine functions.
- Removal of pancreas from human body can be dangerous and life changing.
- It leads to in digestive process.
- People may develop diabetes.

5. What is Limbic System?

- The inner part of cerebral hemisphere constitutes the limbic system. The main components of limbic system are olfactory bulbs, cingulate gyrus, mammillary body , amygdala hippocampus and hypothalamus. It is all so called emotional brain because it plays primary role in regulation of pleasure, pain, anger, fear sexual feeling and affection.

Five Marks Questions and Answers:-

1. Functions of adrenal hormones.

- Glucocorticoids stimulate glyconeogensis. Lipolysis and Proteolysis (the Life saving activity). Cortisol is a glucocorticoid involved in maintaining Cardio vascular and kidney functions.
- It produces anti inflammatory reactions and suppresses the immune response. It stimulates the RBC production.
- It is also known as Stress Combat hormone. Mineralocorticoids regulates water and electrolyte balance of our body.
- Aldosterone stimulates the reabsorption of sodium and water and eliminates. Potassium and Phosphate ions through excretion, thus it helps in maintaining electrolytes, Osmotic pressure and blood pressure.
- The adrenal medulla secretes the hormone adrenalin (epinephrine) and noradrenalin referred as "3F hormone" (Fight, flight and fright hormone). During emergency it increases heart bead rate and blood pressure.

2. Gastro intestinal tract hormones:

- Group of specialized endocrine cells present in gastro-intestinal tract secretes hormone such as gastrin cholecystokinin (CCK) secretion and gastric inhibitory peptides (GIP).
- Gastrin acts on the gastric glands and stimulates the secretion of HCI and pepsinogen.
- Cholecystokinin (CCK) is secreted by duodenum is responsible to the presence of fat and acid in the diet. It acts on the gall bladder to release bile into

duodenum and stimulates the secretion of pancreatic enzymes and its discharge.

- Secretin acts on acini cells of pancreas to secrete bicarbonate ions and water to neutralize the acidity.
- Gastric inhibitory peptide (GIP) inhibits gastric secretion and motility.

LESSON – 12. BASIC MEDICAL INSTRUMENTS AND TECHNIQUES

I. One Mark Questions and Answers:-

1. The instruments used to measure blood pressure is **Sphygmomanometer**
2. Blood smear is used to study **Differential count of WBC**
3. Diluting fluid used for total RBC count is **Hayem's solution**
4. Normal diastolic blood pressure is **80 mmHg**
5. Foetus development can be observed using **Ultra sonogram**
6. When electrical impulses in the heart are not generated properly is used **Pacemaker**
7. PET Scan uses **Radio isotopes**
8. Tissues real time images scan by **Fluoroscopy**
9. When the heart beat is too high it is called **Tachycardia**
10. The diluting fluid used for WBC count is **Turk's solution**

II. Two Marks Questions and Answers:-

1. What is Pacemaker?

Pacemaker is a medical device which used electrical impulse, delivered by electrodes contracting the heart muscles, to regulate the beating of the heart.

2. PET – Clinical significance:

PET imaging is effectively used in the measurement of regional cerebral blood volume, blood, flow, metabolic rated for glucose and oxygen in humans.

3. Write "White coat effect".

White coat hypertension more commonly known as white coat syndrome is a phenomenon which in the patients exhibits a blood pressure level above the normal range.

4. Write Sick Sinus Syndrome (SSS).

Sick Sinus Syndrome is characterized by dysfunction of the sinoatrial (SA) node. Treatment of SSS is directed at symptoms and typically involves the implantation of an artificial pacemaker.

III. Three Marks Questions and Answers:-

1. Clinical significance of Stethoscope.

- Stethoscope helps to find the normal and abnormal heart beat sound and also to diagnose valve function.
- Stethoscope along with sphygmomanometer are used to read the blood pressure.
- It outlines the status of cardiac, respiratory and intestinal disorders.

2. Sphygmomanometer Clinical significance.

- To diagnose pathological conditions such as hypertension and hypotension.
- Helps to access the state of blood circulation.
- Provides the functional details of heart.

3. Ultrasound imaging its significance.

- They are used to hear foetal heart sound, blood flow, etc.,
- Used in echocardiography to diagnose the damage in heart.
- Used for diagnosis of tumours, gall stones, kidney stones, obstruction in the genital tracts.

4. Glucometer its significance.

- Handy and portable.
- Immediate results, the results are displayed in approximately 40 seconds.
- Requires no calculation.
- No training is required for operating the instrument.

5. What is Auto analyzer?

Auto analyzer is a computer controlled device. It is used for quick estimation of several bio-chemical parameters like glucose, urea, cholesterol, enzymes and other proteins present in body fluids.

IV. Five Marks Questions and Answers:-

1. Write the clinical significance of CT scan.

- Gives a clear image of bone, soft tissues and blood vessels.
- Helps in the diagnosis of injuries of the inner ears and sinuses.
- To detect cancer,heart and Lung disorders.
- For diagnosis of Spinal problems and skeletal injuries.
- Helps to measure bone mineral density.
- To detect stroke causing clots and hemorrhage in the brain.

2. Write the clinical significance of EEG.

- EEG provides a means to study the functioning of the brain and its coordination with other parts of the body.
- It is useful in diagnosis of neurological and sleeps disorders.
- EEG has provided to be a useful diagnostic tool in case of serious head injuries tumors and cerebral infections.
- It also helps to find the disease like epilepsy and various degenerative diseases of the nervous system.
- EEG is useful in assessing patients with suspected brain death.

LESSON – 13. TRENDS IN ECONOMIC ZOOLOGY

One Mark Questions and Answers:-

1. Eri silk is obtained from **Attacus ricini**
2. Rearing honey bee is called **Apiculture**
3. Prawn belongs to the class **Crustacea**
4. **Induced breeding** technique is used in Inland fishery.
5. Isinglass is used in **cleaning of wines**
6. The process of killing the cocoons is called **stifling.**
7. **Queen bee** is the largest bee in honey bee colony.
8. The best quality of pearls called as **"Lingha Pearl"**
9. **Lac** is largely used as a Sealing wax.
10. The **drone** is the functional male member of the colony.

1. What are the advantages of artificial insemination?

(i) It increases the rate of conception.
(ii) It avoids genital diseases.
(iii) Semen can be collected from injured bulls which have desirable traits.

2. Define - Cross breeding.

Breeding between a superior male of one breed with a superior female of another breed.

3. Peculiarity of ducks:

(i) The body is fully covered with oily feathers.
(ii) They lay eggs at night or in the morning.
(iii) They feed on rice bran, kitchen wastes, waste fish and snails.

4. What is Isinglass?

- It is a high – grade collagen produced from dried air bladder of certain fishes like cat fish and carps.
- It is used for clarification of wine, beer, and vinegar.

5. What are the important cattle diseases?

Rinderpest, foot and mouth disease, Cow pox, anthrax.

6. What are the features of healthy Cattles?

(i) A healthy animal eat, drinks and sleeps well regularly.
(ii) They appear bright, alert and active.

7. Advantages of Vermi Compost:

(i) It is rich in essential plant nutrients.
(ii) It is excellent organic manure and eco - friendly.
(iii) It helps in seed germination and good plant growth.

8. Uses of Silk?

(i) It is used in preparing silk clothes.
(ii) Silk is used in Industries and military purposes.
(iii) It is used in fishing fibers, Parachutes wireless receivers and medical dressings.

9. What are characteristics of cultivable fishes?

(i) It has high growth rate in short period.
(ii) They should accept supplementary diet.
(iii) They should be enough to resist common diseases.
(iv) Fishes should be able to live together.
(v) They should have high conversion efficiency.

10. What is the importance of Honey?

(i) Honey is the healthier substitute for sugar.

(ii) It is used as an antiseptic & laxative and sedative.
(iii) It is generally used in Ayurvedic & Unani medicine.
(iv) It is also used in the preparation of cakes, breads and biscuits.

11. Economic Importance of Fish:

(i) Fishes are rich source of protein food.
(ii) It is rich in fat such as Omega 3 fatty acids
(iii) Minerals such as Ca, Mg, P, K, Iron and Copper present is fishes.
(iv) Fish liver oil contains rich in Vitamin A, D.
(v) Fish meal is prepared from fish waste after extracting oil from the fish.