

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

1. Diploblastic and triploblastic are terms that describe;
- (1) the number of invaginations during embryonic development.
  - (2) the number of heads during embryonic development.
  - (3) the number of germinal layers during embryonic development.
  - (4) the number of cell types during development.

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

List-I		List-II	
(A)	<i>Sycon</i>	(I)	Bath sponge
(B)	<i>Spongilla</i>	(II)	Scypha
(C)	<i>Euspongia</i>	(III)	Fresh water sponge

- (1) A - II; B - III; C - I
  - (2) A - I; B - II; C - III
  - (3) A - III; B - II; C - I
  - (4) A - III; B - I; C - II
3. The characteristic cells of coelenterates are;
- (1) colloblasts present in epidermis only.
  - (2) cnidoblasts present in epidermis only.
  - (3) cnidoblasts present in both epidermis and gastrodermis.
  - (4) flame cells.
4. The main body parts common to all Molluscs are the;
- (1) foot, radula and mantle.
  - (2) foot, visceral mass (hump) and mantle.
  - (3) visceral mass, mantle and shell.
  - (4) foot, radula, visceral mass.
5. Select the point of difference which has been wrongly written.

	<b>Cartilaginous fish</b>	<b>Bony fishes</b>
(1)	Operculum absent	Operculum present
(2)	Fertilisation internal	Fertilisation external
(3)	Posses 5-7 pair of gill	Posses 4 pair of gills
(4)	Mostly oviparous	Mostly viviparous

6. Which of the following is **incorrect** with respect to junction and its function?

(1)	Tight junction	Promotes leaking of substances across a tissue
(2)	Adhering junction	Keeps neighbouring cells together
(3)	Gap junction	Connects the cytoplasm of adjoining cells for rapid transfer of ions and small molecules
(4)	Gap junction	Facilitates the cells to communicate with each other

7. Dense irregular connective tissue is present in;
- (1) Skin
  - (2) Tendon
  - (3) Ligament
  - (4) Both (2) and (3)
8. Bidder's canal present in the kidney of male frog is involved in the passage of;
- (1) Sperms only
  - (2) Urine only
  - (3) Sperms and urine both
  - (4) Metabolic waste (filtration)
9. Sugar and amino acids are:
- (1) Primary metabolites
  - (2) Secondary metabolites
  - (3) Feed stock
  - (4) Hormones
10. Which of the following is **incorrect**?
- (1) Quaternary structure refers to the spatial relations between individual polypeptide chains in a multi-chained protein.
  - (2) The tertiary structure is absolutely necessary for many biological activities of protein.
  - (3) Biologists describe the protein structures at 2 levels only.
  - (4) Protein structure is correlated with protein function.



11. Read the following statements and choose the right option.

- (a) Right end of polysaccharide is called reducing end while left end is called non-reducing end.
- (b) Starch can hold  $I_2$  molecules in its helical secondary structure but cellulose being non-helical, cannot hold  $I_2$ .
- (c) Starch and glycogen are branched molecule.
- (d) Starch in plant and glycogen in animal are store houses of energy.

- (1) (a) and (d) are correct
- (2) (b) and (c) are correct
- (3) Only (d) is correct
- (4) All are correct

12. A phosphoglyceride is always made up of;

- (1) a saturated or unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached.
- (2) a saturated or unsaturated fatty acid esterified to a phosphate group which is also attached to a glycerol molecule.
- (3) only a saturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached.
- (4) only an unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached.

13. Match the features given in **List-I** with their examples given in **List-II** and choose the **correct** match from the options given below.

<b>List-I (Features)</b>		<b>List-II (Examples)</b>	
(A)	Pseudocoelomates	(I)	<i>Hydra</i> , <i>Adamsia</i>
(B)	Diploblastic	(II)	<i>Ctenoplana</i> , <i>Asterias</i>
(C)	Cellular level of organization	(III)	<i>Ascaris</i> , <i>Wuchereria</i>
(D)	Radial symmetry	(IV)	<i>Sycon</i> , <i>Spongilla</i>
(E)	Metamerism	(V)	<i>Pheretima</i> , <i>Nereis</i>

- |     |          |          |          |          |          |
|-----|----------|----------|----------|----------|----------|
|     | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> |
| (1) | V        | II       | IV       | III      | I        |
| (2) | III      | I        | IV       | II       | V        |
| (3) | II       | I        | III      | V        | IV       |
| (4) | III      | II       | IV       | I        | V        |

14. Match **List-I** (function) with **List-II** (class of enzymes) and select the **correct** option.

<b>List-I (Function)</b>		<b>List-II (Class)</b>	
(A)	Breakdown without addition of water.	(I)	Isomerases
(B)	Conversion of an aldose sugar to a ketose sugar.	(II)	Oxidoreductases
(C)	Transfer of electrons.	(III)	Ligases
(D)	Bonding of two components with the help of ATP	(IV)	Lyases

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

15. Match the **column-I** and **column-II**, and choose the **correct** combination for the options given.

<b>List-I</b>		<b>List-II</b>	
(A)	Eosinophils	(I)	0.5-1%
(B)	Basophils	(II)	2-3%
(C)	Neutrophils	(III)	6-8%
(D)	Lymphocytes	(IV)	20-25%
(E)	Monocytes	(V)	60-65%

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

16. 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

17. Arrange the following steps of respiration properly:

- (a) Breathing or pulmonary ventilation by which atmospheric air is drawn in and  $CO_2$  is released.
- (b) Diffusion of gases ( $O_2$  and  $CO_2$ ) across alveolar membrane.
- (c) Transport of gases by the blood.
- (d) Diffusion of  $O_2$  and  $CO_2$  between blood and tissues.
- (e) Utilization of  $O_2$  by the cells for catabolic reactions and resultant release of  $CO_2$ .

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



18. A large proportion of oxygen is left unused in the human blood even after its uptake by body tissues. This  $O_2$ ;

- (1) raises  $pCO_2$  of blood to 75 mm of Hg.
- (2) acts as a reserve during muscular exercise.
- (3) is enough to keep oxyhaemoglobin saturation at 96%.
- (4) helps in releasing more oxygen to the epithelial tissues.

19. A vein different from the artery in having;

- (1) narrow lumen.
- (2) strong cuticular and muscular wall.
- (3) valves to control direction of flow.
- (4) dark pigmented wall.

20. Match **List-I** with **List-II** and choose the **correct** option.

List-I		List-II	
(A)	Superior vena cava	(I)	Carries deoxygenated blood to lungs
(B)	Inferior vena cava	(II)	Carries oxygenated blood from lungs
(C)	Pulmonary artery	(III)	Brings deoxygenated blood from lower parts of body to right atrium
(D)	Pulmonary vein	(IV)	Brings deoxygenated blood from upper parts of body into right atrium

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

21. In mammalian embryo, the pulmonary aorta communicates with carotico-systemic aorta by a narrow ductus arteriosus, in the adult this connection closes leaving;

- (1) Fossa-ovalis
- (2) Carotico pulmonary aperture
- (3) Ligamentum arteriosus
- (4) None of these

22. Uric acid is an excretory product of;

- (a) Cockroach.
  - (b) Sparrow.
  - (c) Terrestrial reptiles.
  - (d) Man.
- (1) (a) and (d)
  - (2) (b) and (d)
  - (3) (a), (b) and (c)
  - (4) (a), (c) and (d)

23. Select the **correct** statement.

- (1) Juxtamedullary nephrons have reduced Henle's loop.
- (2) Vasa recta is well developed in cortical nephrons.
- (3) PCT and DCT are situated in kidneys medulla.
- (4) The ascending limb of Henle's loop extends as DCT.

24. Mark the **incorrect** statement.

- (1) Micturition is carried out by a reflex.
- (2) Antidiuretic hormone (ADH) helps in  $H_2O$  elimination, making the urine hypotonic.
- (3) Protein free fluid is filtered from blood plasma into the Bowman's capsule.
- (4) Glucose is actively reabsorbed in the proximal convoluted tubule (PCT).

25. Select the **incorrect** statement.

- (1) Plant and animal both exhibit movement.
- (2) All locomotions are movements, but all movements are not locomotion.
- (3) Methods of locomotion performed by animal vary with their habitats and the demand of the situation.
- (4) None of these

26. **Assertion (A):** To track a molecule of carbon dioxide from an arteriole in the right thumb to its exit from the body in exhaled air, it would have passed through a minimum of two capillary beds.

**Reason (R):** To complete the journey from an arteriole in the right thumb to exhaled air, the carbon dioxide molecule would have to pass through at least two capillary beds. First, it would enter a capillary bed in the thumb before returning to the right atrium and ventricle, and then travel to the lungs where it would enter another capillary bed and diffuse into an alveolus, ultimately being exhaled.

- (1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is a correct explanation of **Assertion (A)**.
- (2) Both **Assertion (A)** and **Reason (R)** are 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.



27. **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 suggest that an individual's body is fighting with an infection.
- (1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is a correct explanation of **Assertion (A)**.
  - (2) Both **Assertion (A)** and **Reason (R)** are 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.
28. Myasthenia gravis is;
- (1) autoimmune disorder affecting neuromuscular junction leading to fatigue, weakening and paralysis of skeletal muscle.
  - (2) progressive degeneration of skeletal muscle mostly due to genetic disorder.
  - (3) rapid spasms (wild contractions) in muscle due to low  $\text{Ca}^{2+}$  in body fluid.
  - (4) inflammation of joints.
29. For quick coordination, our neural system is organised through;
- (1) organ to organ connections.
  - (2) cell to cell connections.
  - (3) point to point connections.
  - (4) point to cell connections.
30. In the resting state of the neural membrane, diffusion due to concentration gradients, if allowed would drive;
- (1)  $\text{K}^+$  into the cell
  - (2)  $\text{Na}^+$  into the cell
  - (3)  $\text{Na}^+$  out of the cell
  - (4)  $\text{K}^+$  and  $\text{Na}^+$  out of the cell
31. **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 a correct explanation of **Assertion (A)**.
  - (2) Both **Assertion (A)** and **Reason (R)** are 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.
32. Which of the following options is **wrong**?
- (1) Thyroid gland is the largest endocrine gland.
  - (2) Each thyroid gland is composed of follicles and stromal tissues.
  - (3) Thyroid gland consists of four lobes.
  - (4) Thyroid gland secretes  $\text{T}_3$ ,  $\text{T}_4$  and TCT.
33. Insulin, a peptide hormone like glucagon, has all the following effects except;
- (1) insulin acts mainly on hepatocytes and adipocytes and enhances cellular glucose uptake and utilisation.
  - (2) insulin causes a rapid movement of glucose from blood to hepatocytes.
  - (3) insulin is hypoglycemic factor.
  - (4) insulin reduces glycogenesis.
34. **Assertion (A):** After exercising regularly for several months, our resting heart rate decreases, but our cardiac output at rest is unchanged.  
**Reason (R):** The heart, like any other muscle, becomes stronger through regular exercise. The stronger heart would have a lesser stroke volume, which would allow for the decrease in heart rate.
- (1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is a correct explanation of **Assertion (A)**.
  - (2) Both **Assertion (A)** and **Reason (R)** are 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.
35. Read the given statements.
- Statement I:** Based on appearance, cardiac muscles are striated. They are involuntary in nature as the nervous system does not control their activities directly.
- Statement II:** Skeletal muscles are closely associated with the skeletal components of the body. Their activities are under the voluntary control of the autonomic nervous system.
- (1) Statement I and Statement II both are correct.
  - (2) Statement I is correct but Statement II is incorrect.
  - (3) Statement I is incorrect but Statement II is correct.
  - (4) Statement I and Statement II both are incorrect.



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

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

- (1) Statement I and Statement II both are correct.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Statement I and Statement II both are incorrect.

37. Which of the following statements about cell junctions is **false**?

- (a) All the cells of the epithelium are held together with little intercellular matrix.
  - (b) In almost all animal tissues specialised junction provide both structural and functional link between its individual cells.
  - (c) Tight junctions help to stop substances from leaking across a tissue.
  - (d) Adhering junctions provide cementing to keep neighbouring cells together.
  - (e) Gap junctions provide cytoplasmic channels between cells for passage of ions, small molecules and sometimes big molecules.
- (1) Only (b) and (c)
  - (2) Only (a) and (b)
  - (3) Only (e)
  - (4) None of these

38. Select the **correct** statement.

- (1) Low temperature preserves the enzyme in a temporarily inactive state.
- (2) Higher temperature destroys enzymatic activity because proteins are denatured by heat.
- (3) Activity of enzymes declines both below and above the optimum value.
- (4) All of these.

39. **Statement I:** Left atrium possesses the thickest muscles.

**Statement II:** Left atrium receives blood from the lungs.

- (1) Statement I and Statement II both are correct.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Statement I and Statement II both are incorrect.

40. **Statement I:** In the human heart, there is mixing of oxygenated and deoxygenated blood.

**Statement II:** Presence of valves in the heart allows the movement of blood in one direction only.

- (1) Statement I and Statement II both are correct.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Statement I and Statement II both are incorrect.

41. Mark the **incorrect** statement in the following.

- (1) Diffusion membrane is made up of three major layers.
- (2) Solubility of  $\text{CO}_2$  is higher than  $\text{O}_2$  by 25 times.
- (3) Breathing volumes are estimated by spirometer.
- (4) High concentration of hydrogen ions favours oxyhaemoglobin formation.

42. **Statement I:** Fibrins are produced by the conversion of inactive fibrinogens in the plasma, in the presence of enzyme thrombin.

**Statement II:** Plasma without fibrinogen and blood corpuscles is called serum.

- (1) Statement I and Statement II both are correct.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Statement I and Statement II both are incorrect.

43. Which of the following diseases is also known as atherosclerosis?

- (1) Hypertension
- (2) Angina pectoris
- (3) Heart attack
- (4) Coronary artery disease (CAD)



44. Read the following statements.

- (a) During urine formation, the tubular cells secrete substances like  $H^+$ ,  $K^+$  and  $HCO_2^-$  into filtrate.
- (b) As glomerular filtrate moves down in descending limb of Henle's loop it gets concentrated and as concentrated filtrate pass upward in ascending limb of Henle's loop it gets diluted.
- (c) Conditional reabsorption of  $Na^+$  and water takes place in PCT.
- (d) Reabsorption in ascending limb of Henle's loop is minimum.

Which of the statements given above are **incorrect**?

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

45. Which of the following statements about human vertebral column is **false**?

- (1) Vertebral column consists of 26 vertebrae.
- (2) It is ventrally placed.
- (3) It extends from the base of skull and constitutes the main framework of the trunk.
- (4) Neural canal in vertebra is the passage for spinal cord.

46. Which of the following features is **not correct** regarding the figure given below?



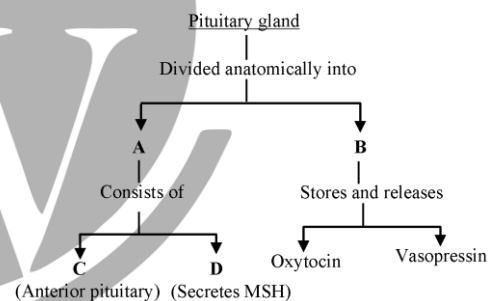
- (1) It is an aquatic form.
- (2) Circulatory system is of open type.
- (3) It possesses parapodia for swimming.
- (4) Neural system consists of paired ganglia connected by lateral nerves to a double ventral nerve cord.

47. Select the total number of **true** statements from the following.

- (a) There are two types of synapses, namely electrical synapses and chemical synapses.
- (b) Electrical synapses are rare in our system.
- (c) At chemical synapse, the membranes of pre and post-synaptic neurons are in very close proximity.
- (d) Transmission of an impulse across electrical synapses is very similar to impulse conduction along a single axon.
- (e) At a chemical synapse, the membrane of the pre and post-synaptic neurons are separated by a fluid filled space called synaptic cleft.

- (1) Two                                      (2) Three
- (3) Four                                      (4) Five

48. Identify A, B, C and D in the given flow chart and select the **correct** option.



- (1) A-Neurohypophysis, B-Adenohypophysis,  
C-Pars distalis, D-Pars intermedia
- (2) A-Adenohypophysis, B-Neurohypophysis,  
C-Pars intermedia, D-Pars distalis
- (3) A-Adenohypophysis, B-Neurohypophysis,  
C-Pars distalis, D-Pars intermedia
- (4) A-Neurohypophysis, B-Adenohypophysis,  
C-Pars intermedia, D-Pars distalis



49. Hormones produce their effect on target tissue by binding to specific (a) called hormone receptors located in the target tissues only. (b) soluble hormones usually need (c) receptors that generate (d) messengers for regulating cellular metabolism. (e) soluble hormones can pass through cell membrane and bind to (f) receptors, mostly (g) receptors. The hormone receptor complex enters the (h) and mostly regulates gene expression or chromosome function by interaction hormone – receptor complex with the (i).

- (1) (a) – protein; (b) – Water; (c) – membrane-bound; (d) – second; (e) – Lipid; (f) – intracellular; (g) – nuclear; (h) – nucleus; (i) – genome
- (2) (a) - lipid; (b) - Lipid; (c) - membrane-bound; (d) - second; (e) - Water; (f) - intracellular; (g) - nuclear; (h) - nucleus; (i) - genome
- (3) (a) - protein; (b) - Water; (c) - intracellular; (d) - second; (e) - Lipid; (f) - extracellular; (g) - nuclear; (h) - nucleus; (i) - genome
- (4) (a) - protein; (b) - Lipid; (c) - membrane-bound; (d) - primary; (e) - Water; (f) - intracellular; (g) - nuclear; (h) - nucleus; (i) – genome

50. **Assertion (A):** Thyrocalcitonin & Parathormone have antagonistic effect on blood calcium level.

**Reason (R):** Thyrocalcitonin raises the blood calcium level and parathormone lowers the blood calcium level by removal of calcium from bone and reabsorption of calcium from nephrons.

- (1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is a correct explanation of **Assertion (A)**.
- (2) Both **Assertion (A)** and **Reason (R)** are 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.

