DIRECTORATE OF GOVERNMENT EXAMINATION

HIGHER SECONDARY SECOND YEAR EXAMINATION - MARCH 2024

BIO – BOTANY ANSWER KEY

Note: 1. Answers written only in BLACK or BLUE should be evaluated

2. Choose the correct answer and written and write the option code with corresponding answer.

Maximum Marks:35

SECTION - A

Answer all the questions. **8×1=8**

Q. No.	Option	A Type	Q. No.	Option	B Type
1	(b)	Dobson	1	(d)	400 – 700 nm
2	(d)	Dominant epistasis	2	(d)	(1)-(iv), (2)-(iii), (3)-(i), (4)-(ii)
3	(a)	10	3	(c)	Brazil
4	(d)	(A) is correct, (R) is wrong	4	(d)	Dominant epistasis
5	(d)	400 – 700 nm	5	(b)	Dobson
6	(d)	(1)-(iv), (2)-(iii), (3)-(i), (4)-(ii)	6	(d)	(A) is correct, (R) is wrong
7	(c)	Brazil	7	(c)	Confer resistance to antibiotics
8	(c)	Confer resistance to antibiotics	8	(a)	10

SECTION - B

Answer any Four questions. **4x2=8**

Q. No	Answer	Marks	Total Marks
9	**Names of the scientists – Rediscovered Mendelism** • Hugo de Vries • Carl Correns • Erich von Tschermak **(Any Two)**	1+1	2

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10	**Phytoremediation** www.Padasalai.Net www.Trb Tnpsc.com The plants Rice and Eichhornia can be used to remove cadmium from contaminated soil, and this make suitable for cultivation is known as Phytoremediation. **(or)** Use of plants to bring about remediation of environmental pollutants		2
11	**Enzymes – Required for Genetic engineering** • Restriction enzymes • DNA ligase • Alkaline phosphatase. **(Any Two)**	1+1	2
12	**Embryoids** • The callus cells undergoes differentiation and produces somatic embryos, known as **Embryoids**. **(or)** • Somatic embryogenesis is the formation of embryos from the callus tissue directly and these embryos are called **Embryoids** **(Any One)**		2
13	**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 tropic levels from producers to the upper levels.		2
14	**Microbial inoculants – Soil fertility** • Efficient in fixing nitrogen • solubilising phosphate • Decomposing cellulose. • They are designed to improvethe soil fertility, • plant growth • Increase the number and biological activity of beneficial microorganisms in the soil. **(Any Two)**		2

SECTION – C

Answer any three questions. Question No. 19 is compulsory. **3x3 =9**

Q. No	Answer	Marks	Total Marks
15	**Genetic Map** The diagrammatic representation of position of genes and related distances between the adjacent genes is called genetic mapping. **Uses :** • 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. **(Any Two)**	1 2	3

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16 **Cryopreservation.**

Cryopreservation (-196°C)

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

3

17 **Habitat and Niche**

Habitat	Niche
A specific physical space occupied by an organism.	A functional space occupied by an organism in the same eco-system
Same habitat may be shared by many Organisms.	A single niche is occupied by a single species
Habitat specificity is exhibited by organism.	Organisms may change their niche with time and season

1 1 1

3

18 **Forest help – maintain the climate**

- Increasing Rainfall and O_2 level.
- Reducing CO_2 from atmosphere and increasing air quality.
- Reducing global warming and controlling climate changes.
- Increasing ozone level.
- Increasing soil fertility.

(Any Three or Related Points)

3

19 **Structure of ovule**

Diagram – 2

Parts - 1

3

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Answer all the questions. **2x5 = 10**

Q. No	Answer	Marks	Total Marks
20 (a)	**Single cell protein** The dried cells of microorganisms that are used as protein supplement in human foods or animal feeds are called Single cell proteins. **Applications of Single-Cell Protein** • It is used as protein supplement. • It is used in cosmetics products for healthy hair and skin. • It is used as the excellent source of proteins for feeding cattle, birds, fishes etc. • It is used in industries like paper processing, leather processing as foam stabilizers. • It is used in food industry as aroma carriers, vitamin carrier, emulsifying agents to improve the nutritive value of baked products, in soups, in ready-to-serve-meals, in diet recipes. **(Any Four)**	1 4×1	5
20 (b)	**Millets** • Definition • Types and Examples	2 3	5
21 (a)	**Inheritance of chloroplast** • Examples • Explanation • Diagram	1 2 2	5
21 (b)	**Steps involved in microsporogenesis** • Steps • Diagram	4 1	5

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DIRECTORATE OF GOVERNMENT EXAMINATIONS, CHENNAI-6

HIGHER SECONDARY SECOND YEAR EXAMINATIONS – MARCH-2024

BIO ZOOLOGY ANSWERS KEY

Note:-

1. Answer written only in BLACK or Blue should be evaluated.
2. Write and underline and pencil to draw diagrams.
3. Choose the correct answer and write the option code if one of them (option of answer) is wrong, then award zero mark only.

PART-I **Maximum Marks : 35**

Answer All the Questions. **8×1=8**

Section-1

TYPE A			TYPE B			Marks
Q.No	Option	Answer	Q.No	Option	Answer	
1.	a	Sertoli cells	1.	c	Liver	1
2.	a	Commensalism	2.	b	Uttarakhand	1
3.	c	Gall fly	3.	d	Henry Bastian	1
4.	d	21	4.	c	Gall fly	1
5.	c	Liver	5.	a	Sertoli cells	1
6.	d	Henry Bastian	6.	a	Commensalism	1
7.	b	Uttarakhand	7.	a	SCID	1
8.	a	SCID	8.	d	21	1

PART-II

Note: Answer any **Four** of the following questions. **4×2=8**

Q.No	Answer	Marks	
9.	**Goals of HGP** • Identify all the genes (approximately 30000) in human DNA. • Determine the sequence of the three billion chemical base pairs that makeup the human DNA. • To store this information in databases. • Improve tools for data analysis. • Transfer related technologies to other sectors such as industries. • Address the ethical, legal and social issues that may arise from the project. **(Any two points)**		2
10.	Refers to the stem cells that can differentiate into various types of cells that are related. For example blood stem cells can differentiate into lymphocytes, monocytes , neutrophils etc.,	1 1	2

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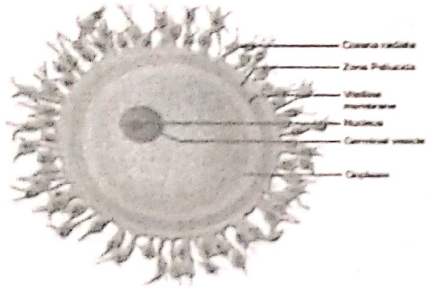
11.	Diagram  (Any two parts)	1 1	2
12.	• Ethanol (C_2H_5OH) or Ethyl alcohol. • It is used for industrial, laboratory and fuel purposes.	1 1	2
13.	**Sameer:** • It is an App. • It provides hourly updates on the National Air Quality Index (AQI).	 1 1	2
14.	The risk factors of cervical cancer: • Having multiple sexual partners. • Prolonged use of contraceptive pills	 1 1	2

SECTION-3

Note: Answer **any three** of the following questions. Q.No.19 is **compulsory.** 3×3=9

Q.No	Answer	Marks	
15.	**Coprolites:** • Hardened faecal matter termed as coprolites occur as tiny pellets. • Analysis of the coprolites enables us to understand the nature of diet the pre-historic animals thrived on.	2 1	3
16.	**Placenta is an endocrine Tissue:** Because it produces hormones • hCG - human Chorionic Gonadotropin • human Chorionic Somatomammotropin (hCS) (or) human Placental Lactogen (hPL). • Oestrogen • Progesterone • Relaxin (Any two)	1 2	3
17.	**Solution for E - Waste:** • Recycle or reuse or resale or salvage. • Great care must be taken to avoid unsafe exposure in recycling operations in leaking of materials such as heavy metals from landfills and incinerator ashes. **(Other relevant answers may also be given marks)**	1 2	3

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18. Differentiate r selected and k selected species

r selected species	k selected species
• Smaller sized organisms	• Larger sized organisms
• Produce many offspring	• Produce few offspring
• Mature early	• Late maturity with extended parental care
• Short life expectancy	• Long life expectancy
• Each individual reproduces only once or few times in their life time	• Can reproduce more than once in lifetime
• Only few reach adulthood	• Most of them reach maximum life span
• Unstable environment, density independent	• Stable environment, density dependent

(Any three points) — 3

19. Reverse transcription PCR or RT-PCR. — 1

In this process, the RNA molecules (mRNA) must be converted to complementary DNA (cDNA) by the enzyme reverse transcriptase. The cDNA then serves as the template for PCR. — 2

3

PART – IV

Note: Answer all the questions. 2×5=10

Q.No	Answer	Marks
20.(a)	To promote the biodiversity conservation: • Identify and protect all threatened species. • Identify and conserve in protected areas the wild relatives of all the economically important organisms. • Identify and protect critical habitats for feeding, breeding, nursing, resting of each species. • Resting, feeding and breeding places of the organisms should be identified and protected. • Air, water and soil should be conserved on priority basis. • Wildlife Protection Act should be implemented. (Any five points) (Other relevant answers may also be given marks)	5×1 = 5
	(or)	
20.(b)	Hardy Weinberg's assumptions: • No mutation: No new alleles are generated by mutation nor the genes get duplicated or deleted. — 1 • Random mating: Every organism gets a chance to mate. — 1 • No gene flow: Neither individuals nor their gametes enter (immigration) or exit (emigration) the population. — 1 • Very large population size: The population should be infinite in size. — 1 • No natural selection: All alleles are fit to survive and reproduce. — 1	5

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21.(a)

Group	Drugs	Effects		
• Stimulants	Amphetamines, cocaine, nicotine and tobacco **(Anyone)**	Accelerates the activity of the brain	1	
• Depressants	Alcohol, Barbiturates, Tranquilizers **(Anyone)**	Slows down the activity of the brain	1	
• Narcotic/ Analgesics	Opium, Morphine **(Anyone)**	Act as depressants on the Central Nervous System	1	5
• Hallucinogens	Lysergic acid diethylamide (LSD), Phencyclidine **(Anyone)**	Distorts the way one sees, hears and feels	1	
• Stimulants, Depressants, Hallucinogens	Bhang (Marijuana), Ganja, Charas **(Anyone)**	Stimulating action on the CNS and affects the cardiovascular system	1	

(or)

21.(b) **Types of Syngamy:**

- **Autogamy**

The male and female gametes are produced by the same cell or same organism and both the gametes fuse together to form a zygote.

- **Exogamy**

The male and female gametes are produced by different parents and they fuse to form a zygote.

- **Hologamy**

Lower organisms, sometimes the entire mature organisms do not form gametes but they themselves behave as gametes and the fusion of such mature individuals is known as hologamy

- **Paedogamy**

It is the sexual union of young individuals produced immediately after the division of the adult parent cell by mitosis.

- **Merogamy**

The fusion of small sized and morphologically different gametes (merogametes) takes place.

- **Isogamy**

The fusion of morphological and physiological identical gametes (isogametes) is called isogamy.

- **Anisogamy**

The fusion of dissimilar gametes is called anisogamy.

(Any Five points)

(Each sub heading ½ mark and explanation ½ mark) — 5

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DIRECTORATE OF GOVERNMENT EXAMINATIONS CHENNAI - 6
HIGHER SECONDARY SECOND YEAR EXAMINATIONS - MARCH - 2024
BIO-BOTANY - ANSWER KEY

ERRATUM

Subject: (+2) BIO-BOTANY (English Medium)

Section – IV Question No- 21(a) & 21(b)

21 (a)	**Inheritance of chloroplast** • Examples • Explanation (or) Diagram	1 4	5

(OR)

21 (b)	**Steps involved in microsporogenesis** Steps (or) Diagram	5

திருத்தம்

உயிரி-தாவரவியல் (தமிழ் வழி)

பிரிவு–IV வினா எண் – 21 (அ) 21 (ஆ)

21 (அ)	பசுங்கணிக மரபணு சார்ந்த பாரம்பரியம் உதாரணம் விளக்கம் (அல்லது) படம்	1 4	5
	(அல்லது)		
21 (ஆ)	நுண்வித்துருவாக்கத்திலுள்ள படிநிலைகள் படிநிலைகள் (அல்லது) படம்		5

SD/-
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DIRECTORATE OF GOVERNMENT EXAMINATIONS CHENNAI - 6
HIGHER SECONDARY SECOND YEAR EXAMINATIONS - MARCH - 2024
BIO-ZOOLOGY - ANSWER KEY

ERRATUM

Subject: (+2) BIO-ZOOLOGY (English Medium)

Part – II Question No-10

10	Oligopotency : • Stem cells that can differentiate into few cell types • Example : Lymphoid or myeloid stem cells can differentiate into B and T cells.	1 1	2

திருத்தம்

உயிரி - விலங்கியல் (தமிழ் வழி)

குதி–II வினா எண் – 10

10	குறுதிறன் எனப்படுவது மூலச் செல்கள் சில வகை செல்களாக மட்டுமே வேறுபாடடையும் திறனாகும். எடுத்துக்காட்டாக லிம்ஃபாய்டு அல்லது மயலாய்டு மூலச் செல்கள் B மற்றும் T செல்லாக மட்டும் வேறுபாடடையும்.	1 1	2

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