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**1.THE LIVING WORLD**

1. Differentiate between probiotics and pathogenic bacteria.
2. Why mule is sterile in nature?
3. List any five salient features of the family Felidae.
4. What is the role of Charles Darwin in relation to concept of species?
5. Why elephants and other wild animals are entering into human living area?
6. What is the difference between a Zoo and wild life sanctuary?
7. Can we use recent molecular tools to identify and classify organisms?
8. Define – Ecosystem
9. DEFINE- Cladogram & Eg.
10. DEFINE Tautonymy & Eg.
11. Monotypic Genus)andPolytypic Genus & Eg.
12. The basic need for classifications
13. Rule of Nomenclature
14. Systematics of Human being
15. Characterstic features of living organisms
16. Five Kingdom Classification
17. DEFINE - Species & Eg.
18. DEFINE Binomial nomenclature & Eg.
19. DEFINE Trinominal nomenclature
20. DEFINE INOTAXA

**2. KINGDOM ANIMALIA**

1. Why are spongin and spicules important to a sponge?
2. What are the four characteristics common to most animals?
3. List the features that all vertebrates show at some point in their development.
4. Compare closed and opened circulatory system.
5. Compare Schizocoelom & enterocoelom.
6. Identify the structure that the archenteron becomes in a developing animal.
7. Why flatworms are called acoelomates?
8. What are flame cells? 33. In which phyla is the larva trochopore found?
9. Which of the chordate characteristics do tunicates retain as adults?
10. List the characteristic features that distinguish cartilaginous fishes with living jawless fishes.
12. List three features that characterise bony fishes.
13. List the functions of air bladder in fishes.
14. Write the characteristics that contributes to the success of reptiles on land.
15. List the unique features of bird's endoskeleton.
16. Could the number of eggs or young

ones produced by an oviparous and viviparous female be equal? Why?

17. Phylum – Platyhelminthes
18. Phylum – Annelida
19. Phylum – Echinodermata
20. Phylum – Hermichordata
21. Phylum – Chordata
22. Difference between Chordates - Non chordates
23. Sub Phylum – Urochordata / Tunicata
24. Animals such as sponges lack nervous tissue and muscle tissue, what does this tell you about sponges?
25. incomplete digestive system & complete digestive system
26. DEFINE Diploblastic animals.
27. DEFINE triploblastic animals
28. DEFINE radial symmetry
29. DEFINE biradially symmetrical
30. DEFINE bilateral symmetry
31. DEFINE Metagenesis
32. Protostomia and Deuterostomia
33. DEFINE Pseudocoelomates
34. DEFINE Polyembryony
35. DEFINE moulting or ecdysis.
36. DEFINE water vascular system or ambulacral system
37. DEFINE acorn worms' or 'tongue worms'.
38. DEFINE anadromous migration.

**3. TISSUE LEVEL OF ORGANISATION**

1. Some epithelia are pseudostratified. What does this mean?
2. Differentiate white adipose tissue from brown adipose tissue.
3. Why blood is considered as a typical connective tissue?
4. Differentiate between elastic fibres and elastic connective tissue.
5. Name any four important functions of epithelial tissue and provide at least one example of a tissue that exemplifies each function.
6. Write the classification of connective tissue and their functions
7. What is an epithelium? Enumerate the characteristic features of different epithelia.
8. DEFINE Histology
9. Important epithelial tissue disorders
10. Three types of cell junctions'
11. DEFINE tissue fluid.
12. Important connective tissue disorders: (Heritable types)
13. Autoimmune connective tissue Disorders.
14. DEFINE Biopsy and Autopsy
15. Diseases of Nervous System

**4. ORGAN & ORGAN SYSTEMS IN ANIMALS**

1. What characteristics are used to identify the earthworms?
2. What are earthworm casts?

3. How do earthworms breathe? Why do you call cockroach a pest?
4. Comment on the functions of alary muscles?
5. Name the visual units of the compound eyes of cockroach.
6. How does the male frog attracts the female for mating?
7. Write the types of respiration seen in frog.
8. Differentiate between peristomium and prostomium in earthworm.
9. Give the location of clitellum and spermathecal openings in Lampito mauritii.
10. Differentiate between tergum and a sternum.
11. Head of cockroach is called hypognathous. Why?
12. What are the components of blood in frog?
13. Draw a neat labeled diagram of the digestive system of frog.
14. Explain the male reproductive system of frog.
15. Explain the female reproductive system of frog.
16. Differentiate between male and female cockroach?
17. Digestive system of Earth worm
18. Digestive system of cockroach.
19. Reproductive system of cockroach MALE
20. Reproductive system of cockroach FEMALE
21. DEFINE clitellum & types
22. Morphological and anatomical differences between Lampito mauritii and Metaphire posthuma
23. DEFINE Intestinal Caeca
24. DEFINE typhlosole.
25. commissural vessels or the lateral hearts
26. How do the earthworm's sense activity in their habitat without eyes, ears or a nose?
27. Three types of nephridia in earthworm
28. DEFINE Protandrous
29. Why the Cockroach is called Vectors".
30. Leg consists of five segments cockroach.
31. passage of air in the tracheal system cockroach.
- alary muscles
32. Why is mosaic vision with less resolution seen in cockroaches?
33. Differences between a Frog and Toad
34. DEFINE tympanic membranes
35. Differences between Anus and Cloaca
36. Respiratory System of frog
37. Economic importance of Frog

**5 - DIGESTION AND ABSORPTION**

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

2. Bile juice contains no digestive enzymes, yet it is important for digestion. Why?
3. List the chemical changes that starch molecule undergoes from the time it reaches the small intestine.
4. How do proteins differ from fats in their energy value and their role in the body?
5. Digestive secretions are secreted only when needed. Discuss.
6. DEFINE GERD
7. Write short notes on small intestine
8. Types of Salivary glands
9. Write short notes on Gastric glands
10. List out the secretions of Pancreas
11. Define PEM/Kwashiorkor/Marasmus
12. Define Liver cirrhosis
13. Define Gall Stones
14. Define Hiatus hernia Diaphragmatic hernia)
15. Define Peptic ulcer
16. Define Obesity
17. Define BMI (Body Mass Index)
18. Define The structure of liver
19. What are the functions of Liver
20. Digestion in the stomach
21. Digestion in the small intestine
22. Define-Thecodont, Diphyodont, heterodont human dental formula
23. Histology of the Guta
24. What is composition of bile?
25. How it helps in digestion of fats and other nutrients of food?
26. How it helps in absorption of fats?
27. What would happen if HCl is not secreted in the stomach?
28. Schematic Diagram Of Human Digestive System

## 6. RESPIRATION

1. Name the respiratory organs of flatworm, earthworm, fish, prawn, cockroach and cat.
2. Name the enzyme that catalyses the bicarbonate formation in RBCs.
3. Air moving from the nose to the trachea passes through a number of structures. List in order of the structures.
4. Which structure seals the larynx when we swallow?
5. Resistance in the airways is typically low. Why? Give two reasons.
6. How the body makes long-term adjustments when living in high altitude.
7. Why is pneumonia considered a dangerous disease?
8. Diffusion of gases occurs in the alveolar region only and not in any other part of the respiratory system. Discuss.
9. Sketch a flow chart to show the path way of air flow during respiration.
10. Explain the conditions which creates problems in oxygen transport.

11. The five primary functions of the respiratory system.
12. The steps involved in respiration.
13. Define Tidal Volume (TV)
14. Define Residual Volume (RV)
15. Define Dead space
16. Haemoglobin –Respiratory pigments
17. Methaemoglobin-Respiratory pigments
18. Define Emphysema
19. Define Tuberculosis
20. The effects of smoking
21. Characteristic features of respiratory surface
22. What is surfactant.
23. Events in inspiration and expiration
24. You are at high level in a mountain above the sea level. Suddenly you get palpitation and nausea. What condition are you suffering from? What are the other symptoms for this disease and how can it be reduced?
25. Define Vital capacity (VC)
26. Why do some people snore?
27. Define Total Lung Capacity (TLC)
28. Breathing through nose is healthier than through mouth– Why?
29. Define Allergy
30. Define Chronic Obstructive Pulmonary Disease (COPD)

## 7. Body Fluids and Circulation

1. Distinguish between arteries and veins.
2. Distinguish between open and closed circulation.
3. Distinguish between mitral valve and semi lunar valve.
4. Right ventricular wall is thinner than the left ventricular wall. Why?
5. What might be the effect on a person whose diet has less iron content?
6. Describe the mechanism by which the human heart beat is initiated and controlled.
7. What is lymph? Write its function.
8. What are the heart sounds?
9. When and how are these sounds produced?
10. Red blood cells/erythrocytes
11. What is Lymphocytes
12. What is Basophils –
13. What is Platelets / Thrombocytes:
14. Coagulation of blood
15. Double circulation/ pulmonary and systemic circulation.
16. Genetic basis of the blood groups.
17. Electrocardiogram (ECG)
18. Coronary heart disease
19. Angina pectoris (ischemic pain in The heart muscles):
20. What is Stroke.
21. What is Varicose veins.

22. What is Embolism:-
23. What is Aneurysm:
24. What is Myocardial infarction (Heart failure)
25. Rheumatic Heart Disease (RHD)
26. What are the four main types of plasma proteins.
27. Liver receives its blood supply from two sources:
28. Define Haematocrit.
29. What is erythroblastosis foetalis / Haemolytic disease of the new born (HDN).
31. Why protein molecules of larger size can pass through the lymph vessel?
32. We have seen that capillary walls are not permeable to plasma proteins. Suggest where the protein comes from.
33. The disease kwashiorkor is caused by a diet which is very low in protein. The concentration of proteins in blood becomes much lower than usual. One of the symptoms of kwashiorkor is edema. Give reasons.
34. The blood vessels in humans are composed of three layers,
35. What are anastomoses?
36. What is The Law of Laplace.
37. Why there are no blood capillaries in the cornea of the eye and cartilage? How are these regions supplied with the required nutrients?
38. Suggest why arteries close to the heart have more elastic fibers in their walls than arteries further away from the heart?
39. Define cardiac cycle.
40. When blood volume drops down abruptly, what happens to the stroke volume? State whether it increases or decreases? Blood pressure.

## 8. Excretion

1. What forces promote glomerular filtration? What forces opposes them? What is meant by net filtration pressure?
2. Name the three filtration barriers that solutes must come across as they move from plasma to the lumen of Bowman"s capsule. What components of the blood are usually excluded by these layers?
3. Podocytes -Which segment is the site of secretion and regulated reabsorption of ions and pH homeostasis?
4. Which part of the autonomic nervous system is involved in micturation process?

5. With regards to toxicity and the need for dilution in water, how different are ureotelic and uricotelic excretions & eg?
6. Differentiate protonephridia from Metanephridia.
7. What is the nitrogenous waste produced by amphibian larvae and by the adult animal?
8. How is urea formed in the human body?
9. Differentiate cortical from medullary Nephrons
10. Name the three main hormones are involved in the regulation of the renal function?
11. Define Ammonoteles & Eg.
12. Structure of kidney
13. Structure of a nephron
14. Define Uremia
15. Define Renal calculi
16. What is the importance of having a long loop of Henle and short loop of Henle in a nephron?
17. Define Aquaporins.
18. List the pathways involved in the homeostatic compensation in case of severe dehydration.
19. Angiotensin Converting Enzyme inhibitors (ACE inhibitors) uses.

## 9. LOCOMOTION AND MOVEMENT

1. Name the different types of movement.
2. Name the filaments present in the sarcomere.
3. Name the contractile proteins present in the skeletal muscle.
4. When describing a skeletal muscle, what does "striated" mean?
5. How does an isotonic contraction take place?
6. How does an isometric contraction take place?
7. Name the bones of the skull.
8. Which is the only jointless bone in human body?
9. List the three main parts of the axial skeleton
10. How is tetany caused?
11. How does rigor mortis happen?
12. What are the different types of rib bones that form the rib cage?
13. What are the bones that make the pelvic girdle?
14. List the disorders of the muscular system.
15. Explain the sliding- filament theory of muscle contraction.
16. What are the benefits of regular exercise?
17. Functions of skeletal system.

18. Types of joints.
19. Define Myoglobin.
20. Define Glycosomes.
21. Muscle Terminology.
22. Define Sliding filament theory.
23. oxidative fibres and glycolytic fibres.
24. Which myofilament has the binding sites for calcium? Name the specific molecule that binds with calcium.
25. Define Skeletal Muscle Glycogen Analysis (SMGA).
26. All muscles produce movement, but only skeletal muscle is responsible for locomotion. What is meant by this statement?
27. Define CTS-(Carpal Tunnel Syndrome).
28. Rheumatoid arthritis
29. Gouty arthritis or gout
30. Exercise and physical activity fall into four basic categories.

## 11. NEURAL CONTROL AND COORDINATION

1. Why is the blind spot called so?
2. Sam's optometrist tells him that his intraocular pressure is high. What is this condition called and which fluid does it involve?
3. The action potential occurs in response to a threshold stimulus; but not at sub threshold stimuli. What is the name of the principle involved?
4. Pleasant smell of food urged Ravi to rush into the kitchen. Name the parts of the brain involved in the identification of food and emotional responses to odour.
5. Cornea transplant in humans is almost never rejected. State the reason.
6. At the end of repolarization, the nerve membrane gets hyperpolarized. Why?
7. The choroid plexus secretes cerebro spinal fluid. List the function of it.
8. What is ANS? Explain the components of ANS.
9. Why the limbic system is called the emotional brain? Name the parts.
10. Classify receptors based on type of stimuli.
11. Differentiate between rod and cone cells.
12. The function of neural system.
13. The structure of neuron.
14. The types of neurons
15. Functions of brain lobes.
16. Functions of neuroglia.
17. Define Saltatory Conduction.
18. Can you state why some areas of the brain and spinal cord are grey and

- some are white?
19. Define satiety centre.
20. Thalamic nuclei are called relay centres of the brain.
21. Damage to medulla may cause the death of organism.
22. Ventricles of the brain.
23. Define cauda equina (horse's tail)
24. Unconditional reflex and Conditioned reflex.
25. aqueous humor and vitreous humor.
26. conjunctivitis - commonly called Madras eye)
27. Define accommodation.
28. Refractive errors of eye.
29. Visual pigments for colour vision.
30. Mechanism of hearing.
31. Defects of Ear
32. Name the parts of the organ of equilibrium involved in the following functions.
  - a) Linear movement of the body
  - b) Changes in the body position
  - c) Rotational movement of the head.
33. Define Pacinian corpuscles
34. Meissner's corpuscles.

## 11. Chemical Coordination and Integration

1. Comment on homeostasis.
2. Hormones are known as chemical messenger. Justify.
3. Write the role of oestrogen in ovulation.
4. Comment on Acini of thyroid gland.
5. Write the causes for diabetes mellitus and diabetes insipidus.
6. Specify the symptoms of acromegaly.
7. Write the symptoms of cretinism.
8. Briefly explain the structure of thyroid gland.
9. Name the layers of adrenal cortex and mention their secretions.
10. Differentiate hyperglycemia from hypoglycemia.
11. Write the functions of (CCK) Cholecystokinin.
12. Growth hormone is important for normal growth. Justify the statement.
13. Pineal gland is an endocrine gland, write its role.
14. Comment on the functions of adrenalin.
15. Predict the effects of removal of pancreas from the human body.
16. Enumerate the role of kidney as an endocrine gland.
17. Write a detailed account of gastro intestinal tract hormones.
18. Types of Endocrine glands
19. Differentiate Exocrine glands &



Endocrine glands

20. Role of Hypothalamus
21. Explain the structure of Pituitary gland
22. Hormones of neurohypophysis
23. Thymus gland
24. The function of Insulin
25. The function of Glucagon
26. Functions of testosterone
27. Chemical nature of hormones
28. Growth hormone (GH):
29. Pituitary gland is commonly called “master gland” of the body.
30. Discuss the role of hypothalamus and pituitary as a coordinated unit in maintaining physiological processes.
31. How does the posterior lobe of pituitary help in osmoregulation?
32. Sporadic goitre
33. fight or flight’ response.
34. Give the possible cause for the increases in blood glucose level.
35. What is the chemical nature of this hormone? Discuss its role in the body.
36. How can this condition be reversed?
37. Avoid use of synthetic soft drinks
38. Avoid use of steroid components
39. Mechanism of steroid hormone action
40. Mechanism of peptide hormone action

## 12. TRENDS IN ECONOMIC ZOOLOGY

1. Write the advantages of vermicomposting.
2. Name the three castes in a honey bee colony.
3. Name the following: i. The largest bee in the colony.
- ii. The kind of flight which the new virgin queen takes along with the drones out of the hive.
4. What are the main duties of a worker bee?
5. What happens to the drones after mating flight?
6. Give the economic importance of Silkworm.
7. What are the Nutritive values of fishes?
8. Give the economic importance of prawn fishery.
9. Give the economic importance of lac insect.
10. Name any two trees on which lac insect grows.
11. Define cross breeding.
12. What are the advantages of artificial insemination?
13. Discuss the various techniques adopted in cattle breeding?

14. Mention the advantages of MOET.
15. Write the peculiar characters of duck.
16. What are the three main components of silk industry
17. Define Moriculture:
18. Types of bees
19. The economic importance of honey
20. Characteristics of cultivable fishes
21. Major carps have proved to be best suited for culture in India, because the carps :
22. Advantages of Aquaponic gardening
- Water conservation:
23. Benefits of Poultry farming
24. Define Silk road”
25. Different types of Silkworm
26. stifling and reeling.
27. Define Pebrine,
28. Define Flacherie
29. Define Grasserie
30. Define Muscardine
31. Define nuptial flight”.
32. Define Swarming
33. India, there are two types of Beehives
34. Define hapas.
35. Induced breeding is also done by Hypophysation
36. Composition of pearl
37. Define “Lingha Pearl”.
38. Objectives of Animal breeding:
39. Define Thawing
40. Brahma:
41. Aseel:
42. Silkie: