

SECOND YEAR HIGHER SECONDARY MODEL EXAMINATION 2022

Part – III

BIOLOGY

PART - A BOTANY

QP : ME-526

KEY

Maximum score: 30

Q.No.	SECTION –I	Split score	Total score
1	DNA Ligase	1	1
2	<i>scutellum</i>	1	1
3	Mycorrhizae	1	1
4	(d) GPP-R=NPP	1	1
5	Transgenic animals	1	1
6	Pericarp	1	1
	SECTION-II		
7	(a) Proinsulin contains 3 polypeptide chains: chain A and chain B, and an extra stretch called the C peptide. (b) This C peptide is not present in the mature insulin and is removed during maturation into insulin.	1 1	2
8	(a) Zoospores-chlamydomonas (b) Buds-Hydra (c) Conidia-Penicillium (d) Gemmules-Sponges	½ ½ ½ ½	2
9	-Multiple Ovulation Embryo Transfer Technology -FSH/ Follicle stimulating hormone	1 1	2
10	Euryhaline-Organisms with wide range of salinity tolerance. Stenohaline-Organisms with narrow range of salinity tolerance.	1 1	2
11	Polyembryony E.g. Citrus /Orange/Mango	1 1	2
12	-selection of disease free and suitable breeds -proper and safe farm conditions -proper feed and water -hygiene and health care [any 2 points]	1 1	2
13	Pioneer –Phytoplankton. Climax-Forest. Phytoplankton-submerged plant stage-submerged free floating stage- reed swamp-marsh meadow-scrub-forest.	½ ½ 1	2
	SECTION III		
14.	(a) D= Mortality/Death E=Emigration (b)Natality/Birth, Immigration.	1 1 1	3
15.	(a) Global warming. (b) deleterious changes in the environment and resulting in odd climatic changes (e.g. El Nino effect) -Increased melting of polar ice caps/ Himalayan snow caps. -Over many years, this will result in a rise in sea level that can	1 1 1	3

	submerge many coastal areas. [Any 2 points]		
16.	Type of pyramid-Inverted pyramid of biomass in sea -small standing crop of phytoplankton supports large standing crop of zooplankton. -It is generally inverted because the biomass of fishes far exceeds that of phytoplankton. [Any 1 point]	1 2	3
17	-Gene- cry gene. - <i>Bacillus thuringiensis</i> forms protein crystals during a particular phase of their growth. These crystals contain a toxic insecticidal protein. -the Bt toxin protein exist as inactive protoxins but once an insect ingest the inactive toxin, it is converted into an active form of toxin due to the alkaline pH of the gut which solubilise the crystals. -The activated toxin binds to the surface of midgut epithelial cells and create pores that cause cell swelling, lysis and death of the insect.	1 2	3
18	(a) -switching over the entire fleet of public transport to CNG - phasing out of old vehicles -use of unleaded petrol - use of low-sulphur petrol and diesel -use of catalytic converters in vehicles -application of stringent pollution-level norms for vehicles [Any 4] (b) Compressed natural gas.	2 1	3
	SECTION IV		
19.	(a) Gel electrophoresis (b) Visualised only after staining the DNA with a compound known as ethidium bromide followed by exposure to UV radiation. We can see bright orange coloured bands of DNA in a ethidium bromide stained gel exposed to UV light. (c)The separated bands of DNA are cut out from the agarose gel and extracted from the gel piece. This step is known as elution.	1 2 2	5
20	<i>a-Synergids.</i> <i>b-Polar nuclei.</i> <i>c-Antipodals.</i> <i>d-Filiform apparatus.</i> Double fertilization-One of the male gametes moves towards the egg cell and fuses with its nucleus thus completing the syngamy. This results in the formation of the zygote. The other male gamete moves towards the two polar nuclei located in the central cell and fuses with them to produce a primary endosperm nucleus (PEN). It is termed triple fusion. -Since two types of fusions, syngamy and triple fusion take place in an embryo sac the phenomenon is termed double fertilisation. -Ploidy of zygote- Diploid /2n. -Ploidy of PEN-Triploid/3n.	½ ½ ½ ½ 1 1 ½ ½	5

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