

ZOO502 – ANIMAL PHYSIOLOGY & BEHAVIOR

ALL OBJECTIVES & SUBJECTIVES FROM PAST FILES FOR FINAL TERM



| 📞 : ARHAM (+923351328979) | 📝 : AIZA WRITES

OBJECTIVES

1. In ---- prolactin regulates fat metabolism and reproduction _____ **Birds**
2. Warmth receptors has conduction velocity _____ **0.8m/s**
3. Cold receptors are----- more common in skin than heat receptors. _____ **3.5 Times**
4. Human have more than --- different types of receptors for bitter taste__ **30**
5. human S-A node is thick _____ **1mm**
6. which of the following is related to ATPase _____ **Association with Na⁺/K⁺ Pumps**
7. insp3 releases the Ca²⁺ ions from intracellular calcium stores like _____ **Mitochondria and Endoplasmic Reticulum**
8. human S-A node is thick _____ **1mm**
9. length of a muscular twitch is _____ **10m/sec**
10. One female has an exclusive relationship with two or more males' _____ **Poly Androus**
11. Facilitated diffusion occurs with _____ **Channel Proteins**
12. Rhythmic discharge of sinoatrial node is..... per minute. _____ **70 To 80**
13. Electric impulse is observed in _____ **Cardiac Muscle**
14. Troponin is sensitive to _____ **Ca⁺**
15. High pressure is _____ **SYSTOLIC BP**
16. Non diffusible -----produce Donnan effect _____ **Solute**
17. ----- Channels are involved in producing action potential _____ **Na⁺ And K⁺**
18. A ChE abundantly present in _____ **Synaptic Cleft**
19. Which -----monitors the position of muscles and joints _____ **Proprioceptors**
20. Sensory sensilla are organ of -----in insects _____ **Taste**
21. Meissner's corpuscles receptors are for _____ **Touch**
22. Merkel Disks are associated with the reception of _____ **Vibration**
23. Human ear can detect sound _____ **20 To 20000 Hertz**
24. Velocity of impulse conducting by arterial fiber is _____ **0.3 M/S**
25. Equation indicates blood flow _____ **V = Q/A**
26. Relative viscosity of plasma _____ **1.8**
27. Which one is not related to diffusion? __ **Flow of Molecule from Lower to Higher Concentration**
28. Cure for which of the following disease, is not a Pharmacological application of __ **Anemia**
29. When the force exerted by the muscle's contraction is equal to the opposing external force then ---- contractions occur _____ **Isometric**
30. The required concentration of Ca²⁺ ions in cytosol for binding of cross-bridges to actin is above _____ **10⁻⁷ m**
31. Intestinal tissues constitute-----of adult testes mass _____ **20%**
32. In the synthesis of catecholamines conversion of tyrosine to dopa and dopamine occur in the _____ **Cytosol**

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33. Over secretion of parathormone lead to _____ **Bone Softness and Deformation**
34. Melatonin belongs to _____ **Pineal Gland**
35. Myofibril diameter is _____ **1-2um.**
36. True about action potential----- inflow of sodium ion _____ **Depolarization**
37. Which is Not a part of organ corti _____ **Reisner's Men**
38. Which one is Local vasodilator _____ **Lactic Acid**
39. H. E. Huxley and A. F. Huxley proposed the sliding filament theory of muscle contraction in ____ **1954.**
40. Secretions that affect neighboring cells are _____ **Paracrine.**
41. Incorrect statement about receptors of taste _____ **Salty Taste Is Associated with Ions**
42. Hypothalamic releasing hormones except _____ **Thyrotropin**
43. Human retina has cone _____ **6million**
44. Which of the following is an example of negative feedback mechanism ____ **Control Of Blood Sugar By Insulin**
45. Diameter pituitary gland _____ **1cm**
46. Electoreceptors of platypus are present _____ **On Its Bill.**
47. The knob of dendrite has ____ olfactory cilia _____ **4 To 25**
48. Antidiuretic hormone can increase water permeability of renal collecting duct in mammals up to _____ **10 Times**
49. Hallucination is caused by _____ **Androphins**
50. Action potential is inflow of _____ **Na+ Depolarization**
51. Which is not an example mechanical stimulus _____ **Allergens**
52. Delta cells constitutes _____ **10%**
53. Neurotransmitters induce large increase to permeability to ____ **Both Nerve and Muscle Cell**
54. Troponin has affinity for _____ **Ca²⁺**
55. Rod photoreceptor are sensitive to _____ **Low Intensity Dimmer Light**
56. Acromatic vision is due to _____ **Rods**
57. Synaptic cleft size is _____ **20nm Wide**
58. Electric transmission in cells has observed in ____ **Smooth Muscles Fibers, Cardiac Muscle Fiber.**
59. Neurohypophysis is lobe of pituitary gland _____ **Posterior.**
60. An adaptive change happens due to chronic exposure to next, naturally occurring environment known _____ **Acclimatization.**
61. In hair cell 20-300 are _____ **Nonmotile Stereocilia.**
62. The study of physics law in physiology of ----- is called as hemodynamics ____ **Circulatory**
63. Ca²⁺ flow out of lumen of SR increases free Ca²⁺ Conc. In myoplasm to an active level of about _____ **10⁻⁷m**
64. Hallucination _____ **Endorphins**

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65. Length of muscle twitch as short as _____ **10 Milliseconds Or As Long As 100 Ms. Short 10ms . Milliseconds. Long 100**
66. Acts as enteric neurotransmitter _____ **Substance P**
67. Rhythmic discharge of AV node is _____ **40 To 60 Times Per Minute**
68. Human s-A node is _____ **3 millimeters wide ,15 millimeters long,1 millimeter thick**
69. Thick filament is composed. _____ **Myosin Molecules.**
70. Mineralocorticoids include _____ **Effects on Mineral Metabolism.**
71. Atria blood pressure is highest during _____ **Ventricular Systole**
72. In equation $R = \frac{\Delta P}{Q}$, stands for _____ **Resistance to Blood Flow**
73. Hypothyroidism leads to ____ **A) High Body Temp b) Weight Loss C) Profuse Sweating (All)**
74. Thyroglobulin is stored within the thyroid gland in _____ **Follicles**
75. Which of the following is not related to voltage gated sodium channels? _____ **Slightly Smaller Than the Potassium Channels**
76. Fenestrated capillaries are found in _____ **Endocrine Glands**
77. Example of peptide hormone _____ **Oxytocin**
78. Which one of the following is not local vasoconstrictor _____ **Endorphin**
79. The conc. of K-ion is maintained -- times more in the cytosol than extracellular fluid. _ **10-30**
80. A depolarization in the range of ----- is the threshold that triggers an AP. ____ **-55 To -40**
81. Cytosolic conc. of calcium ions remains _____ **Below 10^{-6}**
82. ----- that induce hallucinations. _____ **Mescaline**
83. Example of steroid hormone is _____ **Aldosterone**
84. Adenohypophysis contains --- types of glandular cells that synthesized and secrete hormones **5**
85. ----- releases Ca-ions from bones to blood. _____ **Parathormone**
86. Atrial natriuretic peptide (ANP) hormone secreted by ____ **Stretch-Sensitive Secretory Cell**
87. Which is local vasoconstrictor _____ **Angiotensin II**
88. Amount of air M/V that still remains in lungs when they fully collapse ____ **30 To 120ml**
89. ----- is formed in lungs, acts as local vasoconstrictor _____ **Angiotensin II**
90. Respiratory epithelium has only a thickness of _____ **0.5 To 15 μ m**
91. Blood with hemoglobin carry ____ Oxygen per 100ml. _____ **20 ml**
92. Inspiratory volume is _____ **1900 ml**
93. Central chemoreceptor is located in _____ **Medulla of Mammals**
94. which of the following produces atrial natriuretic peptide (ANP) hormone? ____ **Stretch Sensitive Secretor Cells.**
95. are stimulated by stretch of the arterial wall. _____ **Baroreceptors**
96. Female IRV is _____ **1900 ml**
97. Velocity of impulse conducting by arterial fiber is _____ **0.3%**
98. Teleost fish and aquatic vertebrates are _____ **Ammonotelic Animals**

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99. Blood with hemoglobin can carry.....oxygen per100ml at 37 centi CS at sea level is__**20ml**
100. Statement relevant to stenohaline ____ **Animals That Are Found in Estuary and River-Sea Water Confluence**
101. Resting tidal volume____ **Averages About 500 MI in Human Male and Female Both**
102. Blood osmolarities of fresh water vertebrates is----mosm/L_____ **200-300**
103. Produces ANP hormone_____ **Striated Sensitive Fibers**
104. Glomerular filtration rate (GFR averages an astounding -----per minute_____ **125ml**
105. Distal convoluted tube is _____ **NH4 +Ions**
106. DCT secrete _____ **NH4+ Ions, K+ Ions, & H+ Ions.**
107. A camel can lose -----of water and still survi_____ **40%**
108. GFR averages an astounding -----per minute_____ **125 ml**
109. Respiratory system of -----is composed of 7 or 9 air sacs _____ **Birds**
110. Central chemoreceptors are located in ____ **Medulla of Mammals and Air Breathing Vertebrates**
111. Which are stenohaline a _____ **Marine Spider, Crab**
112. ----- is involve in maintaining pH of urine _____ **Tubular Reabsorption**
113. Related to emesis _____ **Reverse Peristalsis**
114. Goblet cells synthesis and secretes _____ **MUCUS**
115. Human GIT secretes__ exocrine fluid daily _____ **Bile and Bile Salts**
116. It requires only ----- of water to excrete 1g of urea _____ **0.05 L**
117. Esophagus is included in -----division of mammalian digestive tract ____ **Four (4)**
118. Esophagus is part of _____ **Foregut**
119. Salivary secretions have _____ **HCO3**
120. pineal glands are found in dorsal surface of invertebrates _____ **Forebrain.**
121. Duodenum is -----cm long _____ **25cm**
122. Length of jejunum is _____ **2.5m**
123. Goblet produce in _____ **Intestine.**
124. Salivary and pancreatic secretion contain _____ **HCO3 Ions**
125. The act or process of Releasing air from lungs through nose or mouth ____ **Expiration**
126. Epithelium of small intestine produces enzyme _____ **Photolytic Enzyme**
127. Gastric secretin in mammals occurs in..... phases _____ **3**
128. The temperature of heterotherms changes on daily basis or annual basis. **Temporal**
129. Human GIT secretes liter of exocrine fluid per day _____ **7**
130. Which of these is temporal heterotherms? _____ **Python**
131. Example of temporal heterotherm _____ **Python**
132. Proteases are _____ **Trypsin, Chymotrypsin, Pepsin**
133. Is largest water-soluble essential nutrient _____ **Vitamin B12**
134. is the gastric proteolytic enzyme _____ **Pepsin**

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135. Blood is ----times viscous than water_____ **3 Or 4**
136. Which is nitrogenous base..... urea. Uric acid. ammonia_____ **All of These**
137.provide heat insulation to mammals_____ **Fur**
138. involves use of respiratory system to lose heat by evaporating cooling ____ **Panting**
139. receives bile salt from gall bladder _____ **Duodenum**
140. are types of instinctive behavior_____ **Fixed Action Patterns.**
141. Epithelium layer of the small intestine produce the enzyme. _____ **Pepsin**
142. Which is Neuroethological behavior _____ **Study Behavior in Laboratory**
143. Brown fat contains large amount of _____ **Mitochondria**
144. Atria blood pressure is highest during_____ **Ventricular Systole**
145. Temperature zone which activates evaporative heat dissipating mechanism like sweating____ **UCT (Upper Critical Temperature)**
146. 1 joule of energy utilized in work, ----- energy is degraded_____ **3joule**
147. Study behavior in laboratory _____ **Neuroethological**
148. Which is Neuroethological Study behavior in laboratory____ **There Are No Predators**
149. luminal membrane of intestinal epithelial cells has types of transport protein__ **Five**
150. Which of the following is related to stenohaline____ **They Can Carry Osmotic Regulation in Face of Changing Salinity?**
151. Relevant instinctive behavior development after exposure to environment _____ **Agonistic, Social, Territorial Adaptive (All)**
152. Agonistic behavior involve-----b/w animals_____ **Competition**
153. A honey bee finds a food source close to the _____ **50meter**
154. Social behavior _____ **Cooperation, Competition, Conflict (All)**
155. Agonistic behavior_____ **Threat Display, Attach and Fight (All)**
156. Structure and function level exists at, (system-muscle, cell-muscle, macromolecules sarcomere) _____ **All**
157. Hypothalamic releasing hormones (RHs) which stimulate the secretory activity of adenohypophysis anterior pituitary _____ **TRH**

SUBJECTIVES**1. How to Nervous System Maintain Blood Pressure?**

Role of Nervous System in Maintaining Blood Pressure Nervous control serves to maintain arterial pressure by:

- Adjusting resistance to blood flow in the peripheral circulation.

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- Controlling the number of capillaries open at any moment

The nervous control of capillary flow ensures that if arterial pressure falls, blood flow to the gut, liver, and muscles is reduced to maintain flow to the brain and heart.

2. Terrestrial Vertebrates?

Amphibians, Reptiles, Birds, And Mammals use a pair of lungs to exchange oxygen and carbon dioxide between their tissues and the air.

Basic Plan of Vertebrate Lung:

Considerable structural variations occur among the four groups. The generalized vertebrate lung consists of a complex network of tubes and sacs or air spaces. The sizes of terminal air spaces become progressively smaller in the order: amphibians, reptiles, and mammals. However, the total number of air spaces per unit volume becomes greater.

Alveoli make the respiratory epithelium of lungs. Respiratory epithelium is thin and well vascularized.

3. Apoenzyme And Function?

An enzyme that requires a cofactor but does not have one bound. An apoenzyme is an inactive enzyme, activation of the enzyme occurs upon binding of an organic or inorganic cofactor.

The term holoenzyme is used to refer to the apoenzyme bound to a cofactor.

Or

Apo enzymes refer to inactive form of enzyme which activates upon the binding of a cofactor.

Function: It is responsible for reaction

4. Function and Parts of Colon?

The colon is about 1.5 m long and consists of four parts: ascending colon, transverse colon, descending colon and sigmoid colon.

Functions

- Colon receives the undigested part of the food along with inorganic ions and excess water.
- Ions and water are absorbed by the colon.
- As water is absorbed, indigestible wastes become solid and are converted into feces as they move along the colon by peristalsis.
- It takes approximately 12-24 hours for material to travel the length of the colon and reach the rectum for elimination through the anus.

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5. Define Peristaltic

Waves of contraction and relaxation in the smooth muscles present in the walls of alimentary canal. The alimentary canal starts from oral cavity and end at distal end of rectum.

The esophagus conducts the bolus by peristaltic movement. Peristaltic movements are the waves of contraction and relaxation in the smooth muscles of alimentary canal walls.

6. Write Down the Basic Types of Alimentary System

Types of Alimentary Systems:

- Sac-like gastro vascular cavity
- Tubular alimentary canal or gut

7. Four Accessory Glands of Elementary Canal?

Accessory Glands: In mammals, the alimentary canal is associated with various accessory glands that secrete digestive juices through ducts into the gut. The accessory glands of the mammalian digestive system are:

- Three pairs of salivary glands
- Gastric glands
- Pancreas
- Liver
- Gallbladder

8. Briefly Describe Ornithine Urea Cycle?

- ✂ All vertebrates except most teleost fishes, synthesize urea primarily in the liver via the ornithine-urea cycle.
- ✂ In this cycle, two ammonia and one CO₂ molecule are added to ornithine to form arginine
- ✂ Arginine is cleaved by the enzyme arginase, to remove a molecule of urea and regenerate ornithine.

9. Uses of Crop in Various Animals.

- ✂ In some animals, esophagus contains a sac-like expanded section, the crop, which is used to store food before digestion.
- ✂ It allows quantities of food to be stored for digestion at a later time.
- ✂ In some animal's crops are also used to ferment or digest foods.
- ✂ Prepare food for nestlings (pigeon's milk)

10. Write A Note on Types of Stomach in Vertebrates?

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Based on the number of chambers, stomachs are classified as:

- Monogastric stomachs
- Digastric stomachs

Monogastric Stomachs

A monogastric stomach consists of a single strong muscular tube or sac. Carnivorous and omnivorous vertebrates have a monogastric stomach.

Digastric Stomachs

Digastric stomachs are multichambered and are found in ruminant mammals of order Artiodactyla e.g., deer, giraffe, sheep, cattle, camel, llama etc.

These stomachs have four chambers which are separated into two divisions.

- ⑩ The first division consists of fermentation chambers called rumen and reticulum.
- ⑩ The second division comprises the omasum and abomasum (true stomach).

11. Write Down the Composition of The Bile?**Bile**

Vertebrate liver secretes bile. Bile doesn't contain any digestive enzymes. It contains many salts. Bile salts are essential for the digestion of fats.

Composition of Bile

Bile consists of water and a weakly basic mixture of cholesterol, lecithin, inorganic salts, organic salts, and bile pigments. The bile organic salts are manufactured by the liver from cholesterol and amino acids complexed with sodium.

12. Role of Appendix in Digestion and Function?

Humans have a relatively small cecum with a finger-like extension, the appendix which is about 9 cm long. Appendix has no role in digestion or absorption but has an undefined role in immunity as it has many lymph nodes.

13. Types of Alimentary Canal?

- ✎ **Headgut:** specialized for receiving ingested material. Includes Buccal cavity and pharynx
- ✎ **Foregut:** specialized for conducting, storing, and digesting ingested material. Includes esophagus and stomach. Also includes crop in some animals.
- ✎ **Midgut:** specialized for digesting and absorbing nutrients. Includes small intestine: duodenum, jejunum and ileum.
- ✎ **Hindgut:** specialized for absorbing water and defecating. Includes large intestine: colon, cecum, rectum and anus.

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14. Ectotherms?

Ectothermic animals produce metabolic heat at comparatively low rates and rely almost entirely on environmental sources of heat for warming their bodies. They also have high thermal conductance as their bodies are poorly insulated.

As a result, heat derived from metabolic processes is quickly lost to cooler surroundings. However, high thermal conductance allows ectotherms to absorb heat readily from their surroundings.

15. Absorption of Ca^{2+} ?

Ca^{2+} requires a special active transport mechanism for absorption from the gut. The calcium ion is first bound to a calcium-binding protein in the microvillus and is then transported as a complex into the absorptive cell by an energy-consuming process.

From the absorptive cell the Ca^{2+} then passes into the blood. The presence of calcium-binding protein is regulated by the hormone calcitriol, vitamin D3. The release of Ca^{2+} from the absorptive cell into the blood is accelerated by parathyroid hormone.

16. Hormones That Control the Pancreatic Secretion?

Pancreatic secretions are controlled by a variety of hormones including peptide hormones, gastrin, cholecystokinin, somatostatin and enkephalins

17. What Is Proenzyme with Example? Or Zymogen

Proenzymes Certain digestive enzymes, in particular proteolytic enzymes, are synthesized, stored, and released in an inactive molecular form known as a proenzyme or zymogen. The proenzyme is activated by the removal of a portion of the molecule, either by the action of another

Examples:

Pepsinogen-Pepsin: Pepsin is the gastric proteolytic enzyme.

Trypsinogen-Trypsin: Trypsinogen is secreted in pancreatic juice as a proenzyme.

Chymotrypsinogen - Chymotrypsin: Chymotrypsinogen is also secreted as proenzyme in pancreatic juice.

18. Note on Physiological Adaptation of Ectothermic in Hot Environment?**Physiological Adaptations:**

- Most ectotherms have high heat conductance that allows them to radiate heat rapidly on moving to less warm places.

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- Above 40°C many reptiles start panting, just like birds and mammals to increase heat loss through respiratory evaporation that causes cooling.
- The marine iguanas can regulate heart rate and flow of blood to the surface tissues to either absorb or eliminate heat.
- The Gila monster (*Heloderma suspectum*) evaporates water from its cloaca to cool its internal body temperature—a process similar to sweating in mammals.

19. Hepatocytes Nutrients Transport?

Transport of Nutrients Digestion products absorbed enter either the blood or the lymphatic circulation in the villi.

Blood Transport of Sugars and Amino Acids:

- Sugars and amino acids primarily enter the capillaries of the villi.
- These capillaries are drained by venules that lead into the hepatic portal vein.
- The hepatic portal vein takes the blood from the intestine directly to the liver.
- In the liver, much of the glucose is taken up by hepatocytes and, under the influence of insulin, is converted into glycogen granules for storage. Only a controlled quantity is released into the circulation to be utilized by tissues.

20. Three Ways of Survival In Cellular Freezing.?

Such animals employ three methods to survive freezing environments:

- ✚ Ice-nucleating Agents (INAs)
- ✚ Cryoprotectants (antifreeze substances)
- ✚ Supercooling

21. Dose Vertebrate Have Lungs?

All vertebrate animals that live on land have lungs. When we breathe in, the muscle below the rib cage (called the diaphragm) is pulled down, and air gets sucked into the rib cage, filling the lungs. Blood cells circulating through tiny blood vessels near the lungs pick up oxygen and carry it around the body to the sites of respiration. Air is then forced out of the lungs as the diaphragm bows upwards.

22. Animal Orientation Detail?

Animal Orientation is the ability of an animal to determine its position in space and move predictably with respect to specific stimuli. The best examples of animal orientation are observed in response to gravity.

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A human who has fell down on ground orients himself by standing up. Some animals orient themselves towards the incoming light.

Sensory Motor Basis of Orientation Animal orientation is a complex process that requires the integration of sensory input and the coordination of motor output. It includes receiving information through the sensory receptor neurons, processing and correlating it in the central nervous system and forming a response through the muscles that cause the body of animal to move.

Types of Orienting Movements:**Kinesis**

Kinesis is a change in activity or turning rate in response to a change in location.

Taxis

A taxi is an oriented movement toward (positive taxis) or away (negative taxis) from some stimulus.

23. Neural Plasticity and Explain It with Example

Although the basic architecture of the nervous system is established during embryonic development, the behavioral patterns can modify with experience. This capacity of nervous system to change with experience is known as neuronal plasticity. Neuronal plasticity is of premier importance for the survival of any organism.

Examples of Neural Plasticity:

- Learning, memory and development of motor skills and habits.
- Neural plasticity lies behind human intelligence.
- The ability of all higher animals to respond to stimuli in diverse ways
- Behavioral plasticity, virtually demonstrated by all animals.

Mechanism of Neuronal Plasticity:

Much of the reshaping of the nervous system occurs at synapses. The mechanisms that underlie synaptic plasticity are currently the subject of many experiments.

24. What Is Blubber and Its Role?**Blubber**

Blubber is a thick layer of fat, also called adipose tissue, directly under the skin of all marine mammals.

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Role of Blubber:

- Marine mammals (seals, walruses, sirenians, cetaceans—whales) have thick layers of insulating subcutaneous fat which is known as blubber.
- Blubber is a good insulator because it has a lower thermal conductivity.
- Fatty tissues are metabolically very inactive and have little blood vascularization. This prevents heat loss through body surface.

25. Objectives of Ethology?**Ethology:** “Scientific study of animal behavior in natural environment”**Objectives of Ethology:** Involves understanding of

- Understanding the stimuli that elicit behavior.
- Understanding the physiological mechanisms that mediate the response.
- Understanding how an animal's experience during growth and development influence the response.
- Understanding how the behavior aids in survival and reproduction.
- Understanding the behavior's evolutionary history.

26. Mechanism of Panting?

- Panting involves use of respiratory system to lose heat by evaporative cooling. It occurs in mammals, birds and some reptiles.
- During panting, mammals inhale through the nose and exhale through the mouth, exposing the tongue and other mouth structures to encourage further water evaporation and therefore heat loss.
- It also involves increase in breathing rate and depth (hyperventilation).
- Heat is carried away in exhalant air because that exhalant air retains the heat absorbed in the lungs.
- In contrast, nasal passages and their vascularization are effective in retaining both water and body heat.

27. Torpor with Example?

Torpor Small endotherms cannot maintain their high rates of metabolic rates when they are not feeding during periods of inactivity. During those periods, some of these animals enter a state of torpor, in which body temperature and metabolic rate decrease.

The lower basal metabolism lowers the rate of conversion of energy stores into body heat. Thus, it is generally advantageous to allow body temperature to decrease during periods of nonfeeding and inactivity.

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As the animal comes out of torpor and becomes active, it undergoes a burst of metabolic activity, through shivering or oxidation of brown-fat and its body temperature rises.

Daily torpor is practiced by many terrestrial birds. The hummingbird is a classic example, allowing its body temperature to fall from a daytime level of about 40°C to a nighttime level as low as 13°C. Several species of small mammals also undergo torpor (e.g., shrews).

28. Parental Care in Mammals?

In mammals, lactating female nourishes the young and is involved in most of the caring behaviors. Males usually play no role in raising the young. In some mammalian species, such as lions, males protect the females and young. In such species a male or small group of males takes care of many females at once in a harem.

29. Define Cognition Map?

Cognitive Maps is also called mental map. Some animals guide their activity by a cognitive map, a representation in the nervous system of the spatial relationships between objects in an animal's surroundings. Rather than relying solely on moving from landmark to landmark, animals using cognitive maps can navigate more flexibly and efficiently by relating landmark positions to one another. It is essential in environment where strategic decisions are made in rapidly shifting economic environment.

30. What Are Pheromones? Also Describe Their Role?

Many animals communicate by releasing chemical substances called pheromones.

Characteristics

- Chemical messengers with particular odors
- Released to the environment
- Spreads through air
- Effective at remarkably low concentrations
- Detected by the olfactory receptors of the receiving animal
- Affect the behavior of individuals of the same species
- Chemical communication is well developed in insects, fishes, salamanders and mammals.

Roles of Pheromones:**Recognize members of species**

- ✂ Unicellular organisms recognize members of their own species.
- ✂ Many insects identify members of their colony through chemical communication.

Reproductive Roles:

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Pheromones may attract members of opposite sex for breeding. They induce courtship behaviors in the members of a species. Pheromones have adaptive value for successful external fertilization. In many aquatic pheromones induce spawning in other individuals.

Territorial Behaviors: Many male mammals mark their territories with pheromones to warn other males of their occupied area.

Insect's Social Order: In a honeybee colony, pheromones produced by queen maintain hive's complex social order.

Alarm Calls: Members of some species produce pheromones on getting injured to warn other members of presence of danger.

Repel Predators: Pheromones also are used to repel predators.

A common example is the foul-smelling musk that makes skunks unpalatable to their enemies.

31. What Is Kin Selection Give Example?

- Kin selection is an altruistic evolutionary strategy that favors the reproductive success of an organism's close relatives, even at a cost of organism's own survival and reproduction.
- Kin selection is an instance of inclusive fitness, which combines the number of offspring produced by an individual itself and the number of individuals it can ensure by supporting other close relatives (siblings).
- William Hamilton proposed the idea of kin (relatives) selection to explain how selection acting on related animals can affect the fitness of an individual.
- Through kin selection, a gene carried by a particular individual passes to the next generation through a related individual.
- The fitness of an individual is based on the genes it passes on as well as on those common genes that its relatives pass on.
- For kin selection to be effective, the individuals of a group must be able to identify their relatives. This is the reason that it is found in animals with advanced social structures i.e., primates and social insects.
- The altruistic kin selection behavior is most readily apparent in the act of **parents sacrificing** for their offspring. When parents sacrifice their own well-being to produce and aid offspring, this actually increases the fitness of the parents because it maximizes their genetic representation in the population.

32. Aggregation with Example?

- An aggregation is any form of gathering of animals or the process of coming together.
- There is minimal interaction between members of an aggregation.

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- o For example, several *Drosophila* flies living on a piece of rotting fruit.

33. Define Physiology?

Animal Physiology deals with the study of functions of the tissues, organs and organ systems of animals. The ultimate goal of the study of physiology is to understand the mechanisms that operate in animals at all levels, in physical and chemical terms.

34. Define Vestibular Apparatus?

Also Called as vestibular apparatus, located in the inner ear. It has:

- ✂ Saccule
- ✂ Utricle
- ✂ Semicircular canals

35. Differentiate Between Laminar and Turbulent Flow?**Laminar Flow**

Flow is streamlined and continuous. The velocity of fluid is constant at every point. Flow occurs in layers at different velocities. Flow is zero at the wall and maximal at the center

Turbulent Flow

Direction of fluid movement is not aligned. It requires higher energy to move blood through Vessels. Turbulence also happens if smoothness is reduced by any obstruction e.g., Buildup of fatty deposits on arterial walls.

36. Favreau's- Lindqvist Effect?

Phenomenon of plasma skimming & resultant increased blood flow velocity is called Fahraeus Lindqvist effect. It reduces energy required to drive blood through micro circular

37. Difference Between Cortex and Medulla?

Cortex and medulla the kidney is divided into two functional layers that contain the functional urine forming units— nephrons. The outer layer is called renal cortex while the inner layer is renal medulla.

38. Differences B/W cGMP and cAMP Pathways?

A few of such differences include:

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- The production of cGMP is catalyzed by guanylate cyclase enzyme from GTP.
- Guanylate cyclase occurs in two forms: one bound to the plasma membrane and one free in the cytoplasm. In contrast, adenylate cyclase is always bound to the plasma membrane.
- Guanylate cyclase becomes active as the Ca^{2+} concentration is increased within the cell, while adenylate cyclase activity is increased when Ca^{2+} conc. is low.
- cGMP activates a specific protein kinase, protein kinase G instead of protein kinase A.

39. Types of Vascular Resistance?

Vascular Resistance “The resistance that must be overcome to push blood through the circulatory system and create flow”

Types

- Systemic vascular resistance (SVR)
- Pulmonary vascular resistance (PVR)

40. Oxytocin?

Is a type of hormone oxytocin are released by axon terminals in the posterior pituitary? Stimulates milk ejection, uterine contractions during child birth.

Neurohypophyseal hormones are synthesized and packaged in the cell bodies of two groups of neurosecretory cells in the anterior portion of the hypothalamus:

- **Supraoptic nuclei**
- **Paraventricular nuclei**

41. Five Types of Hormone?

Based on their structure and pathway for synthesis, hormones are divided into four groups:

- Peptide hormone
- Protein hormones
- Amine hormones
- Steroid hormones
- Prostaglandins

42. Abnormalities Due To GH?

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Disturbances in the secretion of GH lead to abnormal growth and development in humans:

Gigantism

Hypersecretion of GH before puberty causes excessive size and stature.

Acromegaly:

Hyper secretion of GH after maturity causes enlargement of bones of the head and limbs.

Dwarfism:

Insufficient secretion of GH during childhood and adolescence causes underdevelopment of the body (short stature).

43. Genetic Basis of Color Blindness?

The three types of opsins found in color pigments are encoded by three different genes. The gene encoding the opsin in blue-absorbing pigment is located on an autosomal chromosome. The genes for red-absorbing and green-absorbing pigments are closely linked on the X chromosome. Color blindness is caused due to a mutation in one of the cone opsin genes, resulting in absence of one type of pigmented cones. A person missing a single type of color receptive cones is unable to distinguish some colors.

44. cGMP As A Second Messenger?

Many animal cells also use cyclic GMP (cGMP) as a second messenger. The pattern of cGMP activities is similar to that of cAMP. However, the cGMP signaling pathway differs in some respects pertaining to specific enzymes and factors stimulating these enzymes.

45. Factors Affects Systemic Vascular Resistance?

- ✎ Diameter of vessel
- ✎ Vasoconstriction (i.e., decrease in blood vessel diameter) increases SVR,
- ✎ whereas vasodilation (increase in diameter) decreases SVR.

46. Name 3 Vasodilators in The Body?

- ✎ Histamine released from connective tissue and white blood cells in injured tissues causes vasodilation
- ✎ Plasma kinins (e.g., bradykinin) are potent vasodilators in damaged tissues
- ✎ Nitric oxide (NO) serves as a major inducer of vasodilation in cardiovascular system also causes relaxation of vascular smooth muscle and acts as vasodilator
- ✎ Lactic acid generated by tissue cells 5. Rising conc. of K⁺ or H⁺ ions in interstitial fluid
- ✎ Prostacyclin causes vasodilation and acts as an anticoagulant.

47. Write the Name of Local Vasoconstrictor?

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- Prosta gland and thromboxanes released by activated platelets and white blood cells.
- Endotheline released by damaged endothelial cells

48. What Is Rete Mirabile? Mention Its Function in The Tuna Fish?

A countercurrent network arrangement of arterial and venous capillaries is referred to as a rete mirabile. Before entering a tissue, an artery divides into a large number of small capillaries that parallel a series of venous capillaries leaving the tissue. The arterial capillaries are surrounded by venous capillaries. **Rete Mirabile—Functions** this arrangement forms an extensive exchange surface between inflowing and outflowing blood.

Function in the Tuna fish:

Tuna (fish) have a large number of rete mirabile, which are used to regulate the temperature of the brain, muscles, and eyes. The rete mirabile leading to the swim bladder of some fish (e.g., eels) function as a carbon dioxide countercurrent exchanger.

49. Chemoreceptors?

Chemoreceptors in our bodies, sensory cells or organs that interact with chemicals in our blood and in what we eat and smell. These chemoreceptors then convey messages about what they've found to our brains to get a response. These responses may tell us not eat something that's rotten or to flee from the smell of smoke. Our heartbeat and respiration rates are also controlled by chemoreceptors that detect carbon dioxide, oxygen, and pH levels in the blood. **Three types of** chemoreceptors monitor changes in O₂ and CO₂ and pH levels in arterial blood:

- Peripheral Chemoreceptors
- Central Chemoreceptors
- Type-J Chemoreceptor

50. Baroreceptor?

The baroreceptor system is a simple and rapidly acting control mechanism that contributes to the regulation of arterial blood pressure. Baroreceptors in Vertebrates Baroreceptors are widely distributed in the arterial system of vertebrates.

- ✍ The central cardiovascular system of amphibia, reptiles and mammals have unmyelinated baroreceptors.
- ✍ These unmyelinated baroreceptors only respond to pressures above normal, initiating reflexes that reduce arterial blood pressure and thus protect the animal from damaging increases in blood pressure

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51. Vasodilation?

Vasodilation is the widening of blood vessels.

- Decreased tissue oxygen levels or increased CO₂ levels.
- Lactic acid or other acids generated by tissue cells.
- Nitric oxide (NO) released from endothelial cells.
- Rising concentrations of potassium ions or hydrogen ions in the interstitial fluid.
- Elevated local temperature.

52. Gastrointestinal Track?

Cholecystikinin Stimulates secretion of enzymes by pancreatic acinar cells Stimulates gall bladder contraction

Chymodenin: Stimulates secretion of chymotrypsin from pancreas.

Gastrin: Stimulates HCl secretion in stomach.

Secretin: Stimulates secretion of bicarbonate.

Substance P: Acts as enteric neurotransmitter for feeling of pain

Motilin: Increases motility of intestinal villi

53. Prostaglandins.

Prostaglandins are about 16 hormone-like local regulators substances that constitute a family of cyclic, long-chain, unsaturated, hydroxy fatty acids.

Synthesis

Prostaglandins are produced by all or nearly all tissues. They are synthesized in membranes from arachidonic acid, which is produced by cleavage of membrane phospholipids by phospholipases.

Functions:

Prostaglandins have diverse actions on a variety of tissues, particularly involving smooth muscles.

- **Role in Fertilization:** Prostaglandins present in semen aid in fertilization by reacting with the female cervical mucus to make it more receptive to sperm movement. They also stimulate the smooth muscles of the female's uterine wall to contract, helping sperm reach an egg.
- **Aid During Labor:** Certain prostaglandins are secreted by the placenta at the onset of childbirth. They make the muscles of uterus more excitable, enhancing uterine contractions during labor.

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- **Role in Immune Response:** The damaged tissues, that induce immune response, produce prostaglandins. Some prostaglandins act as local regulators of inflammation, promoting fever and inflammation and also intensify the sensation of pain.
- **Blood Clot Formation:** Prostaglandins also help the platelets to aggregate and form blood clots. This is the basis of use of aspirin by patients at risk for a heart attack due to formation of clots.
- **Stomach Lining:** Prostaglandins also help maintain a protective lining in the stomach. As aspirin interferes with prostaglandin synthesis, long-term aspirin therapy can result in damage to this protective lining, causing debilitating stomach irritation.
- **Production of Erythropoietin:** Several prostaglandins stimulate the production of erythropoietin by kidneys. Erythropoietin is a hormone that stimulates the production of erythrocytes.

54. Neuromodulation?

Neuromodulation is a physiological process by which the neurotransmitters released by a small group of neurons diffuse through large areas of the central nervous system, and interact and modulate the effect of many neurons simultaneously. This is in contrast to classical synaptic transmission, in which one presynaptic neuron directly influences a single postsynaptic neuron.

55. What Is the Role of Corpus Luteum In Pregnancy?

If the released ovum is fertilized and becomes implanted in the endometrium, the developing placenta begins to produce chorionic gonadotropin hormone that maintains an active corpus luteum, so that estrogen and progesterone secretion continues until the placenta fully takes over the production of these hormones, at which time the corpus luteum degenerates.

56. Types of Stimuli Two Types?

- External stimuli Stimuli of odor, touch, light, sound and gravitation
- Internal stimuli Stimuli of pain, homeostatic imbalances and blood pressure

57. Taste Buds and Taste Receptors?

The gustatory organs of vertebrates are called taste buds. A taste bud is composed of about 50 types of modified epithelial cells, including:

- ✂ Supporting cells (sustentacular cells)
- ✂ Basal cells
- ✂ Taste receptor cells

They regularly generate new sensory taste receptor cells which have an active life of only 10 days.

58. Feedback Mechanism?

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Mechanism of self-regulation of Biological processes. Output or product itself regulates the process
Maintenance of homeostasis

59. Differentiate Between Concentric Contractions and Eccentric Contractions?

Concentric Contractions: If the muscle generates tension and the entire muscle shortens then it is a concentric contraction.

An example: would be lifting a weight from your waist to your shoulder; the bicep muscle used for this motion would undergo a concentric contraction.

Eccentric Contractions: If the muscle generates tension and the entire muscle lengthens, it is an eccentric contraction.

For example, lowering the weight from the shoulder to the waist, the bicep **muscles would** generate force but the muscle would be lengthening.

60. Acclimatization with Example?

Acclimatization is a physiological, biochemical, or anatomic change within an individual animal that results from the animal's chronic exposure to new, naturally occurring environmental conditions.

Example. Let's consider an animal that voluntarily migrates from a valley to a high mountain i.e., a voluntary change happens in its natural environment in which oxygen partial pressure is low.

61. Adrenal Cortex Hormone?

- Aldosterone
- Cortisol,
- corticosterone,
- cortisone

62. Parts of Eye Take Part in Focusing?

The parts of the eye involved in focusing and image formation are: Cornea, a biconvex lens, pupil and retina.

63. Role of T3 And T4.?

- 👉 They regulate bioenergetics by stimulating cellular respiration, oxygen consumption and metabolic rate.
- 👉 The acceleration of metabolism leads to a rise in heat production. This is of major importance in the thermoregulation of many vertebrates.

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- ⇒ They also sensitize some tissues to epinephrine that helps to maintain normal blood pressure, heart rate and muscle tone. □ They also regulate reproductive functions.

64. Rhodopsin?

The visual pigment in the rods is rhodopsin. Rhodopsin absorbs photons of light energy and produce a generator potential. Opsins are coupled to light-absorbing photopigment Retinal.

This forms a functional pigment molecule rhodopsin.

65. Donnan Equilibrium?

“If diffusible solutes are separated by a membrane that is freely permeable to water and electrolytes but totally impermeable to one species of ion, the diffusible solutes become unequally distributed between the two compartments”.

66. Define Line Coding?

Each receptor subtype for taste sensations is connected to a particular set of axons in the nerve. In such an arrangement, information about one taste e.g., "sweetness" would be carried by some specific subset of axons such a pattern is called labeled line coding.

67. Explain the Types of Hair Cells

Hair cells are ciliary cells.

- ⇒ Found in several sensory organs of vertebrates.
- ⇒ They are highly sensitive mechanoreceptors.
- ⇒ Responsible for transducing mechanical stimuli into electrical signals.

Systems Based on Hair Cells: Examples

- ⇒ Lateral-line system of fishes and amphibians, involved in detection of motion in the surrounding water. This system is based on hair cells.

Hair Cell Cilia

- ⇒ Many cilia project from the apical end of each cell (reason of naming).
- ⇒ Cilia are of two types: Kinocilium and Stereocilia

Kinocilium:

- ⇒ A hair cell has a single kinocilium.
- ⇒ Kinocilium has a "9 + 2" arrangement of internal microtubules

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➤ Each hair cell has 20-300 nonmotile stereocilia.

Stereocilia:

- Stereocilia are structurally and developmentally distinct from the kinocilium.
- They are not formed of microtubules.
- They are formed of actin filaments.
- The stereocilia are arranged in order of increasing length from one side of the cell to the other.

68. Disease Cause by Hypothyroidism?

Hypothyroidism usually results from the lack of dietary iodine. It is characterized by two types of diseases: Cretinism and goiter

Cretinism

Iodine deficiency during early stages of development results in cretinism. In cretinism somatic, neural and sexual development is severely retarded, metabolic rate and resistance to infection is reduced.

Goiter

Inadequate production of thyroid hormones in adults leads to excessive production of TSH. TSH causes overstimulation of thyroid gland resulting in its enlargement (hypertrophy). This condition with enlarged thyroid is called goiter.

69. Name Glandular Cells of Thyroid and Name Their Hormones Too.

- **Somatotropes** — produce growth hormone (GH)
- **Corticotropes** — produce adrenocorticotrophic hormone (ACTH)
- **Thyrotropes** — produce thyroid-stimulating hormone (TSH)
- **Gonadotropes** — produce gonadotropic hormones (luteinizing hormone)
- **Lactotropes** — produce prolactin (PRL)

70. Range Fractionation?

In a sense organ, sensory receptors are arranged in an order of increasing sensitivity to different range of intensities of the stimulus. This hierarchical arrangement of receptors is known as range fractionation.

71. Placental Hormone?

In pregnancy, placenta secretes large quantities of hormones, essential for maintenance of pregnancy. These hormones include:

- gonadotropin

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- Estrogens
- Progesterone
- Somatotropin hormone

72. Progesterone?

Progesterone is secreted in tremendous quantities by the placenta, averaging about a 10-fold increase during the course of pregnancy. It decreases contractility of the uterus to prevent spontaneous abortion.

73. Color Blindness?

Color blindness is caused due to a mutation in one of the cone opsin genes that results in the absence of one type of pigmented cones. • A person missing a single type of color receptive cones is unable to distinguish some colors.

74. Differentiate Between Norepinephrine and Epinephrine?

Norepinephrine is the primary excitatory transmitter in postganglionic cells of sympathetic system.

Epinephrine is excitatory at some synapses and inhibitory at others depending on postsynaptic membrane

75. Name Two Components of Rhodopsin.

A rhodopsin molecule consists of two major components: Opsin protein and a lightabsorbing molecule that may be retinal or 3-dehydroretinal.

76. What Is Gonadotropin

Luteinizing and Follicle Stimulating Hormones. Luteinizing hormone (LH) and follicle stimulating hormone (FSH) are called gonadotropins because stimulate the gonads - in males, the testes, and in females, the ovaries.

77. Define the Terms Gland and Secretion?

A **gland** is a cell or group of cells that secretes a particular chemical substance for use in the body or for discharge into the surroundings.

Secretions are chemical substances, synthesized by glandular cells. They are released from the gland in response to an appropriate stimulus.

78. Write the Role Of Fibers Of Zonula And Ciliary Muscles In Eye?

Role of Fibers of Zonula:

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- The shape of the lens is changed by the fibers of the zonula that held the lens in place.
- These fibers can exert an outwardly directed tension on the perimeter of the lens

Role of Ciliary muscles:

- Ciliary muscles are attached with the fibers of zonula.
- Their contraction and relaxation adjust the amount of tension exerted on the lens.

79. Describe Hodgkin Cycle in Detail?

The number of Na^+ channels open at any instant depends on V_m as well as on time i.e. the phase of action potential. Thus, changes in the conductance of sodium ions (g_{Na}) occur as a function of V_m and time and reflect the behavior of thousands of Na^+ channels, each one opening and closing during depolarization in accord with certain principles.

During an AP, Na^+ channels respond to an initial depolarization by opening, allowing Na^+ to enter the cell, which further depolarize the membrane. This depolarization causes more channels to open, allowing still more Na^+ to enter the cell and triggering an explosive, regenerative event.

This relationship between membrane potential and sodium conductance is termed as the Hodgkin cycle and represents a type of positive-feedback system.

80. Kinesiology?

The study of different types of muscles, lever systems, and their movements is called kinesiology and is an important scientific component of human physio anatomy.

Types of Levers in Body Levers are typically labeled as first class, second class or thirdclass levers depending on:

- the point of muscle insertion
- its distance from axis (fulcrum)
- the length of the lever arm

81. Which Hormones Are Involved in The Regulation Of Water And Ions?

These hormones include:

- Antidiuretic hormone (ADH)
- Aldosterone
- Atrial natriuretic Hormone
- Calcitonin
- Parathormone

82. Messiner Corpuscles And Paccin Corpuscles Difference?

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Touch receptors in ridges of fingertips are Meissner's Corpuscles. They have encapsulated nerve endings. To receive pressure stimulus, Pacinian corpuscles are situated deep in skin, in the limbs they receive vibrations.

83. Basic Components of Homeostasis and Example of Homeostasis, Its Mechanism?

Ability to protect internal environment from the harms of fluctuations in external environment is termed as homeostasis.

Components:

Receptors, Control center, effectors

Example:

- Homeostatic regulation of water
- Homeostatic regulation of temperature
- Regulation of pH
- Regulation of glucose concentration
- Regulation of osmotic pressure □ Regulation of oxygen level □ Regulation of ion conc.

Mechanism of Homeostasis:

- Variables
- Set point
- Living control systems VS physical control system

84. Sensory Stimuli?

- A sensory stimulus is a detectable change in the internal or external environment that causes a neuro-physiological response.
- Stimuli are the sensory inputs that are gathered constantly from the environment and keep the animal aware of its external or internal environment.
- All stimuli represent some form of energy which may be mechanical or chemical or it may be photon energy of light.

Types of Stimuli:

External Stimuli: Stimuli of odor, touch, light, sound and gravitation

Internal Stimuli: Stimuli of pain, homeostatic imbalances and blood pressure

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85. Exocrine Gland With 2 Examples At least?

Exocrine glands produce fluid secretions that are delivered through ducts onto the epithelial surfaces of the body. The fluid secretions may be proteins (enzymes) or mucous or both.

Examples:

- Salivary glands produce saliva that is delivered to the oral cavity through submandibular and parotid ducts.
- Pancreas produces enzyme-containing pancreatic juice that is delivered to the small intestine through pancreatic duct.
- Lacrimal glands produce tears that are delivered through lacrimal duct on the surface of eye.
- Mammary glands produce milk that is delivered through lactiferous ducts to the nipples

86. Effects of Neuro-Modulation?

- Development of complex behavioral patterns e.g., happiness, exploration, revenge, reward, greed.
- Processes of thinking, cognition, planning, learning and memory
- Behavioral problems: mood swings, sleep disturbances, feelings of stress, anxiety, anger and depression.

87. 2 Examples of Interoceptive Receptors?

- Thermo-receptors that keep track of thermal state of the body
- Chemo-receptors that keep track of chemical state of the body
- Nociceptors perceive the sensation of pain.
- Pacinian corpuscles receive pressure stimulus.

88. Name and Explain Hair Cell Types?**Inner hair cells (IHC):**

- There are about 3,500 IHCs arranged in a straight line or wide U.
- They are true sensory cells which send impulses via auditory nerve

Outer hair cells (OHC):

- About 12,000-25,000 OHCs in mammals,
- they are arranged in three or four rows forming a characteristic W shape.

89. Hormones of Ovary?

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LH stimulates production of estrogen and progesterone by ovary.

90. Explain Photoreceptor?

Photoreceptors can detect and generate response to a single photon of light. Photoreceptors possess light sensitive carotenoid pigments retinal and 3-dehydroretinal. Carotenoids are associated with opsin proteins to form rhodopsin's. Rhodopsin's absorb photons of light energy and produce a generator potential.

91. Active Potential Phases Stigma and Ocelli?**Eyespot or Stigma**

Simplest photoreceptive structure. Found in some protozoa e.g., euglena. It is a bright red colored organelle and has carotenoid pigments. It gives a sense of light and dark. Helps in phototaxis.

Eycups or Ocelli

Multi-cellular photoreceptive structure that consists of a cuplike depression containing photoreceptor cells; Found in cnidarians and flatworms e.g., Planaria. Cannot form image, provides the animal a sense of direction only.

92. Hyperthyroidism?

Excessive secretion of thyroid hormone is known as hyperthyroidism. The most common form of hyperthyroidism is Graves' disease. It is an autoimmune disorder in which antibodies that mimic TSH bind to the receptor for TSH and cause sustained thyroxine production.

It leads to high body temperature, profuse sweating, weight loss, irritability, high blood pressure and protruding eyes (exophthalmia).

93. Write Three Type of Blood Vessels?

Network Of blood vessels

- Arterioles,
- Capillaries
- Venules

Three types of blood vessels carry blood during circulation:



- Arteries which carry blood away from the heart to organs and tissues.
- Veins which return blood to the heart.
- Capillaries which have thin walls and permit exchange of materials between blood and tissues.

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94. How Alveolar Collapse Is Prevented?

Prevention of Alveolar Collapse: Alveolar collapse normally does not occur for two reasons:

-  Surrounding tissue prevents over-expansion of alveoli.
-  Presence of pulmonary surfactants.

95. Name Mechanoreceptor Fiber in The Arterial Wall?

Atrial walls have mechano-receptive afferent fibers including:

-  Myelinated A-type afferent fibers
-  Myelinated B-type afferent fibers
-  Unmyelinated C-type afferent fibers
-  Stretch-sensitive secretory cells

96. What Is Hypoxia? Responses of Aquatic Animals In It

Hypoxia is a condition in which the body or a region of the body is deprived of adequate oxygen supply. **Respiratory Responses of Aquatic Animals to Hypoxia:**

- Oxygen level in aquatic environment varies frequently. Aquatic animals are subjected to more frequent and rapid changes in oxygen levels.
- Many aquatic animals can withstand very long periods of hypoxia. Many of these animals utilize a variety of anaerobic metabolic pathways to survive the period of reduced oxygen availability.
- Many animals adjust the respiratory and cardiovascular systems to maintain oxygen delivery during reduced oxygen availability. For example, many fishes increase gill ventilation rate in hypoxic conditions.

97. Three Respiratory Pigments?

Respiratory pigments are the substances that transport respiratory gases, oxygen and CO₂ in the blood. Various respiratory pigments found in animal kingdom include: hemoglobin, myoglobin, hemocyanin, hemerythrin and chlorocruorin.

98. Four Steps of Gas Transport System?

Animals take in oxygen from the environment and give off CO₂. This exchange of oxygen and carbondioxide with the environment is called gas exchange or external respiration or breathing. Such a system involves four basic steps:

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- Breathing movements, which assure a continual supply of air or water to the respiratory surface (e.g., lungs or gills)
- Diffusion of O₂ and CO₂ across the respiratory epithelium
- Bulk transport of gases by the blood
- Diffusion of O₂ and CO₂ across capillary walls between blood and mitochondria in tissue cells



انسانی زندگی میں سب سے برا
زمانہ وہ ہے جب لوگ دلیل سے
نفرت کرنے لگیں۔

‘سقراط’