

Strictly Confidential: (For Internal and Restricted use only)
Senior Secondary School Term II Compartment Examination, 2022
Marking Scheme – BIOLOGY (SUBJECT CODE — 044)
(PAPER CODE — 57/B/6)

General Instructions: -

1. You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2. **“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its’ leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under IPC.”**
3. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and marks be awarded to them. In class-X, while evaluating two competency based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, marks should be awarded.**
4. The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
5. Evaluators will mark(\checkmark) wherever answer is correct. For wrong answer ‘X’ be marked. Evaluators will not put right kind of mark while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**
6. If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
7. If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
8. If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out.
9. No marks to be deducted for the cumulative effect of an error. It should be penalized only once.

10. A full scale of marks 0-35 has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. Every examiner has to necessarily do evaluation work for full working hours i.e. 8 hours every day and evaluate 30 answer books per day in main subjects and 35 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
12. Ensure that you do not make the following common types of errors committed by the Examiner in the past:-
 - Leaving answer or part thereof unassessed in an answer book.
 - Giving more marks for an answer than assigned to it.
 - Wrong totaling of marks awarded on a reply.
 - Wrong transfer of marks from the inside pages of the answer book to the title page.
 - Wrong question wise totaling on the title page.
 - Wrong totaling of marks of the two columns on the title page.
 - Wrong grand total.
 - Marks in words and figures not tallying.
 - Wrong transfer of marks from the answer book to online award list.
 - Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.)
 - Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
13. While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
14. Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
15. The Examiners should acquaint themselves with the guidelines given in the Guidelines for spot Evaluation before starting the actual evaluation.
16. Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
17. The Board permits candidates to obtain photocopy of the Answer Book on request in an RTI application and also separately as a part of the re-evaluation process on payment of the processing charges.

6.	(a) Evolution of the flower and its pollinator are tightly linked with one another. Fig species can be pollinated only by its 'partner' wasp species and no other species. The female wasp pollinates the fig inflorescence while searching for suitable egg laying sites. In return, they get food for developing wasp larvae. <i>(any other suitable example)</i>	1						
	OR							
	(b)							
	<table border="1"> <tr> <td>Eurythermal</td> <td>Stenothermal</td> </tr> <tr> <td>Organisms can tolerate and thrive in a wide range of temperatures.</td> <td>Organisms are restricted to a narrow range of temperatures.</td> </tr> <tr> <td>e.g. mammals / human / cow or any other suitable example</td> <td>e.g. penguins / snowleopard or any other suitable example</td> </tr> </table>	Eurythermal	Stenothermal	Organisms can tolerate and thrive in a wide range of temperatures.	Organisms are restricted to a narrow range of temperatures.	e.g. mammals / human / cow or any other suitable example	e.g. penguins / snowleopard or any other suitable example	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
Eurythermal	Stenothermal							
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		2						
SECTION – 'B'								
7.	(a) (i) Cancer (ii) Neoplastic cells / tumor cells / mass of proliferating cells grow very rapidly, invading and damaging the surrounding normal tissues, cells sloughed from such tumour reach distant sites through blood, and start forming new tumor there. OR	1 $\frac{1}{2} \times 4$						
	(b) Principle of vaccination – Based on the memory of the immune system – Inactivated / weakened pathogen are introduced into the body – Antibodies are produced against the antigen – Memory B and T – cells are formed, that recognize the pathogen on subsequent exposure	1 $\frac{1}{2}$ $\frac{1}{2}$ 1						
		3						
8.	(a) Transmission of HIV – sexual contact with infected person, by transfusion of contaminated blood and blood products, by sharing infected needles as in the case of intravenous drug abusers, from infected mother to her child through placenta <i>(any three)</i> <i>($\frac{1}{2}$ mark to be deducted if infected / contaminated not mentioned)</i>	$\frac{1}{2} \times 3$						
	(b) person becomes immunodeficient, due to decrease in the number of helper T lymphocytes, person suffers from bouts of fever / diarrhoea / weight loss / unable to protect himself / herself against minor infections.	$\frac{1}{2} \times 3$						
		3						

9.	<ul style="list-style-type: none"> – Identification of DNA with desirable genes – Introduction of the identified DNA into the host – Maintenance of introduced DNA in the host and transfer of the DNA to its progeny 	1 × 3
		3
10.	<ul style="list-style-type: none"> – More evolutionary time for species diversification. – relatively more constant environment / less seasonal and more predictable environment. – receive more solar energy which contributes to greater productivity. 	1 × 3
		3
11.	(a) Regions with very high levels of species richness, high degree of endemism (b) Biosphere reserves, national parks, sanctuaries, sacred grooves <p style="text-align: right;"><i>(any two)</i></p>	1 + 1 ½ + ½
		3
12.	<ul style="list-style-type: none"> – Technique for DNA Separation-Agarose Gel electrophoresis – Technique for DNA Isolation -Elution – DNA fragments are separated by agarose gel electrophoresis. Negatively charged DNA molecules move towards the anode / positive electrode under the influence of an electric field through an agarose medium, DNA fragments separate according to their size / molecular weight (smaller size fragments move farther), DNA fragments are stained with ethidium bromide followed by UV radiations, separated DNA bands are cut out from agarose gel and extracted from gel by elution. 	½ ½
		½ × 4 3
SECTION – ‘C’		
13.	(a) (i) Increases yield, pest resistant crops reduce the use of chemical pesticides, prevent early exhaustion of fertility of soil, environment friendly approach, can create tailor made plants <p style="text-align: right;"><i>(any two)</i></p> (ii) <i>Bacillus thuringiensis</i> (iii) Bt gene is isolated from <i>Bacillus thuringiensis</i> , and ligated into the T-DNA of disarmed Ti plasmid of <i>Agrobacterium tumefaciens</i> . Cotton plant is infected with <i>Agrobacterium tumefaciens</i> so that Bt gene is delivered into the cotton plant, Bt protein exist as inactive prototoxin, and when ingested by insect it is converted into active form due to alkaline pH of insect gut, and create pores that finally cause swelling and lysis and finally death of insect. <p style="text-align: center;">OR</p> (b) (i) <ul style="list-style-type: none"> • Transgenic animals • Transgenic rabbits, pigs, sheeps, cows, fish, any other correct example. <p style="text-align: right;"><i>(any two)</i></p>	½ + ½
		1 ½ + ½ ½ × 4 ½ ½ + ½

	<p>(ii) Produces human protein enriched milk (alpha – lactalbumin) / nutritionally more balanced milk for human babies than natural cow milk.</p> <p>(iii)</p> <ul style="list-style-type: none"> • Testing safety of vaccine • Testing toxicity of chemical / drugs • Study of diseases 	<p>½</p> <hr/> <p>1 × 3</p> <hr/> <p>5</p>
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