

ZOO502 FINAL TERM CURRENT PAPERS

(MIDTERM CURRENT MCQS INCLUDED)

FINAL TERM CURRENT MCQS OF ZOO502

1. Non diffusible ____produce Donnan effect **SOLUTE**
2. ____ channels are involved in producing action potential. **Na⁺ and K⁺**
3. Which statements not related to voltage gated Na channel. ____ options likh k laye
4. AChE abundantly present in **SNYPTIC CLEFT**
5. Which ____monitors the position of muscles and joints. **PROPRIOCEPTORS**
6. Sensory sensilla are organ of ____in insects. **TASTE**
7. Merkel Disks are associated with the reception of **VIBRATION**
8. Human ear can detect sound **20 TO 20000 HRTZ**
9. interstial tissues constitute ____ of adult testes mass **20%**
10. Adenohypophysis is the site for production of ____ options likh k laye
11. Velocity of impulse conducting by arterial fiber is **0.3 m/s**
12. Equation indicate blood flow **$V = Q/A$**
13. Relative viscosity of plasma **1.8**
14. Fenestrated capillaries are found in **endocrine glands**
15. Which is local vasoconstrictor **Angiotensin II**
16. ____ is formed in lungs, acts as local vasoconstrictor **Angiotensin II**
17. Amount of air M/V that still remains in lungs when they fully collapse **30 to 120mL**

18. Respiratory system of ____ is composed of 7 or 9 air sacs Birds
19. Central chemoreceptors are located in ____ Medulla of mammals and Air breathing vertebrates
20. which are stenohaline animals Marine spider, crab
21. A camel can lose ____ of water and still survive 40%
22. ____ is involve in maintaining pH of urine TUBULAR SECRATION
23. GFR averages an astounding ____ per minute 125 mL
24. It requires only ____ of water to excrete 1g of urea. 0.05 L
26. Esophagus is included in ____ division of mammalian digestive tract. Four (4)
27. Human GIT secretes ____ exocrine fluid daily. Bile and Bile salts
28. Goblet cells synthesis and secretes Mucus
29. ____ is largest water soluble essential nutrient Vitamin B12
30. Brown fat contains large amount of Mitochondria
31. Which is Neuroethological behavior Study behavior in laboratory
33. Agonistic behavior involve ____ b/w animals Competition
34. Social behaviors are based on Competition
35. Respiratory epithelium has only a thickness of 0.5 to 15 um
36. High pressure is Systolic BP
37. Atrial natriuretic peptide (ANP) hormone secreted by Stretch-Sensitive Secretory Cells
38. Blood with hemoglobin carry ____ Oxygen per 100ml. 20 ml
39. Inspiratory volume is 1900 ml
40. DCT secrete _____ NH₄⁺ ions, K⁺ ions, & H⁺ ions.
41. Teloest fish is _____ Ammonotelic Animals

42. Esophagus is part of Foregut
43. Deudenum is _____cm long 25cm
44. Troponin is sensitive to Ca⁺
45. Electric impulse is observed in Cardiac muscle
46. Proteases are (trypsin , chymotrpsin , pepsin)
47. Facilitated diffusion occurs with channel proteins
48. Sweating occur in UCT (Upper Critical Temperature)
49. Thickness of muscle fibers is _____
50. 1 joule of energy utilized in work, 3Joule energy is degraded
51. Study behavior in laboratory Neuroethological
52. A honey bee finds a food source close to the 50meter
53. One female has an exclusive relationship with two or more males' poly androus
54. Social behavior (Cooperation , competition, conflict)
55. Agonistic behavior (threat display, attach and fight)

MIDTERM PAST CURRENT MCQS OF ZOO502

- 1 A slowly occurring evolutionary process Adaptation
- 2 Changes are induced experimentally in the laboratory Acclimation
- 3 Neurotransmitters induce large increase in permeability to ions by acting on integral membrane proteins in nerve and muscle cell
- 4 Diffusion through the membrane down the conc. gradient with the help of transport proteins facilitated diffusion
- 5 Donnan equilibrium is characterized by a reciprocal distribution of the anions and cations
- 6 The conc. of K⁺ is maintained 10-30 times more in the cytosol than extracellular fluid

- 7 carrier protein Na^+/K^+ ATPase
- 8 A depolarization in the range of -55 to -30 mV is the threshold that triggers an AP.
- 9 The permeability of Na^+ channel for K^+ ions 0.09
- 10 Giant axons of arthropods and molluscs: 30 m/sec
- 11 Which of the following is not a pharmacological application Anemia
- 12 Calcium ions are not delayed rectifiers
- 13 Example of mechanical stimuli is gravity
- 14 Which one is not G protein receptor for taste sour and salty
- 15 Merkel's Disks are associated with the reception of vibration
- 16 Meissner's Corpuscles receptors are for touch
- 17 Each hair cell has 20-300 nonmotile stereocilia.
- 18 Human ear can detect sound frequencies lying between 20 to 20000 hertz.
- 19 Hair cells have a V_{rest} of -60 mV
- 20 Cold Receptors are 3.5 times more common in skin than heat receptors
- 21 Rods are more sensitive to light
- 22 Sensory layer of eye with photoreceptor cells Rods and cons is Retina
- 23 Visible spectrum for human eyes lies between the wavelengths of 400-740 nm
- 24 A person with loss of red cones is called a protanope
- 25 Effect on neighboring cells paracrine secretion
- 26 Adenohypophysis has pituitary lobe anterior
- 27 ACTH is a peptide hormone comprising single chain of 39 amino acids
- 28 Hypothyroidism causes Cretinism and Goiter
- 29 Regulate Ca^{2+} and phosphate ions in blood Parathormone PTH
- 30 Adrenal cortex produces two major types of steroid hormones: • Mineralocorticoids • Glucocorticoids
- 31 Catecholamines Conversion of tyrosine to dopa and dopamine occurs in the cytosol
- 32 Delta Cells constitute 10% of islets
- 33 interstitial cell constitutes of 20% mass
- 34 placental estrogens are 30 times more than the normal levels.
- 35 Thyroglobulin is stored within the thyroid gland in large follicles
- 36 Diameter of membrane channel is less than 1.0nm
- 37 channel involve producing action potential Na^+ and K^+
- 38 Action potential is inflow of Na^+ depolarization
- 39 Hallucination Endorphins

- 4 The receptor molecules are typically proteins
- 4 sensory sensilla are organ of taste
- 4 Prolactin regulates fat metabolism and reproduction in Birds
- 4 Example of peptide hormone in reproduction hormones Oxytocin
- 4 Rod photoreceptors are sensitive to low intensity dimmer light
- 4 Concentration of K^+ is 10-20 times higher inside the cell than outside
- 4 The correct statement is Symporters are coupled transporters that transfer two solutes in the same direction
- 4 Most neurons have an RMP of -70mV, when no impulse is being conducted
- 4 Radioactively labeled TTX is used to estimate density of Na^+ channels
- 4 Voltage-Gated Na^+ Channels are Fast Acting channels
- 5 In many invertebrate species, APs can last for 10-100 milliseconds
- 5 Delayed Rectifiers are Voltage gated K^+ channels
- 5 Cytosolic conc. of Ca^{2+} remains below $10^{-6} M$
- 5 Major ions responsible for V_{rest} are K^+ , Na^+ & Cl^-
- 5 Which of the following is not correct about ion channel protein Have Hydrophilic passageway that facilitate quick flow of water molecules and ion in dissolved form.
- 5 Thickness of cell membrane is 5nm
- 5 Which is not associated with ATPase Ca Activated
- 5 Which is not Fast inhibitory transmitters Acetylcholine
- 5 AChE is abundantly present in the synaptic cleft
- 5 Mescaline that induces hallucinations
- 6 The genes for red and green cone pigments are closely linked on the X chromosome
- 6 Example of steroid hormone is Aldosterone
- 6 substance that is released via a duct through the gland to the external or internal epithelial surfaces Exocrine secretion
- 6 Inhibits release of Growth Hormone (GH) Somatostatin
- 6 Amine hormone (Thyroid & Adrenal Modulatory hormone) are synthesized by the action of Enzyme on amino acid Tyrosine
- 6 Acts as enteric neurotransmitter Substance P
- 6 In many organisms, ACTH also plays role in circadian rhythms
- 6 Pituitary Gland release 9 hormones
- 6 Which is not part of a cell body Myelin Sheath

- 6 Adenohypophysis It contains five types of glandular cells that synthesize and secrete six hormones
- 7 A color-blind person who lacks green cones is called a deuteranope
- 7 Example of Apocrine secretions Mammary gland
- 7 Salivary glands produce saliva that is delivered to the oral cavity through submandibular and parotid ducts
- 7 Oxytocin stimulates motility of the oviduct in Birds
- 7 Which of the following hormone is released from anterior lobe of pituitary gland luteinizing hormone LH
- 7 Parathormone over secretion leads to Softness of bones
- 7 Type of secretion in which entire cell ruptures and breakup to release its content Holocrine secretion
- 7 Human retina contains 6 million cones
- 7 Which one is not related to diffusion option low to high concentration
- 7 melatonin belong to pineal Gland
- 8 pineal gland found dorsal surface of.....in vertebrate forebrain
- 8 target cell of hormones usually have receptors 2000 to 100,000
- 8 Thick filament are composed of myosin.
- 8 Each molecule of calsequestrin protein can bind around.....calcium 50
- 8 human s-A node is ...thick 1 millimeter thick
- 8 Velocity of impulse conduction through most atria fiber is..... 0.3 m/s.
- 8 Average cardiac output for resting adult man- 5L/mint
- 8 Myocytes are ____ muscles Cardiac
- 8 The knob of dendrite has ____ olfactory cilia 4 to 25
- 8 Synaptic cleft is ____ nm wide 20
- 9 Pituitary gland is ____ dm 1cm
- 9 Rhythmical discharge of S-A node is: ____ /mint 70 to 80
- 9 An adaptive change within an individual animal. Happens due to chronic exposure to new, naturally occurring environmental conditions Acclimatization.
- 9 Antidiuretic hormone can increase water permeability of renal collecting duct in mammals up to 10 times
- 9 ____ are delayed rectifiers Voltage – gated K⁺ channels

9. Which one of the following is not the feature of the Voltage-gated Ca^{2+} channel ____ **They are known as delayed rectifier**
9. Which of the following statement is correct about action potential **inflow of sodium ion (depolarization)**
9. Which of the following monitor the position of muscles and joints ____ **Proprioceptors**
9. Taste receptors in terrestrial vertebrates are not located in/on **Larynx**
9. Which is not the part of organ of Corti **Reissner's men**
100. Near the end of pregnancy, placental estrogens are 30 times more than the normal levels. ____ **30 times**
101. Myofibers are ____ in diameter, and up to many centimeters in length ____ **5 to 100 μm**
102. Troponin has high affinity for **Ca^{2+}** .
103. When the force exerted by the muscle contraction is equal to the opposing external force than ____ contraction **isometric**
104. Atrial contraction provides only ____ volume of total mammalian ventricular output **30%**

Subjective

2 Marks:

1. What is blubber and its role /2

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

Role: As fatty tissues are little metabolically active & have little blood vascularization so it is a good insulator b/c of low thermal conductivity and prevent heat loss through body surface.

2. Define peristalsis /2

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. Esophagus conducts the swallowed bolus by peristaltic movement.

3. Q. Write down the basic types of alimentary system? 2.

Types of Alimentary Systems:

Two basic plans of alimentary systems in animals:

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

4. Q. How alveolar collapse is prevented? 2

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

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

5. Q. Differentiate between laminar and turbulent flow? 2

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, A pressure difference supplies the force required to slide adjacent layers to past each other.

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.

6. Q. Name mechanoreceptor fiber in the arterial wall? 2

Ans: **Atrial Receptors:** 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

7. Fahraeu- lindqvist effect? 2

Fahraeus-Lindqvist Effect: Phenomenon of plasma skimming & resultant increased blood flow velocity is called Fahraeus Lindqvist effect. It reduces energy required to drive blood through microcirculation

8. Types of vascular resistance /2

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)

3 Marks:

9. Objectives of ethology /3

Ethology:

"Scientific study of animal behavior in natural environment" .

Objectives of Ethology: Involves understanding of

- Stimuli that elicit behavior
- Physiological mechanisms mediating response
- Animal's experiences that influence behavior
- Role of behavior in survival & reproduction
- Evolutionary history of behavior

10. Four accessory glands of elementary canal? 3

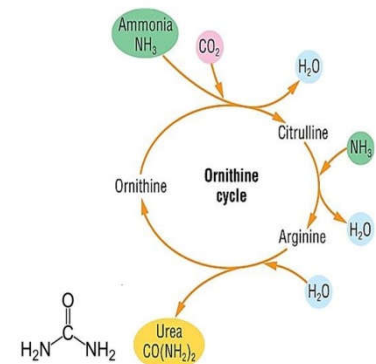
Accessory Glands: Secrete digestive juices through ducts. The accessory glands of the mammalian digestive system are:

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

11. Briefly describe ornithine urea cycle /3

Ornithine-Urea Cycle

- Used by all vertebrates except teleost fishes
- Synthesize urea primarily in the liver
- Two ammonia and one CO₂ molecule are added to ornithine to form arginine
- Enzyme arginase cleaves arginine to remove a molecule of urea and regenerate ornithine



12. Factors affects systemic vascular resistance /3

Factors affecting SVR

- Elasticity of vessel wall
- Diameter of vessel
- Decreasing vessel diameter (vasoconstriction) increases SVR
- Increasing vessel diameter (vasodilation) decreases SVR

13.3 uses of crop in various animals.(3)

Crop

- A sac-like expanded section in esophagus of some animals. Used to store food without digesting.

Crop plays various roles in different animals. For example

- Food storage without digestion

- Fermenting the food
- Prepare food for nestlings (pigeon's milk)

14.Q. Name 3 vasodilators in the body? 3

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

15. Write the name of local vasoconstrictor?

Ans:

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

16. Write down the composition of the Bile? 3

Ans: **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 is a weakly basic mixture of: Water, Cholesterol, Lecithin, Inorganic salts, Organic salts, & Bile pigments. Organic salts of bile are manufactured in liver from cholesterol and amino acids complexed with sodium. Bile pigments are derived from biliverdin and bilirubin—products of breakdown of hemoglobin coming from ruptured red blood cells.

5 Marks:

17.Q. What is Rete Mirabile? Mention its function in the Tuna fish? 5

Ans: **Rete Mirabile** A highly evolved system of countercurrent heat exchange. Found widely in homeothermic and heterothermic vertebrates. The artery carrying warm blood toward extremity is completely encased in a circlet of veins carrying back cold blood.

Function in the Tuna fish:

Forms an extensive heat exchange surface b/w inflowing and outflowing blood. Large number of rete mirabile in tuna (fish) are used to regulate temperature of brain, muscles, and eyes. Swim

bladders of some fishes (e.g. eels) are associated with rete mirabile and functioning as CO₂ exchangers.

18. Note on physiological adaptation of ectothermic in hot environment /5

Physiological Adaptations

- Ectotherms have high heat conductance
- Radiate heat rapidly—by moving to less warmer places
- Panting: Above 40°C many reptiles start panting—like birds and mammals
- Increases heat loss through respiratory evaporation, causing cooling.
- Regulating heart rate and flow of blood to surface tissues—to eliminate heat (e.g. marine iguanas)
- Gila monster (*Heloderma suspectum*) evaporates water from its cloaca to cool—a process similar to sweating in mammals

19. Write a note on types of stomach in vertebrates /5

Types of Stomach in Vertebrates: Based on number of chambers, stomachs are classified as:

- Monogastric stomachs
- Digastric stomachs

Monogastric Stomachs

- Consist of a single strong muscular tube or sac
- e.g. stomachs of carnivorous and omnivorous vertebrates

Digastric Stomachs

- Multichambered
- Found in ruminant mammals of order Artiodactyla
- Examples: deer, giraffe, sheep, cattle, camel, llama

Digastric Stomachs

- These stomachs have four chambers, with two divisions:
- First division consists of fermentation chambers rumen and reticulum
- Second division comprises true stomach (omasum and abomasum)

20. What is hypoxia? Responses of aquatic animals in it /5

Hypoxia • “A condition in which the body or a region of the body is deprived of adequate oxygen supply”

Hypoxia in Aquatic Environment

- O₂ levels in aquatic environment vary more frequently
- Aquatic animals are faced with frequent and rapid changes in oxygen levels. Many aquatic animals can withstand very long periods of hypoxia

Responses of Aquatic Animals to Hypoxia:

- Many aquatic animals utilize anaerobic metabolic pathways to survive hypoxic periods
- Many animals adjust respiratory & cardio-vascular systems to maintain O₂ absorption from hypoxic H₂O
- Many fishes increase gill ventilation rate in hypoxic conditions
- Ram ventilators (e.g. tuna) widely open mouth to increase water flow over the gills

10 Marks:

21. What are pheromones? Also describe their Role? /10

Pheromones:

- Chemical messengers released by many animals in environment to communicate. Spread through air.

Characteristics:

- Affect the behavior of individuals of a species
- Effective at remarkably low concentrations
- Have particular odors
- Detected by olfactory receptors of receiving animal

Roles of Pheromones:

1. Recognize Members of Species:

Unicellular organisms recognize members of their own species. Many insects identify members of their colony.

2. Reproductive Roles:

Pheromones attract members of opposite sex for breeding.

Induce courtship behaviors in members of a species.

Induce spawning behavior in aquatic animals with external fertilization.

3. Territorial Behaviors:

Many male mammals mark their territories with pheromones.

It warns other males of their occupied area.

4. Insect's Social Order:

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

5. Alarm Calls:

Members of some species produce pheromones on getting injured.

It warns other members by the presence of danger in area.

6. Repel Predators:

Pheromones produce by the pray may repel predators.

Example: The skunks produce foul-smelling musk that makes skunks unpalatable or distasteful to their enemies.