

FIRST REVISION EXAMINATION-2025

SUNDARAM GOVT.BOYS.HR.SEC.SCHOOL-THIRUMAZHISAI
THIRUVALLUR DISTRICT
BIOLOGY ANSWER KEY
PART I-BIOBOTANY

1. a) 10 micrometer
2. a) 1856 – 1863
3. b) Meristem culture
4. b) niche
5. d) Chlorella
6. d) Brazil
7. b) Atomita 2
8. b) Rice field
9. **Define the term Diplospory.**
 - A diploid embryo sac is formed from megaspore mother cell without a regular meiotic division is called diplospory.
 - Ex : Eupatorium and Aerva.
10. **What is a Atavism ?**
 - Atavism is a modification of a biological structure.
 - An ancestral that reappears after having been lost through evolutionary changes in the previous generation.
11. **Name the chemicals used in gene transfer.**
 - Polyethylene glycol (PEG)
 - Dextran sulphate are the chemicals used in gene transfer.

12.

<p>The pyramid of energy is always upright The bottom of the pyramid of energy is occupied by the producers. There is a gradual decrease in energy transfer at successive trophic levels from producers to the upper levels.</p>		2
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13. **What is Vulcanization?**

- The rubber articles could be overcome by heating rubber with sulphur under pressure at 150°C.

14.

Primary Introduction	Secondary Introduction	3
When the Introduced variety is well adapted to the new environment without any alternation to the original genotype.	When the Introduced variety in subjected to selection to isolate a superior variety and hybridized with a local variety to transfer one or a few characters to them.	

15.

<p>Genetic Map The diagrammatic representation of position of genes and related distances between the adjacent genes is called genetic mapping.</p> <p>Uses :</p> <ul style="list-style-type: none"> • It is used to determine gene order, identify the locus of a gene and calculate the distances between genes. • It is useful in predicting results of dihybrid and trihybrid crosses. • It allows the geneticists to understand the overall genetic complexity of particular organism. <p style="text-align: right;">(Any Two)</p>	1	
	2	3

16.

Cryopreservation.**Cryopreservation (-196°C)**

Cryopreservation also known as cryoconservation is a process by which process by which protoplast, cells, tissues, organelles, organs, Pollen grains extracellular matrix, enzymes. Subjected to preservation by cooking to very low temperature of -196°C using liquid nitrogen.

3

17. **What is Albedo effect and write their effects?**

➤ An aerosol with small particles is reflecting the solar radiation entering the atmosphere. This is known as albedo effect.

Effects

➤ It reduces the temperature, photosynthesis and respiration.

18. **What are the effects of Ozone depletion.**

- Increases the incidence of cataract, Throat and lung irritation and aggravation of asthma, skin cancer.
- Diminishing the functioning of immune system in human beings.
- Juvenile mortality of animals.
- Increased incidence of mutations.
- Photosynthesis will be inhibited.
- It results global warming and shortage of food leading to food crisis.
- Increase in temperature changes the climate and rainfall pattern.
- Result in flood, drought, sea water rise, imbalance in ecosystems affecting flora and fauna.

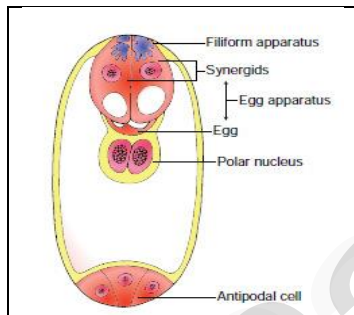
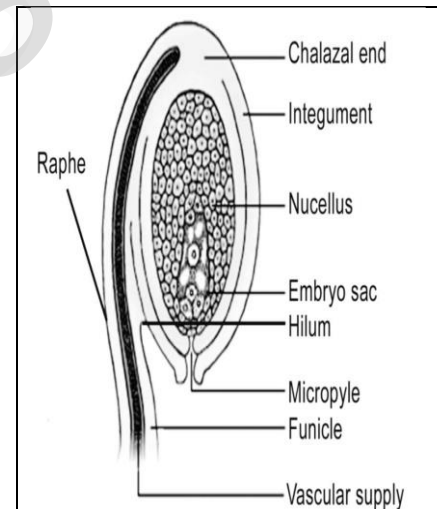
(Any three)19. **Embryo sac**

Diagram : 2 Marks Parts (Any 2) : 1 Mark

20. **a) With a suitable diagram explain the structure of an ovule.**

- Ovule is also called megasporangium.
- It is protected by one or two covering called integuments.
- A mature ovule consists of a two parts
 - Stalk
 - Body
- The stalk or the funiculus is present at the base and attaches the ovule to the placenta.
- The point of attachment of funicle to the body of the ovule is known as hilum.
- The funicle is adnate to the body of the ovule forming a ridge called raphe.
- The body of the ovule is made up of a central mass of parenchymatous tissue known as nucellus.
- It has large reserve food materials.
- The nucellus is enveloped by one or two protective coverings called integuments.
- Integument encloses the nucellus except at the top and forms a pore called micropyle.
- The ovule with one integument said to be unitegmic or two integuments are said to be bitegmic.
- The nucellus, the integument and the funicle meet at the basal region of the ovule is called as chalaza.
- The micropylar end of the nucellus contains large oval, sac-like structure called embryo sac or female gametophyte.
- It develops from the functional megaspore formed within the nucellus.
- The inner layer of the integument may become specialized to perform the nutritive function for the embryo sac and is called as endothelium or integumentary tapetum.
- Ex : Asteraceae

b)Mention the application of Biotechnology.

- Biotechnology has wide applications in various sectors like agriculture, medicine, environment and commercial industries.
- This science has an invaluable outcome like transgenic varieties of plants
- Ex : Bt-cotton, rice, tomato, tobacco, cauliflower, potato and banana
- The development of transgenics as pesticide, stress and disease resistant varieties of agricultural crops is the outcome of biotechnology.
- The synthesis of human insulin and blood protein in E.coli .
- The synthesis of Vaccines, enzymes, antibiotics, dairy products and beverages are the products of biotech industries.
- Biochip based biological computer is one of the successes of biotechnology.
- Single cell protein from Spirulina is utilized in food industries.
- Production of secondary metabolites, biofertilizers, biopesticides and enzymes.
- Biomass energy, biofuel, Bioremediation, phytoremediation for environmental biotechnology.

(ANY FIVE)**21. a) What are psychoactive drugs? Add a note Marijuana and Opium.**

- The phytochemicals / drugs from some of the plants alter an individual's perceptions of mind by producing hallucination are known as psychoactive drugs.

Opium

- Botanical name : Papaver somniferum
- It is native to South Eastern Europe and Western Asia.
- Madhya Pradesh, Rajasthan and Uttar Pradesh are the licenced states to cultivate opium poppy.
- It is derived from the exudates of fruits of poppy plants.
- Opium was traditionally used to induce sleep and for relieving pain.
- It yields Morphine, a strong analgesic which is used in surgery.
- However, opium is an addiction forming drug.

Marijuana

- Botanical name : Cannabis sativa

Origin : China

- Gujarat, Himachal Pradesh, Uttarkand, Uttarpradesh and Madhaya Pradesh have legally permitted to cultivate Marijuana
- The active principle in marijuana is transtetra hydrocanabinal (THC).
- It is an effective pain reliever and reduces hypertension.
- THC is used in treating Glaucoma a condition in which pressure develops in the eyes.
- THC is also used in reducing nausea of cancer patients undergoing radiation and chemotherapy.
- THC provides relief to bronchial disorders, especially asthma as it dilates bronchial vessels.

b) What are the Effects of deforestation

- Burning of forest wood release stored carbon. It is a negative impact just opposite of carbon sequestration.
- It alters water cycle in ecosystem.
- Increases soil erosion and decreases soil fertility.
- Deforestation in dry areas leads to the formation of deserts.
- Increased global warming and account for one third of total CO₂ emission.
- Loss of livelihood for forest dwellers and rural people.
- Loss of life support resources, fuel, medicinal herbs and wild edible fruits.

(ANY FIVE)

PART II-BIOZOOLOGY

1. b)Thelytoky
2. b) Inhibition of spermatogenesis.
3. a)Stevens
4. d) Replication, Transcription, Translation
5. b) Alcohol
6. c) 10th August
7. b) Regulate
8. c) Fluorosis

9. What is parthenogenesis? Give examples ?

☆ The process of development of an egg into a complete individual without fertilization is known as parthenogenesis . Eg. Annelid and sea urchin eggs.

10. Name the active chemical found in the medicinal plant *Rauwolfia vomitoria*. What type of diversity it belongs

- *Rouwolfia vomitaria*, a medicinal plant growing in different ranges of the **Himalayas**.
- Concentration of the active ingredient **reserpine** due to **genetic diversity**.

11. Explain how “Rosie” is different from a normal cow ?

In 1997, Rosie, the first transgenic cow produced human protein enriched milk, which contained the human alpha lactalbumin. □ The protein rich milk (2.4 gm/litre) was a nutritionally balanced food for new born babies than the normal milk produced by the cows.

12. Define Ethology.

Ethology is the scientific study of animal behaviour, under natural conditions.

13. Mayer – Rokitansky syndrome :-

All women are born with ovaries, but some do not have functional uterus. This condition is called Mayer-Rokitansky syndrome.

14. Name the three zones of lymph node?

- ☉ Lymph node has 3 zones. They are the **cortex, paracortex and medulla**.
- ☉ The outer most layer of the lymph node is called **cortex**, which consists of B-lymphocytes, macrophages, and follicular dendritic cells.
- ☉ The **paracortex** zone is beneath the cortex, which is richly populated by T lymphocytes and interdigitating dendritic cells.
- ☉ The inner most zone is called the **medulla** which is sparsely populated by lymphocytes, but many of them are plasma cells, which actively secrete antibody molecules.

15. FUNCTIONS OF REPRODUCTIVE SYSTEM

- Production of gametes
 - Transportation of gametes
 - Sustenance of gametes
 - Nurturing the offspring
 - Production of hormones
- (ANY THREE)

16. Write short notes on Cryopreservation

- **Cryopreservation** is the preservation of **embryos for future use**.
- • **Embryo cryopreservation can provide an additional opportunity** for pregnancy, through a **Frozen embryo transfer (FET)**, without undergoing another **ovarian stimulation and retrieval**.

17. Differentiate totipotent and pluripotent

Totipotent	Pluripotent
Totipotency (Toti-total) - It is the ability of a single cell to divide and produce all of the differentiated cells in an organism.	Pluripotency (Pluri-several) - refers to a stem cell that has the potential to differentiate into any of the three germ layers-ectoderm, endoderm and mesoderm.

18. Give the characters of a Biome ?

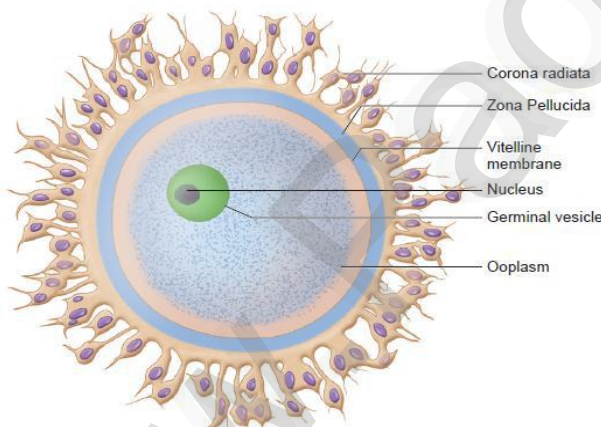
1. Location, Geographical position (Latitude, Longitude).
2. Climate and physiochemical environment.
3. Predominant plant and animal life.
4. Boundaries between biomes are not always sharply defined. Transition or transient zones are seen as in case of grassland and forest biomes.

(ANY THREE)**19. Mention the main objections to Darwinism.**

- 1) Darwin failed to explain the mechanism of variation.
- 2) Darwinism explains the survival of the fittest but not the arrival of the fittest.
- 3) He focused on small fluctuating variations that are mostly non-heritable.
- 4) He did not distinguish between somatic and germinal variations.
- 5) He could not explain the occurrence of vestigial organs, over specialization of some organs like large tusks in extinct mammoths, oversized antlers in the extinct Irish deer, etc.,

(ANY THREE)**20. Describe the structure of the human ovum with a neat labelled diagram?**

- ⊙ Human ovum is microscopic, non - cleidoic and alecithal.
- ⊙ It's cytoplasm is called Ooplasm. Ooplasm contains large nucleus called germinal vesicle.
- ⊙ It has outer thick coat of follicular cells called corona radiata.
- ⊙ The middle thick layer is called zona pellucida.
- ⊙ The inner thin transparent layer is called vitelline membrane.
- ⊙ Between the vitelline membrane and zona pellucida is a narrow space called perivitelline space.

(Explanation 3 marks, Diagram and label 2 marks)**Structure of HIV virus.**

- ❖ The human immunodeficiency virus belongs to the genus **Lentivirus**.
- ❖ HIV is seen as a **spherical virus, 100-120 nm** in diameter, containing a **dense core surrounded by a lipoprotein envelope**.
- ❖ The envelope has **glycoprotein(gp)** spikes termed gp 41 and gp 120.
- ❖ At the core, there are two large **single stranded RNA**.
- ❖ Attached to the RNA are molecules of **reverse transcriptase**.
- ❖ It also contains enzymes like **protease and ribonuclease**.
- ❖ The **core is covered by a capsid** made of proteins.
- ❖ This is followed by another layer of **matrix proteins**.

(Explanation 3 marks, Diagram and label 2 marks)

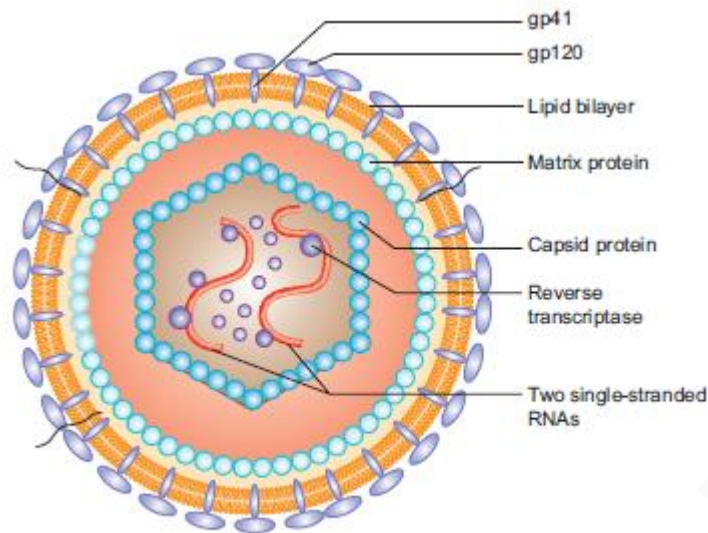


Fig. 7.18 Structure of HIV

21. **The salient features of genetic code :-**

- 1) The genetic codon is a **triplet code** and 61 codons code for amino acids and 3 codons do not code for any amino acid and function as **stop codon** (Termination).
- 2) The genetic code is universal. It means that all known living systems use nucleic acids
- 3) A degenerate code means that more than one triplet codon could code for a specific amino acid. For example, codons GUU, GUC, GUA and GUG code for valine.
- 4) Non-ambiguous code means that one codon will code for one amino acid.
- 5) The code is always read in a fixed direction i.e. from 5'→3' direction called polarity.
- 6) AUG has dual functions. It acts as a initiator codon and also codes for the amino acid methionine.
- 7) **UAA, UAG** (tyrosine) and **UGA** (tryptophan) codons are designated as termination (stop) codons and also are known as “**non-sense**” codons.

(ANY FIVE)

Give an account of the Properties of Soil :-

- 1) Water is one of the main agents in Pedogenesis (soil formation).
- 2) It is the medium for several different ecosystems.
- 3) It is present as moisture in the atmosphere and the outer layers of the lithosphere and is uneven in distribution on the earth.
- 4) Water is heavier than air and imparts greater buoyancy to the aquatic medium. This enables organism to float at variable levels.
- 5) Water has high heat capacity and latent heat, due to which it can withhold large amounts of heat..
- 6) Water is physically unique because it is less dense as a solid (ice) than as a liquid.
- 7) Water is considered as the Universal solvent.
- 8) Water has high surface tension.

(ANY FIVE)

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