



ZOOLOGY

SECTION-A

1. Which of the following sets of animals have radial symmetry?
- (1) Sponges, Hydra, crabs
 - (2) Coelenterates, ctenophores, echinoderms
 - (3) Annelids, arthropods, housefly
 - (4) Housefly, fish, human beings
2. Polyp → Asexually → Medusa → Sexually → Polyp
The above life cycle is shown by;
- (1) *Meandrina*
 - (2) *Aurelia*
 - (3) *Obelia*
 - (4) Hydra
3. Which one of the following statements is **false**?
- (1) In Molluscs, gills have respiratory and excretory functions.
 - (2) In Molluscs, the head has sensory tentacles.
 - (3) Molluscs are dioecious, oviparous with indirect development.
 - (4) None of these.
4. Which of the following is **correct** with respect to classification of *Myxine*?
- (1) Chordata, Agnatha, Pisces, Cyclostomata
 - (2) Chordata, Vertebrata, Agnatha, Cyclostomata
 - (3) Chordata, Vertebrata, Gnathostomata, Chondrichthyes
 - (4) Chordata, Vertebrata, Gnathostomata, Tetrapoda
5. Which of the following is **true** for all amphibians?
- (1) All possess tails.
 - (2) Excretion occurs by kidneys.
 - (3) Alimentary canal, urinary and reproductive tracts open into different chambers to the exterior.
 - (4) Heart is three-chambered with two ventricles.
6. Inner lining of urinary bladder is composed of;
- (1) Columnar epithelium.
 - (2) Squamous epithelium.
 - (3) Transitional epithelium.
 - (4) Pseudostratified epithelium.

7. The intercellular material of cartilage is;
- (1) Hollow, pliable and resists compression.
 - (2) Solid, not pliable and resists compression.
 - (3) Solid, pliable and resists compression.
 - (4) Solid, pliable and does not resist compression.
8. The type of muscles present in our;
- (1) heart has involuntary and unstriated smooth muscle fibres.
 - (2) intestine has striated and involuntary smooth muscle fibres.
 - (3) thighs have striated and voluntary muscle fibres.
 - (4) upper arm has smooth muscle fibres that are fusiform in shape.
9. Which set is **not** of the secondary metabolites?
- (1) Flavonoids and rubber
 - (2) Antibiotics, coloured pigments and essential oils
 - (3) Scents, gums and spices
 - (4) Amino acids and nucleic acids
10. Match **List-I** with **List-II** and choose the **correct** option:

List-I		List-II	
(A)	Acidic	(I)	Valine
(B)	Basic	(II)	Lysine
(C)	Neutral	(III)	Glutamic acid
(D)	Aromatic	(IV)	Tyrosine, phenylalanine, tryptophan

- (1) (A) – (III); (B) – (II); (C) – (I); (D) – (IV)
- (2) (A) – (II); (B) – (III); (C) – (IV); (D) – (I)
- (3) (A) – (IV); (B) – (I); (C) – (II); (D) – (III)
- (4) (A) – (I); (B) – (II); (C) – (II); (D) – (IV)



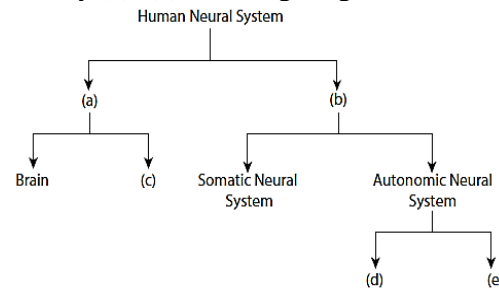
- 11.** Which of the following statements is **false**?
- (1) Chitin, a complex or heteropolysaccharide occurring in the exoskeleton of arthropods consists of NAG.
 - (2) Glucosamine and N-acetylglucosamine are modified sugars.
 - (3) Cellulose shows blue colour when treated with I_2 .
 - (4) Starch shows blue colour when treated with I_2 .
- 12.** Decline in the activity of the enzyme hexokinase by glucose-6-phosphate is caused by;
- (1) Non-competitive inhibition.
 - (2) Competitive inhibition.
 - (3) Allosteric modulator.
 - (4) Denaturation of enzymes.
- 13.** Select **incorrect** statement, regarding chemical structure of insulin.
- (1) Mature insulin molecule consists of three polypeptide chains-A, B and C.
 - (2) Insulin is synthesized as prohormone which contains extra stretch of C-peptide.
 - (3) C-peptide is not present in mature insulin molecule.
 - (4) Polypeptide chains A and B are linked by disulphide bridge.
- 14.** Receptor sites for neurotransmitters are present on;
- (1) presynaptic membrane.
 - (2) tips of axons.
 - (3) postsynaptic membrane.
 - (4) membranes of synaptic vesicles.
- 15.** Calcium is important in skeletal muscle contraction because it;
- (1) detaches the myosin head from the actin filament
 - (2) binds to troponin to remove the masking of active sites on actin for myosin
 - (3) prevents the formation of bonds between the myosin cross bridges and the actin filament.
 - (4) activates the actin ATPase by binding to it.
- 16.** Mark the **correct** statement.
- (a) Alveoli are thin, irregular walled and vascularised bag like structures.
 - (b) Inner pleural membrane is in contact with the thoracic lining.
 - (c) Larynx is a cartilaginous box.
- (1) (a) and (b) (2) (a) and (c)
(3) (a), (b) and (c) (4) Only (a)
- 17.** What is **correct** about human respiration?
- (1) About 90% of CO_2 is carried by haemoglobin as carbamino haemoglobin.
 - (2) Neural signals from pneumotaxic centre of pons can increase duration of inspiration.
 - (3) Workers in grinding and stone breaking industries may suffer from lung fibrosis.
 - (4) All of these
- 18.** What will be the pO_2 and pCO_2 in the atmospheric air compared to those in the alveolar air?
- (1) pO_2 lesser, pCO_2 higher
 - (2) pO_2 higher, pCO_2 lesser
 - (3) pO_2 higher, pCO_2 higher
 - (4) pO_2 lesser, pCO_2 lesser
- 19.** Find out the **incorrect** statement.
- (1) Globulins are primarily involved in the defence mechanism of body.
 - (2) Albumin is the main osmotic protein of blood.
 - (3) Plasma without clotting factor is called serum.
 - (4) Factors for coagulation of blood are also present in the plasma in an active form.
- 20.** Pacemaker is;
- (1) an instrument for measuring heartbeat.
 - (2) an instrument for measuring pulse rate.
 - (3) an auriculo-ventricular node that provides impulse for heartbeat.
 - (4) a sino-auricular node that provides impulse for heartbeat.
- 21.** To obtain a standard ECG, a patient is connected to the machine with three electrical leads. These leads are connected to;
- (1) One in each wrist and to the left ankle.
 - (2) One in each wrist and to the right ankle.
 - (3) One in each ankle and to the left wrist.
 - (4) One in each ankle and to the right wrist.



22. Two examples in which nitrogenous waste products are excreted in the form of uric acid are;
- (1) Insects and cartilaginous fishes.
 - (2) Mammals and molluscs.
 - (3) Frog and cartilaginous fishes.
 - (4) Birds and lizards.
23. Which part of the nephron is situated in the cortex completely?
- (a) Malpighian corpuscle
 - (b) Proximal convoluted tubule (PCT)
 - (c) Distal convoluted tubule (DCT)
 - (d) Loop of Henle
 - (e) Collecting duct
- (1) (a), (b) and (c)
 - (2) Only (b) and (c)
 - (3) (a), (b), (c) and (d)
 - (4) Only (d) and (e)
24. Which of the following statements about proximal convoluted tubule (PCT) is **false**?
- (1) It is lined by a simple cuboidal brush border epithelium which increases the surface area.
 - (2) Nearly all the essential brush border epithelium increases the surface area.
 - (3) Proximal convoluted tubule (PCT) is not the site of selective secretion.
 - (4) PCT helps to maintain the pH and ionic balance of the body fluids.
25. Mark the **incorrect** statement in the following.
- (1) All movements lead to locomotion.
 - (2) Ciliary movement helps in passage of ova through female reproductive tract.
 - (3) Microfilaments are involved in amoeboid movement.
 - (4) In Paramoecium, the cilia help in the movement of food through cytopharynx and in locomotion as well.
26. Read the following (a) to (d) statements and select the one option that contains both the **correct** statements.
- (a) Z line is present at the centre of the light band.
 - (b) Thin filaments are firmly attached to the M line.
 - (c) The central part of thick filaments, not overlapped by thin filaments is called Z band.
 - (d) Light band contains only thin filaments.
- (1) (a) and (d)
 - (2) (b) and (c)
 - (3) (a) and (c)
 - (4) (b) and (d)

27. Which one of the following is **mismatched** with respect to the number of bones and their corresponding body parts?
- (1) Cranium – 8 bones
 - (2) Vertebral column – 26 bones
 - (3) Ribs – 10 bones
 - (4) Appendicular skeleton – 126 bones

28. Identify (a)–(e) in the figure given below.



- (1) (a) – Central Nervous System (CNS); (b) – Peripheral Nervous System (PNS); (c) – Spinal Cord; (d) – Sympathetic Neural System; (e) – Parasympathetic Neural System
 - (2) (a) – Peripheral Nervous System (PNS); Central Nervous System (CNS); (b) – Parasympathetic Neural System; (c) – Central Nervous System (CNS); (d) – Sympathetic Neural System; (e) – Spinal Cord
 - (3) (a) – Parasympathetic Neural System; (b) – Spinal Cord; (c) – Central Nervous System (CNS); (d) – Sympathetic Neural System; (e) – Peripheral Nervous System (PNS)
 - (4) (a) – Central Nervous System (CNS); (b) – Spinal Cord; (c) – Peripheral Nervous System (PNS); (d) – Sympathetic Neural System; (e) – Parasympathetic Neural System
29. Electrical synapse differs from chemical synapse in following features:
- (a) Conduction is faster
 - (b) Shows bidirectional flow
 - (c) Synaptic cleft is more
- The **correct** option(s) is/are;
- (1) (a) and (b)
 - (2) (b) and (c)
 - (3) (a) and (c)
 - (4) Only (c)
30. Frog's heart, when taken out of the body, continues to beat for some time. Select the **best** option from the following statements.
- (a) Frog is a poikilotherm.
 - (b) Frog does not have any coronary circulation.
 - (c) Heart is "myogenic" in nature.
 - (d) Heart is autoexcitable.
- (1) Only (d)
 - (2) (a) and (b)
 - (3) Only (c)
 - (4) (c) and (d)



31. Select the **incorrect** statement.

- (1) Coordination is the process through which two or more organs interact and complement the function of one another.
- (2) Neural system provides an organised network of point to point connection for quick coordination.
- (3) Neural organisation is complex in lower invertebrates.
- (4) Vertebrates have a more developed neural system.

32. Portal blood vessels connect the _____ to the _____.

- (1) Hypothalamus; brain
- (2) Hypothalamus; posterior pituitary
- (3) Hypothalamus; anterior pituitary
- (4) Anterior pituitary; posterior pituitary

33. Consider the following statements:

- (a) Calcitonin is a protein hormone.
- (b) Calcitonin is secreted by parafollicular cells.
- (c) Calcitonin regulates the calcium level in blood.
- (d) Calcitonin is also called as TCT (Thyrocalcitonin).
- (e) TCT is hyperglycemic agent (factor).

Select the option containing **correct** statements.

- (1) (a), (b) and (e)
- (2) (a), (b), (c) and (d)
- (3) (c), (d) and (e)
- (4) (b), (c), (d) and (e)

34. Steroid hormones transmit their information by;

- (1) stimulating the receptors present on cell membranes.
- (2) entering into the cell and modifying cellular contents.
- (3) entering into the cell and modifying nuclear gene expression.
- (4) the help of an intracellular second messenger.

35. A patient who excretes large quantity of sodium in urine has;

- (1) diseased adrenal medulla.
- (2) diseased adrenal cortex.
- (3) diseased pancreas.
- (4) diseased thymus.

SECTION-B

36. **Assertion (A):** Human kidneys can produce urine nearly two times concentrated than the initial filtrate formed.

Reason (R): Counter current mechanism doesn't help to maintain a concentration gradient in the medullary interstitium.

- (1) Both **Assertion (A)** and **Reason (R)** are the true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
- (2) Both **Assertion (A)** and **Reason (R)** are the true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
- (3) **Assertion (A)** is true, and **Reason (R)** is false.
- (4) **Assertion (A)** is false, and **Reason (R)** is true.

37. Which of the following classes is **incorrectly** matched with its general characters?

- (1) Cyclostomata – Lack jaws and paired fins and body is covered with placoid scales.
- (2) Osteichthyes – Four pairs of gill slits, covered with an operculum.
- (3) Reptilia – Tympanum represents ear and fertilisation is internal.
- (4) Aves – Endoskeleton is fully ossified and long bones are hollow with air cavities called pneumatic bones.

38. Match **List-I** with **List-II** and select the **correct** option.

List-I		List-II	
(A)	<i>Pila</i>	(I)	Tusk shell
(B)	<i>Chiton</i>	(II)	Apple snail
(C)	<i>Dentalium</i>	(III)	Cuttlefish
(D)	<i>Sepia</i>	(IV)	Chaetopleura

- (1) (A) – (II); (B) – (I); (C) – (IV); (D) – (III)
- (2) (A) – (II); (B) – (IV); (C) – (I); (D) – (III)
- (3) (A) – (IV); (B) – (II); (C) – (III); (D) – (I)
- (4) (A) – (IV); (B) – (III); (C) – (II); (D) – (I)

39. Given below are some characteristics of muscle tissue.

- (a) Cylindrical, elongated
- (b) Multinucleated
- (c) Show striations

Identify the muscle tissue and choose the **correct** option with respect to location of these types of muscle tissue.

- (1) Neck and back
- (2) Myocardium of heart
- (3) Wall of blood vessels
- (4) Stomach



40. Which of the following is **not** an example of competitive inhibition?
- (1) Inhibition of succinic dehydrogenase by malonate.
 - (2) Sulpha drugs used to control bacterial pathogens.
 - (3) Inhibition of alcohol dehydrogenase by ethanol in methanol poisoning.
 - (4) Inhibition of hexokinase by glucose-6-phosphate.
41. Cellulose does not form blue colour with Iodine because;
- (1) it is a helical molecule.
 - (2) it does not contain complex helices and hence cannot hold iodine molecules.
 - (3) it breaks down when iodine reacts with it.
 - (4) it is a disaccharide.
42. Why do human beings have difficulty in breathing at high elevations?
- (1) O₂ makes up a lower percentage of air there.
 - (2) The temperature is lower there.
 - (3) The barometric pressure is higher there.
 - (4) pO₂ is lower there.
43. Select the total number of **incorrect** matching from the following.
- (a) ECG – Electrocardiogram
 - (b) AVN – AtrioVentricular Node
 - (c) SAN – Sino Atrial Node
 - (d) WBC – White Blue Cells
 - (e) RBC – Red Blood cells
- (1) Five
 - (2) Three
 - (3) Four
 - (4) one
44. Which of the following is **mismatched**?
- (1) LUBB – First heart sound associated with closure of tricuspid and bicuspid valves.
 - (2) Cardiac output – Stroke volume multiplied by heart rate.
 - (3) DUBB – Second heart sound, due to opening of semilunar valves.
 - (4) Duration of cardiac cycle – 0.8 sec.
45. Which of the following is **incorrect**?
- (1) Blood vessels leading to glomerulus is called different arteriole.
 - (2) Vasa recta, peritubular capillaries, glomerulus all have blood.
 - (3) Cortical nephron has no or highly reduced vasa recta.
 - (4) Vasa recta runs parallel to the Henle's loop in juxtamedullary nephrons.
46. Which of the following statements about the molecular arrangement of actin in myofibrils is/are **incorrect**?
- (a) Each actin (thin) filament is made of two F (filamentous) actins helically wound to each other.
 - (b) Each F actin is a polymer of monomeric G (Globular) actins.
 - (c) Two filaments of another protein, tropomyosin, also run close to the F actins throughout its lengths.
 - (d) A complex protein troponin is distributed at regular intervals on the tropomyosin.
- (1) (a) and (b)
 - (2) Only (c)
 - (3) Only (d)
 - (4) None of these
47. (a) Less number of mitochondria
(b) More number of mitochondria
(c) Abundant sarcoplasmic reticulum
(d) High content of myoglobin
(e) less sarcoplasmic reticulum
(f) Aerobic muscles
(g) Depend on anaerobic respiration for energy.
(h) Less myoglobin content.
- Identify above (a) to (h) traits as characteristic of (i) and (ii) types of muscles.
- (i) White muscles (ii) Red muscles**
- (1) (i) – (a), (c), (g), (h); (ii) – (b), (d), (e), (f)
 - (2) (i) – (a), (d), (e), (f); (ii) – (b), (c), (g), (h)
 - (3) (i) – (a), (c), (d), (g); (ii) – (b), (e), (f), (h)
 - (4) (i) – (b), (e), (f), (h); (ii) – (a), (c), (d), (g)
48. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).
- Assertion (A):** All vertebrates are chordates but all chordates are not vertebrates.
- Reason (R):** Notochord is replaced by vertebral column in the adult vertebrates.
- In the light of the above statements, choose the most appropriate answer from the option given below:
- (1) Both **Assertion (A)** and **Reason (R)** are the true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
 - (2) Both **Assertion (A)** and **Reason (R)** are the true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
 - (3) **Assertion (A)** is true, and **Reason (R)** is false.
 - (4) **Assertion (A)** is false, and **Reason (R)** is true.



49. **Correct** sequence for depolarisation and repolarisation is;

- (a) Stimulus applied at a site on a polarised membrane.
- (b) Increase permeability for Na^+ .
- (c) Generation of action potential.
- (d) Increase permeability for K^+ .
- (e) Restoration of membrane potential.

- (1) (a) \rightarrow (b) \rightarrow (c) \rightarrow (d) \rightarrow (e)
- (2) (b) \rightarrow (a) \rightarrow (c) \rightarrow (d) \rightarrow (e)
- (3) (a) \rightarrow (d) \rightarrow (c) \rightarrow (b) \rightarrow (e)
- (4) (a) \rightarrow (b) \rightarrow (d) \rightarrow (c) \rightarrow (e)

50. (a) Melatonin influences menstrual cycle and our defence capability.
- (b) In adult women, hypothyroidism may cause menstrual cycle to become irregular.
- (c) Protein hormones secreted by thyroid TCT (thyrocalcitonin) regulates the blood calcium level.
- (d) Maintenance of water and electrolytes balance is also influenced by thyroid hormone.
- (e) Oxytocin causes milk ejection from the mammary gland.

Select the **correct** statement.

- (1) Only (a), (b and (c)
- (2) (a), (b), (c) and (e)
- (3) All except (e)
- (4) All of these



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