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Senior Secondary School Term II Compartment Examination, 2022

Marking Scheme – BIOLOGY (SUBJECT CODE — 044)

(PAPER CODE — 57/6/1)

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(√) 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.

MARKING SCHEME

Senior Secondary School Compartment Examination TERM–II, 2022

BIOLOGY (Subject Code — 044)

[Paper Code — 57/6/1]

Maximum Marks : 35

Q. No.	EXPECTED ANSWER / VALUE POINTS	Marks
	SECTION – 'A'	
1.	• Pneumonia • *Streptococcus pneumoniae / Haemophilus influenzae* • **Symptoms** – fever, chills, cough, headache, in severe cases lips and fingers nails may turn grey to bluish in colour. ***(any two)***	½ ½ ½+½ 2
2.	• *Anabaena / Nostoc / Oscillatoria* ***(or any other correct example)*** • fix atmospheric nitrogen, acts as biofertiliser, add organic matter to the soil, increases soil fertility, reduces dependence on chemical fertilisers, replenish the soil nutrients ***(any two)***	1 ½ + ½ 2
3.	(a) • NACO – National AIDS Control Organisation • 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 ***(any three)*** (½ mark to be deducted if infected / contaminated not mentioned) **OR** (b) • *Papaver somniferum* • fruit / latex of poppy plant / inflorescence • acts as depressant / slows down body functions by binding to the opioid receptors present in the central nervous system and gastrointestinal tract.	½ ½ × 3 ½ ½ 1 2
4.	(a) (A) (b) – In the aeration tanks the effluent is constantly agitated mechanically and air is pumped into it.	½ ½

	– Vigorous growth of aerobic microbes into flocs (masses of bacteria associated with fungal filaments to form mesh like structures) takes place. – While growing these microbes consume the major part of the organic matter in the effluent thus decreasing / reducing BOD.	½ ½
		2
5.	– *Ophyrs* employs sexual deceit (to get pollination done) – one petal of its flower (has uncanny) resemblance to the female bee in size / colour / markings – The male bee is attracted and 'pseudocopulates' with the female flower achieving pollination – When this same bee 'pseudocopulates' with another flower, it transfers pollen to it and pollinates the flower.	½ ½ ½ ½
		2
6.	(a) *(i)* A – cat B – lizard *(ii)* 'A' (Regulator) can maintain homeostasis or constancy in body temperature, but only over a limited range of environmental conditions 'B' (Conformer) changes its body temperature in accordance with the external temperature (as shown in the graph, range 35^o – 45^o C, beyond which they simply conform) **OR** (b) *(i)* Exponential growth model / Geometric growth pattern *(ii)* 'r' – intrinsic rate of natural increase *(iii)* 'J' shaped curve *(iv)* Unlimited resources	½ ½ ½ ½ ½ ½ ½ ½
		2
	SECTION – 'B'	
7.	• CT (Computed Tomography), MRI (Magnetic Resonance Imaging) • **Computed Tomography** – uses X-rays to generate a three dimensional image of the internals of an object. / **MRI** – uses strong magnetic fields / non – ionising radiations to accurately detect the cancer in internal organs. ***(explain any one technique)***	1 + 1 1
		3
8.	(a) 'X' – Lymph nodes 'Y' – Thymus	½ ½

	(b) • Lymph nodes (secondary lymphoid organ) – to trap the microorganisms or other antigens present in lymph or tissue fluid. • Thymus (primary lymphoid organ) – provide microenvironment for the development and maturation of T-lymphocytes.	1 1 3
9.	(a) Advantages: large volumes (100 – 1000 litres) of culture can be processed, foam control system can control foam formation, temperature can be controlled by temperature control system, pH control system, optimum growth conditions can be maintained, substrate / salt / vitamins can be periodically added, small volumes of cultures can be withdrawn periodically through sampling ports ***(any four)*** (b) Product has to be formulated with suitable preservatives, clinical trials are required in case of drugs, strict quality control testing of each product is required ***(any two)***	½ × 4 ½ × 2 3
10.	(a) X – Insects Y – Molluscs (b) • X – makes most species rich taxonomic group • more than 70% of the total	1 1 ½ ½ 3
11.	(a) Normal ADA gene is inserted into patient's cell / tissue / embryo to treat a disease. It is done by isolation of lymphocytes from the blood of the patient and culturing of lymphocytes outside the body, introduction of functional ADA cDNA into lymphocyte using retroviral vector, modified lymphocytes are injected back to the patient, if gene isolated from marrow cells producing ADA is introduced into the cells at early embryonic stage, it is a permanent cure. **OR** (b) • **Insulin production in human body:** – Synthesised naturally in the form of proinsulin consisting of polypeptide chain A and polypeptide chain B, linked together by disulphide bonds and an extra stretch called C-peptide – The C-peptide is removed during processing and proinsulin matures into functional insulin. • **Insulin production by rDNA technology** – Two DNA sequences corresponding to chain A and chain B of human insulin are synthesised – They are introduced into two different plasmids of E.coli – Chain A and chain B are produced separately,	½ ½ × 5 ½ + ½

	– extracted and combined by disulphide bond to form human insulin.	½ × 4
		3
12.	(a) • loss of habitat leads to loss of biodiversity and threatens the survival of plants and animals to extinction. • Mammals and birds requiring large territories and certain animals with migratory habits are badly affected due to fragmentation, leading to population decline. b) Many commercially important species are overharvested, endangering their existence which may lead to their extinction.	1 1 1
		3
	SECTION – 'C'	
13.	(a) i) • *EcoRI* • 5' – GAATTC – 3' 3' – CTTAAG – 5' • *EcoRI* cuts the DNA between bases G and A from 5' end of both DNA strands. / ↓ 5' GAATTC 3' 3' CTTAAG 5' ↑ ***(or any other correct example with relevant answer)*** ii) – DNA molecule being negatively charged moves towards the anode / positive electrode through a medium of agrose gel under an electric field. – DNA fragments separate according to their size / molecular weight (smaller the fragment size, the farther it moves) **OR** (b) i) • When monkeys are treated with saline solution, serum cholesterol level increases from 24 hours to 264 hours. • When monkeys are treated with 2.5mg/kg SiRNAs, level of serum cholesterol decreases from 24 hours to 264 hours. ii) using Agrobacterium vectors, nematode specific genes are introduced into the host plant, introduced DNA forms both sense and anti-sense RNA in the host cell, these two RNAs being complementary to each other, form a double stranded RNA, that initiates RNAi and thus silencing the specific mRNA of the nematode, nematode is unable to survive in the transgenic plant.	1 1 1 1 1 1 1 ½ x 6
		5

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