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ENT-24

Total No. of Pages : 24

## M.Sc. P.G. Entrance Examination, 2026

### Zoology

Subject Code : 58714

Day and Date : Thursday, 14-05-2026

Total Marks : 100

Time : 01.00 p.m. to 02.30 p.m.

#### Instructions

- 1) All questions are compulsory
- 2) Each question carries 1 mark.
- 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
- 4) Follow the instructions given on OMR sheet.
- 5) Rough work shall be done on the sheet provided at the end of question paper.

1. The "beads-on-a-string" structure of chromatin represents .....
  - A. DNA replication forks
  - B. Nucleosome organization
  - C. Polytene chromosome bands
  - D. Telomere loops
2. The K-T extinction is strongly associated with .....
  - A. Plate tectonics
  - B. Ice age
  - C. Ocean salinity
  - D. Asteroid impact
3. Assertion (A): Golgi apparatus is abundant in secretory cells.  
Reason (R): It adds sugar residues by O-glycosylation and packages proteins for secretion.
  - A. Both A and R are true, and R is the correct explanation of A
  - B. Both A and R are true, but R is NOT the correct explanation of A
  - C. A is true, but R is false
  - D. A is false, but R is true

4. Mendel's law of independent assortment fails when .....
- A. Genes are located on the same chromosome but far apart
  - B. Genes are on different chromosomes
  - C. Crossing over frequency is 50%
  - D. Genes are tightly linked on the same chromosome
5. Which adaptation in parasitic flatworms is most directly linked to excretion+ osmoregulation?
- A. Tegument
  - B. Flame cells
  - C. Suckers
  - D. Proglottids
6. Which combination of features would exclude a sponge from class Calcarea?
- A. Calcareous spicules + marine habitat
  - B. Asconoid canal system + choanocytes
  - C. Siliceous spicules + six-rayed
  - D. Cellular level organization + intracellular digestion
7. Match the causal organism (List I) with its hallmark clinical symptom (List II):
- |                     |   |
|---------------------|---|
| List I (Pathogen)   | List II (Symptom)                           |
| P. Plasmodium       | 1. Severe joint pain (Break-bone fever)     |
| Q. Yersinia pestis  | 2. Periodic shivering and high fever        |
| R. Dengue Virus     | 3. High fever and characteristic trunk rash |
| S. Rickettsia typhi | 4. Swollen lymph nodes (Buboes)             |
- Choose the correct combination:
- A. P - 2, Q - 4, R - 1, S - 3
  - B. P - 1, Q - 2, R - 3, S - 4
  - C. P - 2, Q - 1, R - 4, S - 3
  - D. P - 4, Q - 2, R - 3, S - 1

8. Identify the correct lobulation pattern of the lungs in *Rattus rattus*
- A. The left lung is divided into three lobes (cranial, middle, caudal) while the right lung is undivided.
  - B. The right lung consists of four lobes (cranial, middle, caudal, and post-caval) while the left lung is a single lobe.
  - C. Both lungs are symmetrically divided into two lobes each to accommodate the central position of the heart.
  - D. The lungs are non-lobulated structures that occupy the entire abdominal cavity ventral to the kidneys.
9. The locomotory organelles in Amoeboid protozoans are .....
- A. Cilia
  - B. Flagella
  - C. Pseudopodia
  - D. Tentacles
10. Which of the following is a cartilaginous fish?
- A. Rohu
  - B. Catla
  - C. Shark
  - D. Tilapia
11. Why does menstruation NOT occur during pregnancy?
- A. LH remains high
  - B. FSII is absent
  - C. Estrogen levels fall
  - D. Progesterone levels remain high
12. Which ART method bypasses sperm motility defects?
- A. ICSI
  - B. IUT
  - C. GIFT
  - D. ZIFT

13. In surgical contraceptive methods (Vasectomy and Tubectomy), which physiological process remains unaffected?
- A. Gamete transport through the reproductive tract.
  - B. The meeting of sperm and ovum for fertilization.
  - C. The process of gametogenesis in the gonads.
  - D. The patency of the vasa deferentia or fallopian tubes.
14.  $\beta$ -oxidation takes place to produce ..... as a fuel.
- A. Glucose
  - B. Pyruvate
  - C. Acetyl-CoA
  - D. Lactate
15. Which process contributes MOST directly to ATP production?
- A. Glycolysis
  - B. Krebs cycle
  - C. Pentose phosphate pathway
  - D. Oxidative phosphorylation
16. The heart of a frog is .....
- A. Two chambered
  - B. Three chambered
  - C. Four chambered
  - D. Single chambered
17. Which skull type is characteristic of modern Mammals?
- A. Anapsid (No temporal openings).
  - B. Diapsid (Two temporal openings).
  - C. Synapsid (One temporal opening).
  - D. Parapsid (One high temporal opening).
18. The Widal test is used for the diagnosis of .....
- A. Tuberculosis
  - B. Typhoid
  - C. Syphilis
  - D. Rickettsia

19. Which organism is the causative agent of Syphilis?  
A. *Borrelia recurrentis*                      B. *Rickettsia typhi*  
C. *Treponema pallidum*                      D. *Mycobacterium*
20. The "Candling" process in poultry management is used to .....
- A. Clean the eggs.  
B. Check the internal quality/fertility.  
C. Increase the shell thickness.  
D. Speed up hatching.
21. Which structure is purely epidermal in origin?  
A. Dermal scales                                  B. Placoid scales  
C. Feathers    D. Osteoderms
22. Mammalian vertebrae are .....
- A. Amphicoelous                                  B. Procoelous  
C. Acoelous                                        D. Opisthocoelous
23. Ruminants digest cellulose using .....
- A. Enzymes                                        B. Symbiotic microbes  
C. Bile salts                                        D. Pancreatic juice
24. The evolution of a "Double Circulation" (pulmonary and systemic) was primarily a response to .....
- A. The loss of the tail.  
B. The increased metabolic demand of endothermy and gravity on land.  
C. Living in deep ocean trenches.  
D. Moving from fresh water to salt water.

25. The transition from a homodont (identical teeth) to a heterodont (varied teeth) condition represents .....
- A. A shift from generalist to specialized feeding niches.
  - B. A decrease in the efficiency of digestion.
  - C. The loss of the ability to eat meat.
  - D. A move back toward an aquatic lifestyle.
26. Assertion: Lateral line system is absent in terrestrial vertebrates.  
Reason: It detects water vibrations.
- A. Both A and R are true, and R is the correct explanation
  - B. Both A and R are true, but R is NOT the correct explanation
  - C. A is true, R is false
  - D. A is false, R is true
27. Which feature is common to all chordates at some stage of life?
- A. Presence of Backbone
  - B. Presence of Notochord
  - C. Presence of Limbs
  - D. Presence of Lungs
28. Which arch persists as systemic arch in mammals?
- A. 3rd
  - B. 4th left
  - C. 4th right
  - D. 6th
29. Increase in intelligence correlates with .....
- A. Development of Cerebral cortex
  - B. Brain size
  - C. Skull thickness
  - D. Spinal cord length
30. The organ of Corti is associated with .....
- A. Vision
  - B. Smell
  - C. Hearing
  - D. Taste

31. If DNA ligase is non-functional, which outcome would be observed?
- A. RNA primers would not be synthesized during replication.
  - B. Okazaki fragments would remain unjoined on the lagging strand.
  - C. DNA polymerase would fail to add nucleotides to the growing chain.
  - D. Hydrogen bonds between bases would not form.
32. Which molecule acts as the primary effector for the positive regulation of the lac operon?
- A. Allolactose
  - B. Glucose
  - C. CAMP
  - D. Galactose
33. If the anticodon loop of a tRNA is altered, what is the most direct consequence?
- A. DNA replication becomes inaccurate.
  - B. Incorrect amino acids may be incorporated into proteins.
  - C. RNA polymerase fails to synthesize mRNA.
  - D. Ribosomes cannot bind to mRNA.
34. If splicing fails to occur in eukaryotic cells, what would be the likely result?
- A. Only exons would be translated into protein.
  - B. Introns would be retained in mRNA, disrupting translation.
  - C. DNA replication would stop completely.
  - D. Ribosomes would not bind to mRNA.
35. If a stop codon appears in the middle of an mRNA sequence, what happens?
- A. Translation continues until the normal stop codon is reached.
  - B. Ribosomes ignore the stop codon.
  - C. A shortened protein is produced.
  - D. DNA replication is halted.

36. Which statement best explains why highly expressed genes are abundant in cDNA libraries?
- A. cDNA is synthesized from mRNA, reflecting gene expression levels.
  - B. Genomic DNA selectively amplifies expressed genes.
  - C. Restriction enzymes preferentially cut active genes.
  - D. DNA polymerase targets coding regions specifically.
37. Western blotting is meant for transfer of bands of ..... from gel to membrane.
- A. DNA
  - B. RNA
  - C. Protein
  - D. Lipids
38. Gene knockout technique results in .....
- A. Addition of a gene
  - B. Inactivation of a specific gene
  - C. Duplication of a gene
  - D. hyperactivation of a gene
39. A frameshift mutation differs from a point mutation because it .....
- A. Alters only a single amino acid.
  - B. Changes the reading frame of the entire downstream sequence.
  - C. Has no effect on protein synthesis.
  - D. Occurs only in non-coding regions.
40. Why is an RNA primer necessary for DNA replication?
- A. DNA polymerase cannot initiate synthesis without a free 3'-OH group.
  - B. DNA strands cannot separate without RNA.
  - C. RNA is more stable than DNA.
  - D. Ligase requires RNA to function.

41. The first mammal cloned from an adult somatic cell was .....

- A. Tracy
- B. Dolly
- C. Gracy
- D. Cumulina

42. Serum-free media is used to .....

- A. decrease contamination
- B. Reduce cost
- C. Speed up the cell cycle
- D. Avoid unknown growth factors

43. "Explant culture" involves

- A. Dissociating the cells with enzymes
- B. Use of viral vectors
- C. Obtaining the cells by placing a small piece of tissue in a cell culture plate
- D. Growing the cells in suspension to get the exponential yield of cells

44. Assertion (A): Animals produced via the retroviral method of gene transfer are often chimeric or mosaic.

Reason (R): Retroviruses typically integrate their genetic material after the first few embryonic cleavages, rather than at the single-cell stage.

- A. (A) is true, but (R) is false.
- B. (A) is false, but (R) is true.
- C. Both (A) and (R) are true, and (R) is the correct explanation of (A).
- D. Both (A) and (R) are true, but (R) is not the correct explanation of (A).

45. Imagine you are setting up a biotech lab. Match the tool or material to the specific problem it solves:

**Column I (The Tool)**

**Column II (The Problem it Solves)**

- |                          |   |
|--------------------------|---|
| P. Laminar Air Flow Hood | 1. Keeping cells alive at sub-zero temperatures for years.        |
| Q. Stem Cells            | 2. Preventing dust and germs from falling into your open culture. |
| R. Cryopreservation      | 3. Creating a "living factory" to produce medicine in milk.       |
| S. Transgenic Animal     | 4. Replacing damaged heart tissue with new, healthy cells.        |

Choose the correct combination

- |                       |                       |
|-----------------------|-----------------------|
| A. P-2, Q-1, R-4, S-3 | B. P-2, Q-4, R-1, S-3 |
| C. P-2, Q-3, R-1, S-4 | D. P-4, Q-3, R-2, S-1 |

46. What is the Mode of the dataset: 12, 15, 12, 18, 12, 20, 15, 12?

- |       |       |
|-------|-------|
| A. 12 | B. 15 |
| C. 18 | D. 20 |

47. If all observations in a dataset are the same (c.g., 5, 5, 5, 5), the Standard Deviation is .....

- |      |             |
|------|-------------|
| A. 1 | B. 5        |
| C. 0 | D. Infinite |

48. If the Karl Pearson's Correlation Coefficient ( $r$ ) between height and weight is 0.85, the relationship is .....

- |                    |                  |
|--------------------|------------------|
| A. Strong Negative | B. Weak Positive |
| C. Strong Positive | D. Independent   |



55. In industrial water pollution, which group of pollutants is most typically associated with the chemical industry?
- A. Silt and suspended clay particles
  - B. Heavy metals and complex organic chemicals
  - C. High levels of nitrogen and phosphorus only
  - D. Pathogenic bacteria and viruses
56. Agricultural runoff primarily contributes to which specific type of water pollution?
- A. Thermal pollution
  - B. Radioactive pollution
  - C. Nutrient enrichment (Nitrates and Phosphates)
  - D. Permanent hardness due to magnesium sulphates
57. In a standard Sewage Treatment Plant (STP), the "Secondary Treatment" stage is primarily a .....
- A. Biological process where microbes degrade organic matter
  - B. Physical process of filtration and sedimentation
  - C. Chemical process using chlorine for disinfection
  - D. Mechanical process to remove large floating debris
58. Streams originate from .....
- A. Oceans
  - B. Lakes only
  - C. Atmosphere
  - D. Groundwater/springs
59. Deep sea organisms are adapted to .....
- A. Luminiscent microorganisms
  - B. Low pressure
  - C. High pressure and darkness
  - D. High oxygen

60. The "Thermal Regime" of a hill stream is typically .....
- A. Stenothermal (narrow temperature range)
  - B. Eurythermal (wide temperature range)
  - C. Consistently above 30°C.
  - D. Uninfluenced by altitude
61. Cleavage differs from standard mitosis because .....
- A. There is no DNA replication
  - B. There is no growth phase (G1 and G2) between divisions
  - C. The nuclear-to-cytoplasmic ratio decreases
  - D. It occurs only in haploid cells
62. In amphibians, the "Organizer" is located in the .....
- A. Dorsal lip of the blastopore
  - B. Ventral lip of the blastopore
  - C. Animal pole
  - D. Vegetal pole
63. The liver and pancreas are derived from .....
- A. Ectoderm
  - B. Mesoderm
  - C. Endoderm
  - D. Rathke's pouch
64. During gastrulation, the "Yolk Plug" stage is characterized by .....
- A. Complete disappearance of the blastocoel
  - B. Closure of the mouth
  - C. Formation of the neural plate
  - D. Protrusion of yolky macromeres through the blastopore
65. What happens to the gills during the transition to a terrestrial froglet?
- A. They are resorbed through phagocytosis by macrophages
  - B. They transform into lungs
  - C. They remain as vestigial structures in the adult
  - D. They become the tympanic membrane

66. The "Area Pellucida" of the chick blastoderm is formed by .....
- A. The peripheral cells attached to the yolk
  - B. The thickening of the primitive streak
  - C. The cells of the marginal zone
  - D. The central cells that set themselves free from the underlying yolk
67. During chick gastrulation, the "Primitive Streak" represents .....
- A. The future nervous system
  - B. The site of massive cell internalization (involution/ingression)
  - C. The border of the egg shell
  - D. The yolk sac stalk
68. What is the fate of the "Arca Opaca" in the developing chick?
- A. It forms the embryo proper
  - B. It forms extraembryonic membranes (like the yolk sac)
  - C. It becomes the brain
  - D. It disappears during cleavage
69. Which type of placenta is found in humans based on the distribution of villi?
- A. Diffuse
  - B. Cotyledonary
  - C. Zonary
  - D. Discoidal
70. A "Zonary" placenta, where villi are arranged in a girdle-like band around the middle of the chorionic sac, is typically found in .....
- A. Dogs and Cats
  - B. Humans
  - C. Pigs
  - D. Rabbits

71. Assertion (A): The Alternative Pathway of the complement system is considered part of the innate immune response.

Reason (R): It is triggered directly by the surfaces of pathogens without the requirement of an antigen-antibody complex.

- A. Both (A) and (R) are true, and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).
- C. (A) is true, but (R) is false.
- D. (A) is false, but (R) is true.

72. Assertion (A): Cytokine "Redundancy" ensures that the immune system remains functional even if one specific cytokine pathway is blocked.

Reason (R): Redundancy refers to the ability of multiple different cytokines to exert the same biological effect on a target cell.

- A. Both (A) and (R) are true, and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).
- C. (A) is true, but (R) is false.
- D. (A) is false, but (R) is true.

73. Match the Vaccine Concept with the Required Immune Logic

**List I (Vaccine Concept)**

(A) Adjuvant

(B) Attenuation

(C) Booster Dose

(D) Passive Immunization

**List II (Mechanism/Goal)**

(I) Generating antibodies against a pathogen's toxic byproduct.

(II) Reducing virulence while maintaining the ability to replicate.

(III) Enhancing the innate immune response to a weak antigen.

(IV) Rapid protection via pre-formed components (No memory).

Choose the correct combination

- A. (A)-(III), (B)-(II), (C)-(IV), (D)-(I)
- B. (A)-(III), (B)-(II), (C)-(I), (D)-(IV)
- C. (A)-(II), (B)-(III), (C)-(IV), (D)-(I)
- D. (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

74. Match the Components and Pathways (Complement & Immune Response)

**List I (Term)**

**List II (Mechanism/Feature)**

- |                            |   |
|----------------------------|---|
| (A) C3b                    | (I) Anaphylatoxin (triggers inflammation) |
| (B) C5b-C9                 | (II) Opsonization (enhances phagocytosis) |
| (C) C3a / C5a              | (III) Lectin Pathway trigger              |
| (D) Mannose-binding Lectin | (IV) Membrane Attack Complex (MAC)        |

Choose the correct combination

- A. (A)-(II), (B)-(I), (C)-(IV), (D)-(III)
- B. (A)-(I), (B)-(III), (C)-(IV), (D)-(II)
- C. (A)-(IV), (B)-(II), (C)-(III), (D)-(I)
- D. (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

75. MHC class II presents antigen to .....

- |                      |                   |
|----------------------|-------------------|
| A. Cytotoxic T cells | B. Helper T cells |
| C. RBCS              | D. Platelets.     |

76. Primary lymphoid organs include .....

- |                           |                |
|---------------------------|----------------|
| A. Spleen                 | B. Lymph nodes |
| C. Bone marrow and thymus | D. Tonsils     |

77. Natural killer cells are part of .....

- |                      |                        |
|----------------------|------------------------|
| A. Adaptive immunity | B. Innate immunity     |
| C. Humoral immunity  | D. Artificial immunity |

78. Antigen processing occurs in .....
- A. dendritic cells, macrophages, and B cells
  - B. RBCs and platelets
  - C. All cells present in the blood
  - D. Neurons
79. IgA is mainly found in .....
- A. Blood
  - B. Mucosal secretions
  - C. Bone marrow
  - D. Skin
80. Monoclonal antibodies are produced by .....
- A. activated plasma cells in the organism
  - B. hybridoma cells
  - C. engineered E. coli cells
  - D. Yeast cells containing cloned antibody genes
81. The hexagonal shape of the cells in a honey comb is a structural adaptation primarily designed to .....
- A. Provide the maximum storage volume with the minimum use of beeswax.
  - B. Discourage the growth of fungal pathogens.
  - C. Allow the bees to move faster across the surface.
  - D. Regulate the internal temperature of the hive.
82. During the centrifugal extraction of honey, why is it considered superior to the traditional "squeezing" method?
- A. It yields honey that is naturally more acidic.
  - B. It keeps the wax combs intact so they can be reused by the bees, saving them energy.
  - C. It automatically filters out all impurities and pollen.
  - D. It prevents the honey from crystallising over time.

83. Assertion (A): Honeycomb cells are built horizontally with a slight upward tilt toward the opening.  
Reason (R): This structural angle prevents the low-viscosity nectar from flowing out of the cell before it is dehydrated into honey and capped.
- A. Both (A) and (R) are true, and (R) is the correct explanation of (A).  
B. Both (A) and (R) are true, but (R) is NOT the correct explanation of (A).  
C. (A) is true, but (R) is false.  
D. (A) is false, but (R) is true.
84. In dairy farm management, "Synchronization of Estrus" is conceptually used to.....
- A. Ensure that all cows in a herd produce exactly the same volume of milk.  
B. Stop the reproductive cycle entirely during the peak summer months.  
C. Bring a large group of females into heat at the same time for efficient batch-insemination.  
D. Increase the number of twin births within the herd.
85. The commercial success of "Cross-breeding" programs in India (e.g., crossing Sahiwal with Jersey) is based on the concept of .....
- A. Producing an animal that requires zero maintenance or housing.  
B. Combining the high milk yield of exotic breeds with the disease resistance of indigenous breeds.  
C. Ensuring the offspring are smaller in size so they consume less fodder.  
D. Creating a new species that can survive without water for extended periods.
86. In addition to their value in the jewellery industry, what is another significant use of the "by-products" of pearl culture?
- A. The oyster meat is used in various cuisines, and the shells are used for buttons or decorative inlay.  
B. The nacre is used as a primary ingredient in high-performance jet fuel.  
C. The rejected pearls are ground up to create high-strength building cement.  
D. The oyster shells are used to manufacture transparent glass for windows.

87. What is the primary functional reason for constructing rectangular ponds with a smooth, sloping bottom in prawn farming?
- A. To increase the surface area available for the growth of natural plankton.
  - B. To facilitate efficient "scining" (netting) during the harvesting process.
  - C. To prevent the prawns from crawling over the embankments into adjacent ponds.
  - D. To ensure that the water temperature remains uniform across the entire pond.
88. Why is "Pond Fertilization" performed prior to stocking prawn post-larvae (PL)?
- A. To clarify the water so beekeepers can see the bottom clearly.
  - B. To stimulate the growth of natural "benthic" and "planktonic" organisms that serve as supplemental food.
  - C. To increase the dissolved oxygen levels to a point where aeration is unnecessary.
  - D. To chemically bond with toxic ammonia and remove it from the water column.
89. During the transportation of fish fry in closed containers, why is pure oxygen often added to the plastic bags?
- A. To make the fry swim more actively and increase muscle growth.
  - B. To prevent the fish from growing too large for the container.
  - C. To counteract the buildup of carbon dioxide and ensure survival during long transits.
  - D. To chemically neutralize the waste produced by the fish.
90. What is the approximate floor space required for an adult goat in a well-managed house?
- A. 0.25 sq. meters
  - B. 1.5 to 2.0 sq. meters
  - C. 10.0 sq. meters
  - D. 50.0 sq. meters

91. The first heart sound ("Lubb") is produced during the beginning of ventricular systole.
- What is the mechanical cause of this sound?
- A. The opening of the Aortic and Pulmonary valves.
  - B. The rapid rushing of blood into the relaxed atria.
  - C. The closure of the Mitral and Tricuspid (AV) valves.
  - D. The forceful contraction of the diaphragm against the heart.
92. If a person experiences a sudden drop in blood pressure, the "Baroreceptor Reflex" will immediately attempt to compensate by .....
- A. Decreasing the heart rate to save energy.
  - B. Increasing heart rate and constricting blood vessels.
  - C. Dilating all major arteries to reduce resistance.
  - D. Triggering the kidneys to excrete more water.
93. What is the primary factor that determines the direction of gas exchange (Oxygen and CO<sub>2</sub>) across the respiratory membrane?
- A. The difference in partial pressures of the gases between the alveoli and the blood.
  - B. The thickness of the muscular wall of the capillaries.
  - C. The total volume of blood flowing through the body per minute.
  - D. The amount of nitrogen currently present in the bloodstream.
94. Why is the Oxygen-Hemoglobin dissociation curve "S-shaped" (sigmoidal) rather than a straight line?
- A. Because oxygen is heavier than carbon dioxide.
  - B. Due to the constant changes in atmospheric pressure during breathing.
  - C. Because the lungs are physically curved inside the chest.
  - D. Due to the "cooperative binding" where the binding of one oxygen molecule makes it easier for the next to bind.

95. What is the specific function of the protein "Tropomyosin" in a resting muscle fiber?
- A. To act as an enzyme that breaks down ATP for energy.
  - B. To store calcium ions within the sarcoplasmic reticulum.
  - C. To pull the Z-lines closer together during relaxation.
  - D. To cover the active binding sites on actin, preventing myosin from attaching.
96. What is the role of Calcium ions in the initiation of the cross-bridge cycle?
- A. They bind to Troponin, causing a shape change that moves Tropomyosin away from binding sites.
  - B. They provide the electrical charge needed to polarize the myosin head.
  - C. They break the bond between the muscle and the bone.
  - D. They prevent ATP from being used until the muscle is fully stretched.
97. Which specific property of the "Descending Limb" of the Loop of Henle contributes to the concentration of urine?
- A. It is highly permeable to salts but impermeable to water.
  - B. It is permeable to water but virtually impermeable to solutes.
  - C. It actively pumps urea into the interstitial fluid.
  - D. It contains mitochondria for the active transport of water.
98. In a chemical synapse, how is the signal transmitted across the synaptic cleft?
- A. Via the secretion and diffusion of neurotransmitter molecules.
  - B. Through the direct physical contact of the two neuronal membranes.
  - C. By the jumping of an electrical arc between the terminal and the dendrite.
  - D. Through the movement of mitochondria from one cell to another.

99. What is the physiological consequence of a deficiency in Parathyroid Hormone (PTH)?
- A. A dangerous increase in blood calcium levels (Hypercalcemia).
  - B. A significant drop in blood calcium levels leading to muscle tetany (Hypocalcemia).
  - C. An overproduction of vitamin D in the kidneys.
  - D. The softening of bones due to excessive mineral loss.
100. Within the Islets of Langerhans, what is the functional relationship between Alpha cells and Beta cells?
- A. Alpha cells secrete insulin to lower blood sugar, while Beta cells secrete glucagon to raise it.
  - B. Beta cells produce somatostatin to neutralize the effects of Alpha cells.
  - C. Both cells work together to produce digestive enzymes for the small intestine.
  - D. Beta cells secrete insulin to lower blood sugar, while Alpha cells secrete glucagon to raise it.



**- Rough Work -**

**- Rough Work -**