

INDIAN SCHOOL MUSCAT

FIRST PRE BOARD EXAMINATION

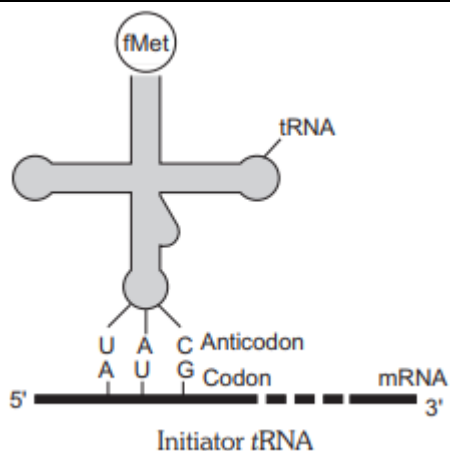
FEBRUARY 2021

SET A

CLASS XII

Marking Scheme – BIOLOGY [THEORY]

Q.NO.	Answers	Marks (with split up)
1.	Stigma	1
2.	Synergid-n, Nucellus-2n	½ x 2
3.	Cross pollination	1
4.	Meiosis	1
5.	Coenorabditis elegans	1
6.	Heat killed S strain transferred genetic factor (DNA) into R strain.	1
7.	Cannot keep DNA coiled around/no nucleosome	1
8.	Efficiency of DNA uptake 1/2 by creating pores on the cell wall. 1/2	1
9.	Removal of C peptide	1
10.	Mammals in colder regions have shorter limbs and ears	1
11.	D	1
12.	B	1
13.	A	1
14.	D	1
15.	- 1.b; 2.b; 3.c; 4.b; 5.a	4
16.	1.a; 2.b; 3.d; 4.a; 5.a	4
17.	An ideal contraceptive should be: 1.User-friendly 2.Easily available 3.Effective 4.Reversible 5.No or least side-effects. 6.Should not interfere with the sexual drive, desire or sexual act of the user	4x ½
18.	Drones develop in honey bees through unfertilized eggs. They develop in honey bees by the process of Parthenogenesis.	2x1
19.	High levels of species richness. High degree of endemism. Hotspots in "India - Western Ghats", Himalaya (Indo-Burma/Srilanka).	4x ½
20.	This tRNA is specific for amino acid Methionine and it also acts as initiator codon (initiator tRNA)	2x1



OR

Bt toxin is produced by a soil bacterium called *Bacillus thuringiensis*. This toxin does not kill the bacteria because when it is present in the bacteria, it is in an inactive and crystalline form.

21.	<p>a) It recognises a specific sequence of base pairs / pallindromes, and cuts the DNA strand at a specific site.eg. EcoRI / Hind II.</p> <p>(b) Act as vectors / cloning of desired alien gene / foreign gene eg. pBR322 / plasmid of Salmonella / plasmid of Agrobacterium / Ti Plasmid / Tumour inducing Plasmid.</p>	2x1
22.	<p>Agarobacterium tumifaciens is a pathogen of several dicot plants.</p> <p>It can deliver a piece of DNA calld TDNA to transform normal plant cells into a tumor and induce tumor cells to produce the chemicals required by the pathogen.</p> <p>So by introducing the gene of interest into the Ti Plasmid it can be a cloning vector.</p> <p>OR</p> <p>GEAC (1)</p> <p>Make decisions regarding validity of GM research and safety of introducing GM organisms for public services. ($\frac{1}{2} \times 2$)</p>	<p>4 x $\frac{1}{2}$</p> <p>2</p>
23.	<p>(a) Yes, India /tropical region are less seasonal/ more constant and more predictable/ hence promote niche specialisation leading to greater bio-diversity./ Species diversity increases as we decreases as we move towards equator more number ofspecies exist.</p>	4 x $\frac{1}{2}$
24.	<p>Does not show much variation in productivity from year to year.</p> <p>Either resistant or resilient to seasonal disturbances</p>	2 x 1

	Resistant to invasion by alien species. (any two)	
25.	When we conserve and protect the whole ecosystem, its biodiversity at all levels is protected. This approach is called in situ conservation. When an animal or plant is endangered or threatened they are taken out from their natural habitat and placed in special setting where they can be protected and given special care and is called exsitu.	2 x 1
26.	Gametogenesis, Insemination, , fertilisation, implantation , gestation, parturition	3
27.	The genotypes produced are AabbDd/aabbDd (1+1) Seed shape is controlled by two alleles of a gene R and r./ In homozygous recessive condition (rr) the seed shape becomes wrinkled. (2 x ½)	3
28.	NCERT page 155 Fig 8.6	3
29.	A recombinant DNA is inserted within the coding sequence of an enzyme, β galactosidase/ inactivates the enzyme/insertional inactivation/colonies don't produce any colour. Cumbersome procedure/ because it requires simultaneous plating on two plates having different antibiotics.	6 x ½
30.	Biomass or percentage cover – Banyan tree Relative density – fish Indirect estimate – tiger census OR a) Mutualism b) Commensalism Epiphytes and mango tree/ cattle and egret (any two)	6 x ½ 1+1+ ½ + ½
31.	a) Diagram 2.8 © 2 b) Functional megaspore mother cell/ free nuclear division/8 nucleated stage/ wall formation 2 c) polar nuclei turn into PEN after fertilisation 1 OR NCERT Fig 3.11	5
32.	Regulatory gene (i gene) , three structural genes z,y and a (4 x ½) With the help of permease lactose is transported into the cells (1)/inactivates the repressor (1)/RNA polymerase binds to promoter (½)/and transcription proceeds.(½) OR a) Entire length / only genes Both the strands/ only one strand DNA polymerase/RNA polymerase b) Exons are the coding sequences/introns are intervening or non coding	5
33.	Physical – skin,mucus lining Physiological – acid, saliva,tears Cellular- WBC,PMNL,monocytes Cytokine Interferons (6 x ½)	5

	<p>Figure 8.4 (2)</p> <p style="text-align: center;">OR</p> <p>(i) Ladybird - Aphids</p> <p>(ii) Dragonfly - mosquito larvae</p> <p>(iii) Trichoderma -several plant pathogens</p> <p>(iv) Nucleopolyhedrus virus - insecticidal</p> <p>(v) Bacillus thuringiensis - insecticidal</p>	
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