THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

Biology (044)

FIRST TERMINAL

EXAMINATION

GRADE XI - 2024-25 Time: 3 Hours

Date:01/10/2024 Max. Marks: 70

General Instructions:
1.All questions are compulsory.
2.The question paper has five sections and 33 questions. All questions are compulsory.
3.Section—A has 16 questions of 1 mark each; Section—B has 5 questions of 2 marks each; Section—C has 7 questions of 3 marks each: Section—D has 2 case-based questions of 4 marks each; and Section—E has 3 questions of 5 marks each.
4.There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
5.Wherever necessary, neat and properly labelled diagrams should be drawn.

Qn. No		Mark
	SECTION A	
1	Apocarpous is the term given to b) More than one carpel which may be free.	1
2	Which of the following represents the depolarisation of the ventricles? c) QRS complex	1
3	Which among the following is incorrect about Echinoderms c) The larvae is immobile and bilaterally symmetrical	1
4	Naked cytoplasm, multinucleated and saprophytic are the characteristics of	1

	d. Slime molds	
5	Fusion of two motile gametes which are dissimilar in size is termed as c. Anisogamy	1
6	Which one of the following statements is incorrect? a. In cockroaches and prawns excretion of waste material occurs through malpighian tubules.	1
7	Respiratory process is regulated by certain specialised centres in the brain. One of the following centres can reduce the inspiratory duration upon stimulation b. Pneumotaxic centre	1
8	From the following relationships between respiratory volume and capacities and mark the correct answer ii. Vital Capacity (VC) = Tidal Volume (TV) + Inspiratory Reserve Volume (IRV) + Expiratory Reserve Volume (ERV).	1
9	Birds and mammals share one of the following characteristics as a common feature. d. Warm blooded	1
10	Which among the following is not an asexual mode in bryophytes? d) Sporophyte formation	1
11	Cyanobacteria are classified under c. Monera	1
12	Those bronchioles which divide into alveolar ducts are called as: d) Respiratory bronchioles	1
DIRECTION : Q. No. 13-16: Consist of two statements— Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:		

13	Assertion : Inspiration occurs due to muscular relaxation. Reason : During inspiration, the diaphragm and external intercostal muscle contract simultaneously. (d) A is False but R is true.	1
14	Assertion: In ctenophores, digestion is chiefly extracellular. Reason: Digestive tract is incomplete in ctenophores. (c) A is true but R is false.	1
15	Assertion: Pneumatophores are seen in Rhizophora. Reason: From the region of elongation, some of the epidermal cells form root hairs (b) Both A and R are true and R is not the correct explanation of A.	1
16	Assertion: Rhodophyta is red in colour due to abundant formation of r-phycoerythrin. Reason: r-phycoerythrin is able to absorb blue green wavelengths of light and reflect red colour. (a) Both A and R are true and R is the correct explanation of A.	1
	Section—B	
17	What is meant by double circulation? What is its significance? Double circulation is a process during which blood passes twice through the heart during one complete cycle. The movement of blood in an organism is divided into two parts: (i)Systemic circulation (ii)Pulmonary circulation The separation of oxygenated and deoxygenated blood allows a more efficient supply of oxygen to the body cells. Blood is circulated to the body tissues through systemic circulation and to the lungs through the pulmonary circulation.	2
18	Cigarette smoking causes emphysema. Give reason. Emphysema is a chronic disorder which occurs due to cigarette smoking for a prolonged period Excessive cigarette smoking damages the walls of the alveoli due to increased exposure of tobacco. This leads to loss of elasticity of walls of	2

	the alveoli. The inner walls of the air sacs get ruptured which creates larger air spaces instead of numerous small ones. As a result, the effective surface area for the exchange of gases is reduced.	
19	Endoparasites are found inside the host body. Mention the special structure, possessed by these and which enables them to survive in those conditions. Presence of suckers and hooks: Taenia and Fasciola possess hooks and suckers. • Hooks found in Taenia solium are organs of attachment that attach these organisms to the small intestines of the human host. • Suckers present in Taenia also help in attachment to the alimentary canal of the host. • In Fasciola, suckers help in adhesion to the host bile duct (mostly sheep) as well as help in ingestion of food.	2
20	Both gymnosperms and angiosperms bear seeds, then why are they classified separately? Gymnosperms and angiosperms are classified separately because of the following reasons : 1. The ovules of gymnosperms are naked. But in angiosperms, they are enclosed inside the ovary. 2. In gymnosperms, the wood is non-porous, i.e., the vessels are absent. In angiosperms, the wood is porous, i.e., the vessels are present. 3. The archagonia are absent in angiosperms whereas they are present in gymnosperms.	2
21	What is the significance of atrio-ventricular node and atrio-ventricular bundle in the functioning of heart? the atrioventricular (AV) node is present in the right atrium, near the base of the septum that separates the right atrium from the ventricle. It gives rise to the bundle of His that conducts the cardiac impulses from the autrium to the ventricles. As the bundle of His passes the ventricle along the inter-ventricular septum, it divides into two branches – the right ventricle and the left ventricle.	2
	Section—C	
22	Give the characteristic features of the following citing one example of each a. Chondrichthyes and osteichthyes b. Urochordata and cephalochordata	3

	Chondrichthyes	**Osteichthyes**
	A class of cartilaginous fishes found in marine habitats.	All the bony fishes found in both freshwater and marine habitats.
	Endoskeleton is made up of cartilage.	Endoskeleton is made up of bone.
	Do not have operculum.	Have operculum.
	Mouth is ventral.	Mouth is terminal.
	Air bladder in absent.	Air bladder is present.
	Have placoid scales.	Have cycloid/ ctenoid scales.
	Undergo internal fertilisation.	Undergo external fertilisation.
	Many of them are viviparous.	Mostly oviparous.
	Urochordata	**Cephalochordata**
	Notochord is only present in the tail of the larva.	Notochord extends from head to tail region.
	Have open circulatory system.	Have a closed circulatory system.
	Adults are sedentary.	Adults are motile.
	Larva undergo retrogressive metamorphosis.	Larvae undergoes progressive metamorphosis
	Example: Ascidia.	Example: Branchiostoma.
23	Define the following terms: (a) aestivation (b) placentation (c) actinomorphic (d) zygomorphic (a) Aestivation : The mode of arrangement of sepals or petals in floral bud with respect to the other members of the same whorl is known as aestivation. (b) Placentation : The arrangement of ovules in ovary is known as placentation. (c) Actinomorphic : Actinomorphic flowers can be divided into two radial halves by any radial plane passing through its centre. (d) Zygomorphic : Zygomorphic flowers are those flowers which can be divided into two similar halves by a single vertical plane, e.g. pea and beans.	3

24	What observable features in Trypanosoma would make you classify it under kingdom Protista? The members of this group are either free-living or parasitic. They have flagella. The parasitic forms cause diaseases such as sleeping sickness Unicellularity: Trypanosoma is a unicellular organism. Asexual reproduction: Trypanosoma reproduces asexually	3
25	Diatoms are also called as 'pearls of ocean', why? What is diatomaceous earth? because they are vital producers in marine ecosystems, providing food for themselves and other marine life. Diatomaceous earth is the accumulation of their siliceous remains, used in polishing and filtration	3
26	Explain the role of the neural system in regulation of respiration. • Respiratory rhythm center: Located in the medulla, this center controls respiration. • • Pneumotaxic center: Located in the pons, this center can adjust the respiratory rhythm center's functions. For example, it can reduce the length of inspiration and change the respiratory rate. • • Chemosensitive area: Located near the rhythm center, this area is sensitive to hydrogen ions and CO2. • • Receptors: Located in the carotid artery and aortic arch, these receptors detect changes in CO2 and H+ concentration and send signals to the rhythm center. • • Voluntary control: This system is located in the cerebral cortex and sends impulses to the respiratory motor neurons. • • Automatic control: This system is driven by a group of pacemaker cells in the medulla	3

27	Give an example for each of the following a. A viviparous animal b. A fish possessing a poison sting c. A fish possessing an electric organ d. An organ, which regulates buoyancy e. Animal, which exhibits alternation of generation f. Oviparous animal with mammary gland	3
28	Write semi-technical description of the family Solanaceae. Also draw their floral diagram.	3
	Section—D	
29	Read the following and answer any four questions: In human beings, the lungs are situated in the thoracic chamber which is formed dorsally by the vertebral column, ventrally by the sternum, laterally by the ribs, and on the lower side by the dome-shaped diaphragm. The anatomical setup of the lungs in the thorax is such that any change in the volume of the thoracic cavity will be reflected in the lung (pulmonary) cavity. Such an arrangement is essential for breathing. Breathing involves two stages – inspiration and expiration. During inspiration, the atmospheric air is drawn in and during expiration, the alveolar air is released out. 1. On average, a healthy human breathes _____ times/minute. 1. 12 – 16 2. Air is sucked into the lungs by_____ . 1. Both ribs lift up and diaphragm flattens 3. What term is used for the volume of air inspired or expired during normal respiration? 1. Tidal volume 4. The residual volume of air is _____. 1. 1100 mL to 1200 mL	4
30	Animals in which the cells are arranged in two embryonic layers, an external ectoderm and an internal endoderm, are called diploblastic animals, e.g., coelenterates. An undifferentiated layer, mesoglea, is present in between the ectoderm and the endoderm. Coelom – Presence or absence of a cavity between the body wall and the gut wall is very important in classification. The body cavity, which is lined by mesoderm is called coelom. Animals possessing coelom are called coelomates, e.g., annelids, molluscs, arthropods, echinoderms, hemichordates and chordates. In some animals, the body cavity is not lined by mesoderm, instead, the mesoderm is present as scattered pouches in between the ectoderm and endoderm. Such a body cavity is called pseudocoelom and the animals possessing them are called	4

	pseudocoelomates, e.g., aschelminthes. The animals in which the body cavity is absent are called acoelomates, e.g., Platyhelminthes. Segmentation – In some animals, the body is externally and internally divided into segments with a serial repetition of at least some organs. For example, in earthworm, the body shows this pattern called metameric segmentation and the phenomenon is known as metamerism. Notochord – It is a mesodermally derived rod-like structure formed on the dorsal side during embryonic development in some animals. Animals with notochord are called chordates and those animals which do not form this structure are called non-chordates, e.g., porifera to echinoderms. 1.) Diploblastic animals are characterised by _____. c) Both a and b 2.) In coelomates, body cavity is surfaced by_____ b) Mesoderm 3.) Name the layer is present in between the ectoderm and the endoderm in diploblastic animals. 4.) What is mean by metameric segmentation and metamerism?	
SECTION-E		
31	a)Define a cardiac cycle and the cardiac output Cardiac cycle: Sequence of events during the completion of one heart beat - systole and diastole. Cardiac output: Volume of blood pumped out by each ventricle per minute/stroke volume x heart rate. b)Sino-atrial node is called the pacemaker of our heart. Why? The sinus node continuously generates electrical impulses, setting a healthy heart's normal rhythm and rate. Hence, the SA node is referred to as the heart's natural pacemaker. c)Describe the evolutionary change in the pattern of heart among the vertebrates They've progressed from a two-chambered heart (fish) to a four-chambered heart (humans and mammals).	5
32	a)Define oxygen dissociation curve. Can you suggest any reason for its sigmoidal pattern?	5

	The oxygen dissociation curve is a graph that shows the relationship between the partial pressure of oxygen and the oxygen saturation of hemoglobin. The curve is S-shaped, or sigmoidal b)Diffusion of gases occurs in the alveolar region only and not in the other parts of respiratory system. Why? • Thin: The alveolar region is made up of thin layers of squamous epithelial cells. • Moist: The alveolar region is moist. • Permeable: The alveolar region is permeable to respiratory gases. • Large: The alveolar region is very large. • Highly vascular: The alveolar region has a rich supply of blood capillaries. • Thin barrier: The barrier between the alveoli and the capillaries is thin c)What are the major transport mechanisms for CO2?	
33	Comment upon the habitats and external features of animals belonging to class, amphibia and reptilia. • Habitat: Amphibians can live in both water and on land, and are often found near wetlands and riparian areas. They use a variety of microhabitats, such as leaf litter, woody material, and small mammal burrows. • External features: Amphibians are tetrapods, meaning they have four limbs that help them move on land. Their skin is smooth or rough, and is moist due to glands. Most amphibians are born with gills, but later develop lungs. Reptiles • Habitat: Reptiles are primarily terrestrial animals, and are usually found in warmer regions. They need a temperature	5

	gradient within their habitat, with basking areas in the sun and shelters from the heat. • • External features: Reptiles have a body divided into a head, neck, trunk, and tail. They are born with lungs, and typically lay their eggs on dry land. Their skin is scaly. •	