

**ZOOLOGY****SECTION-A**

1. **Assertion (A):** Parathormone & thyrocalcitonin are antagonist to each other.
Reason (R): Parathormone maintains Na^+ concentration in blood and its receptors are present in osteoclast cells.
- (1) Both **Assertion (A)** and **Reason (R)** are correct and **Reason (R)** is correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are correct and **Reason (R)** is not correct explanation of **Assertion (A)**.
(3) Only **Assertion (A)** is true but **Reason (R)** is false.
(4) Both **Assertion (A)** and **Reason (R)** are false.
2. Metamerism refers to;
- (1) Mesoblastic development
(2) Occurrence of mesoderm
(3) Segmentation where external divisions correspond to internal divisions
(4) Metastasis
3. Path of water through a sponge is:
- (1) Ostia → Spongocoel → Osculum
(2) Osculum → Spongocoel → Ostia
(3) Ostia → Spongocoel → Ostia
(4) Spongocoel → Ostia → Osculum
4. Parasitic adaptation of flatworm is:
- (1) Presence of hooks and suckers
(2) Absorption of food through body surface
(3) Both (1) and (2)
(4) Presence of complex digestive system
5. The space between the visceral hump and dorsal spongy skin is called _____ in which _____ are present in case of Molluscs.
- (1) mantle cavity; gills
(2) body cavity; shells
(3) viscera; shells
(4) shell; viscera
6. Amphibia
- (a) Has body divided into head and trunk, tail is present in some amphibians.
(b) Shows respiration by gills, lungs and through skin.
(c) Has scales in all its members.
(d) can lead dual life (aquatic and terrestrial).
(e) Have eyelids.
- (1) All are correct
(2) (a) and (d) are correct
(3) Only (c) is wrong
(4) Only (b) is wrong
7. What is the function of adhering junction?
- (1) Cementing to keep neighbouring cells together.
(2) Give rigidity to tissue
(3) Stop leaking substance across the tissue
(4) All of these
8. Which of the following are the three basic components of all type of connective tissue except blood?
- (1) Cells, fibres and ground substances
(2) Fibroblast, reticular fibres and collagen
(3) Mast cells, lymphocytes and adipocyte
(4) Arteries, veins and capillaries
9. Frogs belonging to class _____ of phylum chordate are _____ animals and show hibernation in _____ and aestivation in _____.
- (1) Hemichordata; poikilothermic; winter; summer
(2) Amphibia; poikilothermic; summer; rainy season
(3) Amphibia; poikilothermic; winter; summer
(4) Amphibia; warm blooded; winter; summer



10. Cellulose, the most important constituent of plant cell wall is made up of;

- (1) Branched chain of glucose molecules linked by $\beta(1 \rightarrow 4)$ glycosidic bond in straight chain and $\alpha(1 \rightarrow 6)$ glycosidic bond at the site of branching
- (2) Unbranched chain of glucose molecules linked by $\beta(1 \rightarrow 4)$ glycosidic bond.
- (3) Branched chain of glucose molecules linked by $\alpha(1 \rightarrow 6)$ glycosidic bond at the site of branching.
- (4) Unbranched chain of glucose molecules linked by $\alpha(1 \rightarrow 4)$ glycosidic bond.

11. Which one of the following statement is **false**?

- (1) Fatty acids may be unsaturated (with one or more C=C bonds) or saturated (without double bonds).
- (2) Fatty acids may be esterified with glycerol forming monoglyceride, diglyceride and then triglyceride.
- (3) Sometimes especially neural tissues have lipid rich simple structures.
- (4) Fats and oils are triglycerides.

12. Which of the following statement is **incorrect**?

- (1) Backbone of DNA is formed by sugar-phosphate-sugar chain.
- (2) Nucleic acids are present in acid soluble fraction of any living tissue.
- (3) DNA and RNA function as genetic materials.
- (4) There are three hydrogen bonds between G and C in DNA molecule.

13. Each enzyme shows its highest activity at particular temperature and pH called the _____ temperature and _____ pH. Choose the **correct** option to fill in the blanks.

- (1) optimum; optimum
- (2) minimum; minimum
- (3) maximum; maximum
- (4) minimum; maximum

14. Match the items given in **List-I** with those in **List-II** and select the **correct** option given below.

	List-I		List-II
(I)	Tidal volume	(A)	2500 – 3000 mL
(II)	Inspiratory reserve volume	(B)	1100 – 1200 mL
(III)	Expiratory reserve volume	(C)	500 – 550 mL
(IV)	Residual volume	(D)	1000 – 1100 mL

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

15. Match the following **List**:

	List-I		List-II
I.	Formed elements	A.	55% of blood
II.	plasma	B.	45% of blood
III.	Number of RBC	C.	6000-8000 mm ³ of blood
IV.	Number of WBC	D.	5-5.5 million mm ³ of blood

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

16. Match the following **List**:

	List-I		List-II
I.	Fibrinogen	A.	Clotting or coagulation of blood
II.	Globulins	B.	Defense mechanism of body
III.	Albumins	C.	Osmotic balance

- (1) I-C, II-B, III-A
- (2) I-C, II-A, III-B
- (3) I-B, II-A, III-C
- (4) I-A, II-B, III-C

17. Which group of animals respire through lungs?

- (1) Earthworm and insects
- (2) Sponges, coelenterates and flatworms
- (3) Fishes and aquatic arthropods
- (4) Reptiles, birds and mammals



18. Arrange the following steps of respiration in that proper order;
- Breathing or pulmonary ventilation is that by which Atmospheric air is drawn in and CO_2 is released.
 - Diffusion of gases (O_2 and CO_2) across alveolar membrane.
 - Transport of gases by the blood.
 - Diffusion of O_2 and CO_2 between blood and tissues.
 - Utilization of O_2 by the cells for catabolic reactions and resultant release of CO_2 .
- (a), (b), (c), (d), (e)
 - (a), (c), (b), (e), (d)
 - (e), (d), (c), (a), (b)
 - (c), (d), (e), (b), (a)
19. A large proportion of oxygen is left unused in the human blood even after its uptake by body tissues. This O_2 ;
- Raises $p\text{CO}_2$ of blood to 75 mm of Hg.
 - Acts as a reserve during muscular exercise.
 - Is enough to keep oxyhaemoglobin saturation at 96%.
 - Helps in releasing more oxygen to the epithelial tissues.
20. What is correct for lymph?
- Lymph = Blood - RBCs + Platelets - Plasma proteins of high molecular weight
 - Lymph = Blood + RBCs + Platelets + Plasma proteins of high molecular weight
 - Lymph = Blood - (RBCs + Platelets + Plasma proteins of high molecular weight)
 - Lymph = Blood + RBCs - Platelets + Plasma proteins of high molecular weight
21. Which of the following statements is wrong about the closed circulatory system?
- Blood remains within blood vessels and never comes in direct contact with the body cells.
 - In this flow of fluid can be more precisely regulated.
 - There is no blood capillary.
 - Blood flow is more rapid due to higher pressure.
22. Which of the following statement is **correct** regarding blood pressure (BP)?
- 105/50 mm Hg makes a person active.
 - 100/55 mm Hg is an ideal BP.
 - 190/110 mm Hg may harm vital organs like brain/ kidney.
 - 130/90 mm Hg is considered high and requires treatment.
23. Aquatic animals are mostly ammonotelic because;
- Ammonia helps in checking inflow of water into body.
 - Excretion of ammonia requires large amount of water which is available to these animal.
 - Water contains less nitrogen.
 - These get less light.
24. Two kidneys of human beings lie;
- At the level of ovaries
 - At the same level
 - Left kidney at a higher level than the right one
 - Right kidney at a higher level than the left one
25. Which of the following statements is **correct**?
- Reabsorption of water occurs passively in the initial segment of nephron.
 - Nitrogenous waste is absorbed by passive transport.
 - Conditional reabsorption of Na^+ and water takes place in distal convoluted tubule (DCT).
 - DCT is capable of selective secretion of H^+ , NH_3 and K^+ to maintain pH and H^+ and K^+ balance in blood.
 - Substances like glucose, amino acids, Na^+ , etc., in the filtrate are reabsorbed actively.
- (a) and (b)
 - (b) and (c)
 - (d) and (e)
 - All of these
26. Sarcomere is;
- The portion of myofibrils between two successive A bands.
 - The portion of myofibrils between two successive I bands.
 - The portion of myofibrils between two successive Z line.
 - The portion of myofibrils between two successive M line.



27. Which of the following statements are **incorrect**?

- (1) White fibres have high sarcoplasmic reticulum but the number of mitochondria is few.
- (2) White fibres depend on anaerobic process for energy.
- (3) The reaction time of the fibres can vary in different muscles.
- (4) The process of cross-bridge formation and breaking continues till the calcium ions are pumped back to the sarcoplasmic cisternae resulting in the masking of myosin filaments.

28. How does the troponin–tropomyosin complex affect cross bridge cycle?

- (1) When concentration of Ca^{2+} is low, the troponin–tropomyosin complex blocks actin's binding site for myosin. When concentration of Ca^{2+} is high, the complex rolls out of the way, allowing myosin to bind to actin and initiate the crossbridge cycle.
- (2) The troponin – tropomyosin complex regenerates ATP for the myosin ATPase.
- (3) The troponin–tropomyosin complex regulates calcium release from the terminal cisternae.
- (4) The troponin–tropomyosin complex binds to the myosin head, facilitating contact with the actin filaments.

29. Afferent neurons transmit impulses via dorsal nerve root to;

- (1) Sensory organs
- (2) Effector organs
- (3) Central nervous system
- (4) The statement is incorrect since afferent neurons pass via ventral nerve root

30. During depolarisation of the neuronal membrane,

- (1) Na^+ ions rapidly move to the inside of the cell.
- (2) K^+ ions rapidly move to the inside of the cell.
- (3) K^+ ions rapidly move to the outside of the cell
- (4) Na^+ ions rapidly move to the outside of the cell.

31. The limbic system is formed by:

- (1) The hypothalamus, epithalamus, amygdala and hippocampus
- (2) Hypothalamus, amygdala and hippocampus
- (3) Corpora quadrigemina and hippocampus
- (4) Midbrain and hindbrain

32. 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)

33. Iodine deficiency in our diet results in _____ and enlargement of _____ gland, commonly called _____.

- (1) hyperthyroidism; thyroid; goitre
- (2) hypothyroidism; thyroid; goitre
- (3) hypoparathyroidism; parathyroid; goitre
- (4) hyperthyroidism; thyroid; acromegaly

34. Blood pressure is controlled by:

- (1) Thyroid gland (2) Thymus gland
- (3) Adrenal gland (4) Parathyroid gland

35. Identify the hormones of GI tract.

- (a) Gastrin (b) Secretin
- (c) Cholecystokinin (d) ACTH
- (e) MSH (f) GIP

The **correct** options are:

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

SECTION-B

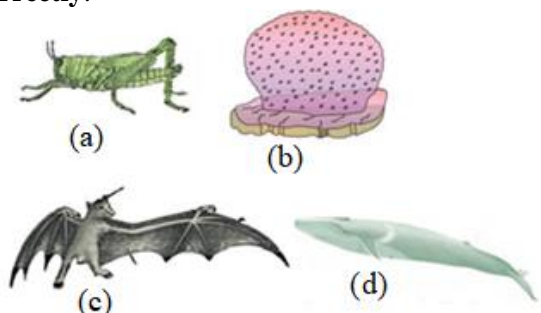
36. Which of the following statements are **correct**?

- (a) In Urochordates like Ascidia, Salpa, Doliolum notochord is present in only larval tail.
 - (b) In cephalochordates like Branchiostoma (Amphioxus or Lancelet) notochord extends from head to tail and is persistent throughout the life.
 - (c) All vertebrates are chordates but all chordates are not vertebrates.
 - (d) Notochord is replaced by vertebral column.
- (1) All of these (2) Only (b) and (d)
 - (3) None of these (4) All except (b)



37. Which one of the following is **not** a characteristic feature of all the chordates?
- (1) Presence of coelom
 - (2) A diaphragm separating thorax from abdomen
 - (3) Dorsal nerve cord
 - (4) Pharyngeal gill slits in the early embryonic stages

38. For the organisms given below, identify the option that represents triploblastic condition with closed circulatory system and true coelom in them **correctly**.



- (1) (a), (b) and (c)
 - (2) (a), (c) and (d)
 - (3) (b), (c) only
 - (4) (c), (d) only
39. Which of the following statements are **correct**?
- (a) Catalytic activity is lost when the co-factor is removed from the enzyme.
 - (b) Co-enzyme nicotinamide adenine dinucleotide (NAD) and NADP contain the vitamin niacin.
 - (c) Bio-macromolecules have a hierarchy of structures – primary, secondary, tertiary and quaternary.
 - (d) Enzymes lower activation energy of reactions and enhance greatly the rate of the reactions.
 - (e) Nucleic acids carry hereditary information and are passed on from parental generation to progeny.
- (1) (a) and (e)
 - (2) (b) and (c)
 - (3) (b) and (e)
 - (4) All of these

40. Match name of insects in **List-I** with their Scientific names in **List-II** and select the **correct** option.

List-I		List-II	
(I)	King crab	(A)	<i>Apis</i>
(II)	Honey bee	(B)	<i>Limulus</i>
(III)	Silkworm	(C)	<i>Bombyx</i>
(IV)	Lac insect	(D)	<i>Laccifer</i>

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

41. Read the given statements.

Statement A: Some cnidarians like *Obelia* and *Physalia* exhibit metagenesis.

Statement B: These animals exhibit polymorphism as they exist in both polyp and medusa forms.

- (1) Both the statements are correct.
- (2) Both the statements are incorrect.
- (3) Statement B is incorrect.
- (4) Statement A is incorrect.

42. Lack of pulmonary surfactant produces;

- (1) Asthma
- (2) Emphysema
- (3) Cystic fibrosis
- (4) Respiratory distress syndrome

43. **Assertion (A):** In the case of a patient displaying symptoms of an infection, a physician may decide to perform a white cell count.

Reason (R): A rise in the quantity of white blood cells (leukocytes) could with suggest that an individual's body is fighting off with an infection.

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

44. Read the following statements.

- (a) Reabsorption in this region is minimum.
 - (b) This region plays a significant role in the maintenance of high osmolarity of intestinal fluid.
 - (c) Its descending limb is permeable to water, but almost impermeable to electrolytes.
 - (d) Its ascending limb is impermeable to water, but allows transport of electrolyte actively or passively.
 - (e) In descending limb filtrate is hypertonic, while in ascending limb filtrate is hypotonic
- The above characteristics are associated with;
- (1) Proximal Convolute Tubule (PCT)
 - (2) Loop of Henle
 - (3) Distal Convolute Tubule (DCT)
 - (4) Bowman's capsule



45. There are three blanks in the following statement. Mark the **correct** option having suitable words for filling the blanks.

The thin filaments of myofibril contain ____ (a) ____ actin, two filaments of ____ (b) ____ protein along with ____ (c) ____ protein for masking the binding site for myosin.

- | | (A) | (B) | (C) |
|-----|-----|-------------|-------------|
| (1) | 1F | troponin | Tropomyosin |
| (2) | 1F | Tropomyosin | troponin |
| (3) | 2F | troponin | Tropomyosin |
| (4) | 2F | tropomyosin | troponin |

46. Which of the following is **true** about vertebral column?

- (1) Each vertebra in vertebral column has a central hollow portion (neural canal) through which spinal cord passes.
- (2) The first vertebra in vertebral column is atlas and it articulates with the occipital condyle.
- (3) Vertebral column protects spinal cord, supports the head and serves as the point of attachment for the ribs and musculature of the back.
- (4) All of these

47. **Assertion (A):** The AV node delay the electrical impulse moving from the SA node and the atria to the ventricles.

Reason (R): The delay allows the atria to empty completely, filling ventricles fully before they contract.

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

48. **Assertion (A):** Endocrine glands are also called ductless glands.

Reason (R): Endocrine glands lack ducts.

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

49. Choose the option that is **correctly** matching the source gland with its respective hormone as well as the function.

Source glands	Hormones	Functions
(1) Posterior pituitary	Vasopressin	Stimulates reabsorption of water in the distal tubules in the nephron
(2) Corpus luteum	Oestrogen	Supports pregnancy
(3) Thyroid	Thyroxine	Regulated blood calcium level
(4) Anterior	Oxytocin	Contraction of uterus muscles during child birth

50. Which of the following is an **incorrect** statement?

- (1) Hormones are required in trace amounts.
- (2) Hormones are intracellular messenger.
- (3) Hormones are secreted by endocrine glandular cells.
- (4) Hormones are secreted in response to a particular stimulus.

