

SAHODAYA PRE BOARD EXAMINATION – 2024-25

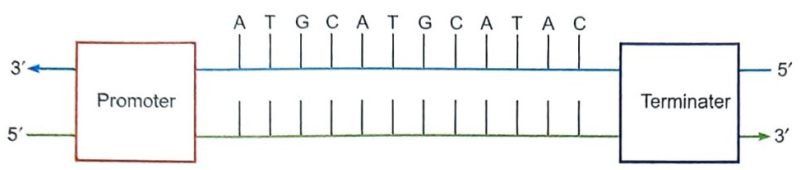
CLASS – XII

Sub.: BIOLOGY (044)

MARKING SCHEME

Q.No.	SECTION – A (1 marks)	Marks
1.	(c) Meiosis I Meiosis II Mitosis Mitosis Mitosis Embryo sac	1
2.	(d) Progesterone level is high during the post ovulatory phase of menstrual cycle.	1
3.	(b) $1/8 AaBbCc$	1
4.	(b) Smaller sub unit binds at codon AUG → cognate tRNA binds to codon → larger sub unit binds to smaller sub unit.	1
5.	(b) 0.6	1
6.	(c) Naturally acquired passive immunity	1
7.	(a) A-ii, B-iv, C-v, D-iii	1
8.	(c) A-Competency, B-Calcium, C-microinjection method	1
9.	(d) Using a retroviral vector nematode specific were introduced into gene the host plant.	1
10.	(c) Our technology has allowed us to keep increasing K.	1
11.	(b) Primary productivity depends on the plant species inhabiting a particular area.	1
12.	(c) for conservation of biodiversity and sustainable utilization of its benefits	1
13.	(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.	1
14.	(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.	1
15.	(c) Assertion is true but Reason is false.	1
16.	(c) Assertion is true but Reason is false.	1
	SECTION – B (2 marks)	
17.	(a) Synergid embryo is haploid and nucellar embryo is diploid. (b) (i) Dehydration (ii) Dormancy.	$\frac{1}{2} \times 4$
18.	(i) Numbat (ii) Lemur (iii) Tasmanian tiger cat (iv) Wolf	$\frac{1}{2} \times 4$
19.	(a) <i>Saccharomyces cerevisiae</i> - ethanol (b) <i>Monascus Purpureus</i> - Statins	$\frac{1}{2} \times 4$
20.	B-DNA polymerase C- Plasmid D- Restriction endonuclease E- plasmid with sticky ends	$\frac{1}{2} \times 4$
21.	If the rate of reproduction of phytoplanktons slows down then the net	$\frac{1}{2} \times 4$

	<p>primary productivity decrease. As a result, flow of energy will also decrease in the successive trophic level.</p> <p>The following two factors cause reduction in phytoplankton reproduction: (i) Less water availability (ii) Less nutrient availability.</p> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Nile perch introduced in Lake Victoria eventually led to the extinction of an ecologically unique assemblage of more than 200 species of cichlid fish. • Parthenium/Lantana/water hyacinth caused environmental damage and threat to our native species • African catfish-<i>Clarias gariepinus</i> introduced for aquaculture purposes is posing a threat to the indigenous catfishes in our rivers. (Any one) 	1+1
SECTION – C (3 marks)		
22.	<p>(a) A-Endosperm, provides nourishment to the growing embryo. (b) D-Hypocotyl, C-Cotyledon (c) In ‘E’ seedcoat is covered by root cap & coleorrhiza but in the bean seed only by root cap.</p>	½ x 6
23.	Definition with example, quantitative-thalassemia qualitative-sickle cell anemia.	1½ +1½
24.	<p>(a)</p> <div style="text-align: center;"> </div> <p>(b) Law of Independent Assortment: When two pairs of traits are combined in a hybrid, segregation of one pair of characters is independent of the other pair of character.</p>	2+1
25.	<p>(a) A colony of bacteria (say A) growing in a given medium has built in variation in terms of ability to utilise a feed component, a change in the medium composition would bring out only that part of the population (say B) that can survive under the new conditions.</p> <p>In due course of time this variant population outgrows the others and appears as new species thus organisms with shorter life-cycle or life-span will undergo evolution faster / for the same thing to happen in fish or fowl would take millions of years as life spans of these animals are in years.</p> <p>(b) During industrialisation period in England, the lichens got wiped out due to air pollution and tree trunks became dark due to industrial smoke. So, that the dark coloured moths could camouflage in the dark background without any risk of predation.</p> <p>Thus, they escaped predation, survived and therefore increased in population, whereas white winged moth did not survive due to predation and industrial pollution.</p>	2+1

	flowers may have a mucilaginous covering that helps protect them from getting wet and thus facilitates pollination in aquatic environments. (iii) egg -200, Male gametes-400 = total 600	1
32.	<p>(a) A protein is coded for by 999 bases in RNA for every 333 amino acids. If the base at 901 places is removed, the first 900 bases will be normal, but bases following the 901st base will be modified, implying that 99 bases will be altered. Because 3 bases equal 1 codon, the cancellation of one base at 901 locations will modify 99 bases = 33 codons.</p> <p>(b)</p>  <p>(c) Act as catalyst, releasing factor - binds to stop codon – stop translation.</p> <p>(d) Refer to NCERT – fig 5.12 (ser(AGU), anticodon – UCA)</p> <p style="text-align: center;">OR</p> <p>(a)</p> <p>(i) 2000bp per second, 18 mins (ii) act as substrate, provide energy</p> <p>(b) Further polymerisation up to the end would not occur as the 3-OH on sugar molecule is not for forming ester bond, which is required to add another nucleotide.</p> <p>(c) 0 : 1 : 31</p> <p>(d) If histone proteins were rich in acidic amino acids instead of basic amino acids then they may not have any role in DNA packaging in eukaryotes as DNA is also negatively charged molecule. The packaging of DNA around the nucleosome would not happen. Consequently, the chromatin fibre would not be formed.</p>	<p>2</p> <p>1</p> <p>$\frac{1}{2} + \frac{1}{2}$ 1</p> <p>$\frac{1}{2} \times 4$</p> <p>1</p> <p>1</p> <p>1</p>
33.	<p>(a) (i) Retrovirus has RNA as the genetic material. RNA does not have the ability to replicate. Therefore, reverse transcriptase converts it to DNA first and then replicates using host machinery.</p> <p>(ii) In step 7, the viral DNA becomes the part of host DNA for multiplication and expression. In step 8, the new viral RNA is produced by the infected cell.</p> <p>(b) All humans have cellular oncogenes or proto-oncogenes, but only a few suffer from cancer because cancer only occurs on activation of oncogenes. This activation is induced by carcinogens which can be physical, chemical or biological.</p> <p>(c) Allergy, Histamine, Serotonin.</p> <p style="text-align: center;">OR</p>	<p>1 + 1</p> <p>$1\frac{1}{2}$</p> <p>$1\frac{1}{2}$</p>

	<p>(a) Tobacco has nicotine that stimulates the release of adrenaline and non adrenaline which raise blood pressure. Smoking tobacco releases carbon monoxide which reduces the concentration of haem-bound oxygen. This causes emphysema.</p> <p>(b) Plant source of 'smack' is <i>Papaver somniferum</i> or poppy. Smack is a depressant and slows down body functions.</p> <p>(c) Tetanus is caused by a microbe which has a deadly and fast action. Action of vaccine is slow and this delay may become fatal. Therefore, antitoxins are administered which neutralise the effect of the bacterial toxin.</p>	<p>2</p> <p>1½</p> <p>1½</p>
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