SECOND YEAR HIGHER SECONDARY EXAMINATION– MARCH - 2023

SY - 526

PART – III

BIOLOGY (BOTANY & ZOOLOGY)

SCORING KEY (UNOFFICIAL)

	PART -A BOTANY	
Qn. No.	Scoring indicators	Marks
	PART - I	
	Answer any 3 questions from 1 – 5. Each carry 1 score	
1.	Perisperm	1
2.	Fragmentation	1
3.	Electrophoresis / Gel electrophoresis / Agarose gel electrophoresis	1
4.	Commensalism	1
5.	*cry*IAb	1
	PART - II	
	Answer any 9 questions from 6 – 16. Each carry 2 scores	
6.	<table><tr><th>Grazing Food Chain</th><th>Detritus Food Chain</th></tr><tr><td>Starts with producers. It is the major channel of energy flow in aquatic ecosystem. Producers or Plants belongs to first trophic level.</td><td>Starts with detritus / dead organic matter. It is the major channel of energy flow in terrestrial ecosystem. Dead organic matter belongs to first trophic level.</td></tr></table> (Any two points in each type) or (Flow chart showing DFC and GFC give 1 Score)	1 + 1 =2
7.	Pollen release and stigma receptivity are not synchronized. Anther and stigma are placed at different position. Self-incompatibility. Production of unisexual flowers. male and female flowers are present on different plant (dioecy).	½ x 4 = 2

Qn. No.	Scoring indicators	Marks
8.	Bacterial cells are treated with divalent cation such as Ca2+ to increase cell permeability. Then these cells are treated with recombinant DNA (rDNA) on ice. The cells and rDNA in ice are allowed to heat at 42oC (heat shock at 42oC). The content is again cooled to ice cold.	½ x 4 = 2
9.	(a) – Funicle (b) – Micropyle (c) – Embryo sac / Female gametophyte (d) – Chalaza / chalazal pole	½ x 4 = 2
10.	(a) – Taq polymerase (b) – *Thermus aquaticus*.	1 + 1 = 2
11.	The rate of biomass production is called productivity It may be primary productivity and secondary productivity Factors affecting primary productivity 1. The plant species inhabiting an area. 2. Environmental factors. 3. Availability of nutrients. 4. Photosynthetic capacity of plants.	1 + 1 = 2
12.	The Bt toxin is produced by the bacteria as inactive protoxin. Alkaline P^H of insects' gut convert inactive protoxin into active toxin. Active Bt toxin binds to the gut epithelium and causes cell lysis leading to insect's death.	1 + 1 = 2
13.	(a) – Mutualism (b) – Parasitism (c) – Commensalism (d) – Mutualism	½ x 4 = 2
14.	Energy at a lower trophic level is always more than at a higher level / when energy flow from one trophic level to the next level some energy is lost as heat at each step. / It always follows law of 10%.	2
15.	Genetically Modified Organism (GMO) / An organism (bacteria, fungi, plants or animals) whose genetic material is altered is called Genetically Modified Organism. o Made crops tolerant to abiotic stress (cold, drought, salt & temperature). o Develop pest resistance. o Helped to produce reduce post-harvest losses. o Enhanced nutritional value of food. Eg :- Vitamin 'A' enriched rice o Increased efficiency of mineral usage by plants. (Any one merit)	1 + 1 = 2

Qn. No.	Scoring indicators	Marks
16.	(a) – (a) - Exponential growth / J shaped curve (b) - Logistic growth / Verhulst-Pearl Logistic Growth / Sigmoid Growth / S shaped curve (b) – K – Carrying capacity	1 + 1 = 2
	PART – III	
	Answer any 3 questions from 17 – 20. Each carry 3 scores	
17.	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
18.	Plants produces enormous amount of pollen. Flowers with well exposed stamens. Large feathery stigma to trap air-borne pollen grains. Most wind pollinated flowers contain single ovule in one ovary and numerous flowers packed into an inflorescence e.g. corn cob. Pollen grains are light and non-sticky. . (Any three peculiarities)	1+1+1= 3
19.	(i) (a) – Mortality / Death rate / D (b) – Emigration / E (ii) Natality / Birth rate / B and Immigration / I. (iii) The number of births during a given period or birth rate during a given period.	1+1+1= 3
20.	❋ **Ist letter (E)** - First letter in the genus of the bacteria from which the enzyme is derived. ❋ **IInd & IIIrd letters (co)** - First two letters from the species of the organism. ❋ **IVth letter (R)** - First letter of the strain of bacteria. ❋ **Roman number (I)** - Order of isolation. OR **E - *Escherichia*** **co - *coli*** **R - RY 13 strain** **I- First order of isolation**	1+1+1= 3