SECOND YEAR HIGHER SECONDARY EXAMINATION – MARCH - 2022

SY – 26

PART – III

BIOLOGY (BOTANY & ZOOLOGY)

SCORING KEY (UNOFFICIAL)

PART -A

BOTANY

Qn. No.	Scoring indicators	Marks

PART - I

A **Answer any 3 questions from 1 – 4. Each carry 1 score**

1. (c) / Tapetum — 1
2. Hind II — 1
3. Blubber — 1
4. (c) / Producers — 1

B **Answer all questions from 5 – 6. Each carry 1 score**

5. Life span — 1
6. Enzyme Linked Immuno-sorbent Assay — 1

PART - II

A **Answer any 2 questions from 7 – 9. Each carry 2 scores**

7. Increased protein content and quality.
Increased oil content and quality
Increased vitamin content
Increased micronutrient and mineral content — ½ x 4 =2

8. GEAC will make decisions regarding the validity of GM research.
It makes decisions regarding safety of introducing GM-organisms for public services — 1 + 1 =2

9.

Asexual Reproductive Structures	Examples
Zoospores (b) Conidia (c) Buds Gemmules	(a) *Chlamydomonas* *Penicillium* *Hydra* (d) *Sponges*

½ x 4 =2

Qn. No.	Scoring indicators	Marks

B **Answer any 2 questions from 10 – 13. Each carry 2 scores**

10. Genetic mechanism to prevent self-pollination. — 1 + 1 =2
Pollen from the same flower or other flowers of the same plant does not germinate in the stigma.

11. Wheat - Sonalika and Kalyan Sona.
Rice - IR-8, Taichung Native-1, Jaya and Ratna (Any 2 answer) — ½ x 4 =2

12.

Population Interactions		
(a) – / negative	(b) – / Negative	Competition
(c) + / Positive	–	Predation
–	0	(d) Amensalism

½ x 4 =2

13. Hydrarch
Climax community – Forest stage / Forest — 1 + 1 = 2

PART – III

A **Answer any 3 questions from 14 – 17. Each carry 3 scores**

14. Eli Lilly Company prepared DNA sequences corresponding to A and B chain of insulin.
A and B Chain DNA were introduced in plasmid of *E. coli* to produce the A and B chains.
Chain A and B were produced separately.
Chain A and B were extracted and combined by creating disulphide bonds — 3

15. They have a thick cuticle / leaf reduced or absent / fleshy flattened stem etc.
Their stomata arranged in deep pits / Sunken stomata to minimize water loss through transpiration.
They have a special photosynthetic pathway (CAM).
Stomata closed during day time/
(Any 3 relevant points) — 1+1+1 =3

16. Enhanced carbon dioxide concentration in the atmosphere.
Loss of Biodiversity.
Disturbs hydrologic (water) Cycle.
Soil erosion.
Desertification
(Any 3 relevant points) — 1+1+1 =3

Qn. No.	Scoring indicators	Marks
17.	Energy at a lower trophic level is always more than at a higher level / when energy flows from one trophic level to the next level some energy is lost as heat at each step. / It always follows law of 10%.	3

B **Answer the following question. Carry 3 scores**

18. (a) Compressed Natural Gas
(b) It burns efficiently / It is cheaper than petrol or diesel / It cannot be siphoned off by thieves / It cannot be adultered like petrol or diesel.
(Any two points) 1 + 2 = 3

PART – IV

Answer any 1 question from 19 – 20. Each carry 5 scores

19. (a) Transfer of pollen grains from the anther to the stigma of a pistil is termed as pollination.

(b)
1. Autogamy - Pollination achieved within the same flower / Transfer of pollen grain from the anther to the stigma of the same flower.
2. Geitonogamy - The transfer of pollen grains from the anther to the stigma of different flowers of the same plant / Geitonogamy is genetically similar to autogamy since the pollen grains come from the same plant.
3. Xenogamy - The transfer of pollen grains from the anther to the stigma of different plants of the same species / Xenogamy is functionally and genetically similar to cross pollination since the pollen grains come from the different plant/ genetic variation occur.
(Any one points) 1+4 =5

20. (a) Exonucleases & Endonucleases
(b) EG:-

EcoRI - derived from *Escherichia coli* RY 13 and it is Ist to be isolated.
E - Escherichia
co - coli
R - RY 13 strain
I - First order of isolation
Or
Ist letter - First letter in the Genus name of the bacteria from which the enzyme is derived.
IInd & IIIrd letters - first two letters of the species name of the bacteria.
IVth letter - First letter of the strain of bacteria.
Roman number - Order of isolation. 2+3 =5

PART -A
ZOOLOGY

Qn. No.	Scoring indicators	Marks

PART - I

A **Answer any 3 questions from 1 – 4. Each carry 1 score**

1. Convergent evolution — 1
2. Zygote Intra Fallopian Transfer — 1
3. Cleavage — 1
4. Ligases or DNA Ligases — 1

B **Answer all questions from 5 – 6. Each carry 1 score** — 1

5. Edward Wilson — 1
6. Penicillin — 1

PART - II

A **Answer any 2 questions from 7 – 9. Each carry 2 scores**

7. (a) Methionine / met
   (b) UAA, UAG, UGA
   (Any two) — 1+1 = 2

8. (a) secrete testicular hormones called androgens / Testosterone.
   (b) secretes progesterone
   1 + 1 =2

9.

A	B
Trichoderma polysporum	Cyclosporin A
Monascus purpureus	Statin
Saccharomyces cervisiae	Ethanol
Aspergillus niger	Citric acid

½ x 4 =2

(i) – (c)
(ii) – (d)
(iii) – (b)
(iv) – (a)

B **Answer any 2 questions from 10 – 13. Each carry 2 scores**

10. (i) – (a) Darwinism
    (ii) – (b) Miller's experiment
    (iii) – (c) Bigbang theory
    (iv) – (d) Lamarkism
    ½ x 4 =2

Qn. No.	Scoring indicators	Marks

11. •Causes heart failure and hypertension.
•Use of alcohol causes stomach ulcer and pancreatitis.
•Causes lack of interest in personal hygiene, isolation, depression, aggressiveness etc.
•Causes deteriorating relationship with family and friends change in eating and sleeping habit etc.
•The excess usage of alcohol causes liver cirrhosis and damage to nervous system.
•Use of drugs and alcohol during pregnancy adversely affect the foetus.
•Drug users are prone to blood related diseases like AIDS, hepatitis B etc.
•Drug and alcohol users finally may turn to criminals.
(Any 4 relevant points) ½ x 4 =2

12. (a) – Acrosome
(b) – Acrosome is filled with lytic enzyme that helps in the penetration of ovarian wall layers / Helps in fertilization 1 + 1 =2

13. (a)

Male heterogamety	Female heterogamety
Male are heterozygous regarding sex chromosome (XY /XO)	Female are heterozygous regarding sex chromosome
Male produce two types of gametes	Female produce two types of gametes
Type of male gamete will determine the sex of the progeny	Type of female gamete will determine the sex of the progeny

(b) Male heterogametry Eg :- Human/ Drosophila / Insects / Grasshopper
Female heterogametry Eg :- Birds (Any one example) 1 + 1 = 2

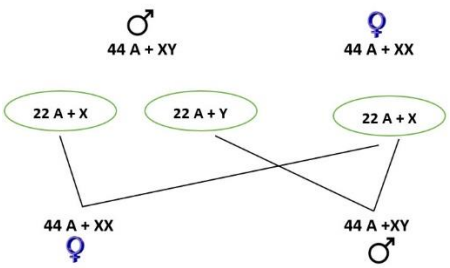
PART – III

A Answer any 3 questions from 14 – 17. Each carry 3 scores

14. (a) Hardy Weinberg Equilibrium
(b) Gene flow / genetic drift / mutation / genetic recombination / natural selection 1+2 =3

15. In human male individual are heterogametic regarding the sex chromosome.
The male or father produce two types of gametes or sperm one with X chromosome and other with Y chromosome.
Sperm with X chromosome fuses with egg to produce female child.
Sperm with Y chromosome fuses with egg to produce male child.

OR



1 + 2 = 3

Qn. No.	Scoring indicators	Marks
16.	(a) Sexually Transmitted Diseases / venereal diseases / reproductive tract infections (b) Gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B, AIDS (Any four example)	1+1+1 =3
17.	(a) Habitat loss and fragmentation, Over-exploitation, Alien species invasions & Co-extinctions (b) In situ conservation Eg :- Biosphere Reserves / National Park / Sanctuaries / Sacred Groves Ex situ Conservation Eg :- Botanical Gardens / Zoological Park / Seed bank / Cryopreservation /wild life safari Park / IVF/Tissue Culture (Any one example)	1+1+1 =3
B	**Answer the following question. Carry 3 scores**	
18.	(a) Deoxyribo Nucleic Acid James Watson & Francis Crick (b) Adenine, Thymine, Guanine, Cytosine / A,T,G,C	1+1+1 =3
	PART – IV	
	Answer any 1 question from 19 – 20. Each carry 5 scores	
19.	(a) Acquired Immuno Deficiency Syndrome Human Immuno deficiency Virus / HIV (b) ELISA Test / Enzyme Linked Immuno-sorbent Assay (C) Promoting widespread awareness about HIV and AIDS education. Use disposable syringe and needles. Proper monitoring of blood before blood transfusion. Condomise, which means using male or female condoms consistently and correctly. Control drug abuse. Avoid intercourse with unknown partner. (Any four relevant method)	2+1+2 =5
20.	(a) A - Promoter B- Template strand (b) Process of formation of RNA from DNA (c) 3'-TACGTACGTA-5'	2+2+1 =5