THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

Biology (044)

Class XI 2024-25

FINAL EXAM

Time: 3 Hours **Max. Marks: 70**

Marking scheme

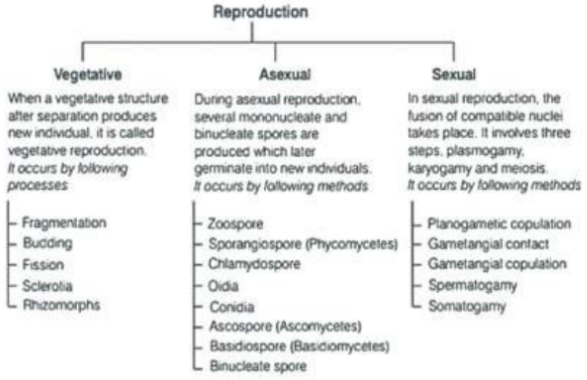
Qn. No		
	SECTION A	
1	Respiratory process is regulated by certain specialized centres in the brain. One of the following centres can reduce the inspiratory duration upon stimulation: d) Pneumotaxic centre	1
2	Which one of the following is also known as antidiuretic hormone? c)Vasopressin	1
3	Which of the following is not a macromolecule? d) Lipid	1
4	Frog shows which kind of excretion? b) Ureotelic	1
5	Fusion of two motile gametes which are dissimilar in size is termed as c. Anisogamy	1
6	b	1
7	d	1

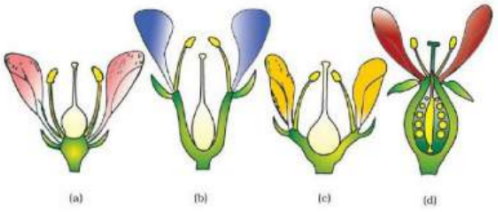
8	c	1
9	b	1
10	d	1
11	Cyanobacteria are classified under a. Protista b. Plantae c. Monera d. Algae	1
12	a	1
DIRECTION : Q. No. 13-16: Consist of two statements— Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:		
13	Assertion : Inspiration occurs due to muscular relaxation. Reason : During inspiration, the diaphragm and external intercostal muscle contract simultaneously. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true and R is not the correct explanation of A. (c) A is true but R is false. (d) A is False but R is true.	1
14	**Assertion:** Neurohypophysis is under the direct regulation of the hypothalamus. **Reason:** Neurohypophysis stores and releases two hormones called oxytocin and vasopressin which are actually synthesized by the hypothalamus.	1
15	Both are false	1
16	b	1
Section—B		

17	What are endocrine glands? Name their secretions. 1. Hormone is secreted by endocrine glands 2. It is secreted directly into the bloodstream which is transported to the site of action directly.	2
18	What type of succession is seen is racemose inflorescence?One example? acropetal succession Racemose – Here, the flowers are supported laterally in an acropetal succession and the main axis continues to grow.	2
19	What is the function of flame cells? In which phylum are they found? A flame cell is a specialized excretory cell found in the simplest freshwater invertebrates, including flatworms (platyhelminthes). They function like a kidney, removing waste materials.	2
20	What are viroids? • Viroids are infectious particles composed of circular strands of RNA without any protein coat. • Viroids were discovered by T.O. ... • The size of viroids is smaller than the viruses. • Viroids lack protein coat.	2
21	Name the bones of pectoral & pelvic girdle in man. scapula and clavicle.	2
	Section—C	
22	Describe the structure of contractile proteins – actin & myosin The I bands contain only thin (actin) filaments, whereas the A bands contain thick (myosin) filaments. The myosin and actin filaments overlap in peripheral regions of the A band, whereas a middle region (called the H zone) contains only myosin.	3
23	What is the role of the following in regulation of Kidney function:- (i) Hypothalamus (ii) JGA (iii) ANF i)Hypothalamus : ADH stimulates reabsorption of water from the distal parts of the tubules and thereby preventing the water loss and diuresis. In case of sufficient body fluid, osmoreceptors are switched off hence ADH release is suppressed.	3

	ii)JGA : JGA is known as Renin-Angiotensin mechanism. Angiotensin II also stimulates the release of aldosterone from adrenal cortex gland, which facilitates reabsorption of sodium ion and water from the distal parts of the tubule and also and causes an increase in glomerular blood pressure and GFR. iii)ANF The critical regulation of the body's salt, potassium and acid content is performed by the kidneys. The kidneys also produce hormones that affect the function of other organs. For example, a hormone produced by the kidneys stimulates red blood cell production.	
24	Distinguish anaphase of mitosis from anaphase I of meiosis. During anaphase of mitosis sister chromatids get separate from each other due to the break down of centromere. But during anaphase I Homologous chromosomes get separated from each other called as chromosomal disjunction. Both these occurs due to contraction of spindle fibres	3
25	List the different features of class reptilia 1. These are cold-blooded animals with three-chambered hearts except crocodiles that have four-chambered hearts. 2. The body is divisible into the head, neck, trunk, and tail. 3. The limbs are pentadactyle i.e., five-toed with clawed digits. Some snakes and lizards do not possess limbs. 4. The tympanum is small or depressed. 5. Most of them possess teeth except turtles and tortoises. 6. They possess scales. 7. They are oviparous and eggs are covered with a tough covering. 8. Example: - Crocodiles, snakes, lizards, turtles, tortoises, etc	3
26	Enumerate different types of nerve fibres according to their nature and function • Sensory nerves carry signals to your brain to help you touch, taste, smell and see. • Motor nerves carry signals to your muscles or glands to help you move and function.	3

27	What are fibrous, cartilaginous & synovial joints? Give examples of each. (I) FIBROUS JOINT: Fibrous joints are also termed as fixed joints. They are characterized by the absence of synovial cavities and ligaments. They are fixed by sutures. In the fibrous joint, no movements occur between the bones, hence are immovable. Example bones of skull, bones of pelvic girdle. (II) CARTILAGINOUS JOINT: Cartilaginous Joints are also called as slightly movable joints. They are characterized by separation of bones by cartilage and absence of synovial cavity. Slight movements are possible in such joints due to compression of pad of cartilages. Example: between the central two vertebra, ribs and sternum. (III) SYNOVIAL JOINTS: Synovial Joints are also called freely movable joints. They are characterized by the free movements of joints in one or more directions. A membrane called synovial membrane is present which secretes synovial fluid. Synovial fluid acts as lubricant and provides nutrient materials for the structures within the joint cavity. The bone ends are covered by articular cartilages which are composed of hyaline cartilage.	3
28	Explain double circulation ? The heart receives deoxygenated blood from different parts of the body, and it pumps this blood to the lungs. The oxygenated blood from the lungs returns to the heart, which is pumped again into different parts of the body by the heart. Thus, the blood passes twice through the heart making one complete round through the body. This is called double circulation. Pulmonary and systemic circulation The pulmonary circulation pertains to lungs. The blood flows from the right ventricle to the lungs. Pulmonary veins collect oxygenated blood from the lungs and carry it back to the heart (left auricle). The systemic circulation pertains to the major circulation of the body. The aorta receives the blood from the left ventricle and sends it to the various parts of the body. Veins collect the deoxygenated blood from the body parts and pour it back into the right auricle Difference between Heart beat and pulse	3
	Section—D	

29	**Read the text carefully and answer the questions:** The fungi constitute a unique kingdom of heterotrophic organisms. They show a great diversity in morphology and habitat. Fungi are cosmopolitan and occur in air, water, soil, and on animals and plants. They prefer to grow in warm and humid places. Most fungi are heterotrophic and absorb soluble organic matter from dead substrates and hence are called saprophytes. When a fungus reproduces sexually, two haploid hyphae of compatible mating types come together and fuse. In some fungi, the fusion of two haploid cells immediately results in diploid cells (2n). The fungiform fruiting bodies in which reduction division occurs, leading to the formation of haploid spores. Symbionts	
	- in association with algae as lichens and with roots of higher plants as mycorrhiza. *Three types of reproduction occur in fungi*  (i) Observe the given flow chart of reproduction and mention which steps involves in the sexual cycle of fungi. **OR** In which form Fungi Stores Food Material? Do fungi have food vacuoles? (ii) What is Rhizopus? Also, mention Rhizopus - wheat rush a correct match? (iii) What is Mycorrhiza? And mention its function.	4

30	**Read the text carefully and answer the questions:** The flower is the reproductive unit in the angiosperms. It is meant for sexual reproduction. A typical flower has four different kinds of whorls arranged successively on the swollen end of the stalk or pedicel, called thalamus or receptacle. These are calyx, corolla, androecium and gynoecium. Calyx and corolla are accessory organs, while androecium and gynoecium are reproductive organs. In symmetry, the flower may be actinomorphic (radial symmetry) or zygomorphic (bilateral symmetry). Based on the position of calyx, corolla and androecium in respect of the ovary on the thalamus, the flowers are described as hypogynous, perigynous and epigynous. A flower may be trimerous, tetramerous or pentamerous when the floral appendages are in multiple of 3, 4 or 5, respectively.  (i) Observe the diagram given below. and mention what happens after the given stage. (ii) Is Actinomorphic - datura the incorrect match?	4
	(iii) When the ovary is superior it is called? **OR** Which of the following represents epigynous? Also, mention what an epigynous flower is.  	
	Section—E	

30	Comment on the statement - Meiosis enables the conservation of specific chromosome number of each species even though the process per se, results in reduction of chromosome number. OR Explain meiosis-II in an animal cell.	5
31	Enumerate the assumptions that we have undertaken in making the respiratory balance sheet. Are these assumptions valid for a living system? OR Give the various steps involved in Glycolysis.	5
32	Describe the structure of the following with the help of labelled diagrams. **[5]** i. Nucleus ii. Centrosome OR Give the biochemical composition of plasma membrane. How are lipid molecules arranged in the membrane?	5

1.**(i) Nucleus**

The nucleus controls all the cellular activities of the cell. It is spherical in shape. It is composed of the following structures:

Nuclear membrane:

1. It is a double membrane separating the contents of the nucleus from the cytoplasm. The narrow space between the two membranes is called the perinuclear space.
2. Nuclear membrane has tiny holes called nuclear pores.
3. These holes allow specific substances to be transferred into a cell and out of it.

Nucleoplasm/Nuclear matrix:

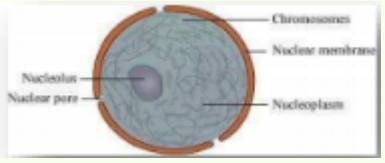
It is a homogenous granular fluid present inside the nucleus. It contains the nucleolus and chromatin.

Nucleolus:

It is a spherical structure that is not bound by any membrane. It is rich in protein and RNA molecules and is the site for ribosome formation.

Chromatin:

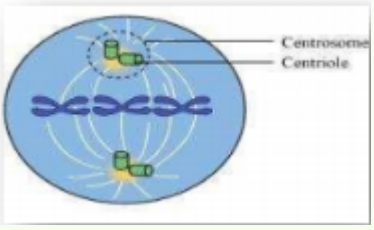
it is an entangled mass of thread-like structures. It contains DNA and some basic proteins called histones.



(ii) Centrosome

1. Centrosome consists of two cylindrical structures called centrioles. Centrioles lie perpendicular to each other.
2. Each has a cartwheel-like organisation.

3. A centriole is made up of microtubule triplets that are evenly spaced in a ring. The adjacent triplets are linked together.
4. There is a proteinaceous hub in the central part of a centriole. The hub is connected to the triplets via radial spokes.
5. These centrioles help in organising the spindle fibres and astral rays during cell division. They form the basal body of cilia and flagella.



Plasma membrane is consist of lipid and protein. Lipid is arranged as a bilayer with protein embedded in the matrix. The polar heads of lipid are on the outer side and hydrophobic ends are on the inner side of the membrane. This ensures that non-polar ends of saturated hydrocarbon molecules are protected from the aqueous environment. The lipid component is mainly composed of phosphoglycerides.