

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior Secondary School Examination, 2026 (XIIth)
SUBJECT NAME : Biology-VI (Q.P. CODE 044/57B)

General Instructions: -

1	The CBSE has decided to introduce On Screen Marking (OSM) for the evaluation of Class XII answer Book with the 2026 Examination.
2	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.
3	“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 Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
4	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 due marks be awarded to them. In Class-XII, 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, due marks should be awarded.
5	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
6	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. If there is any variation, the same should be zero after deliberation and discussion. 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.
7	Evaluators will mark (✓) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
8	If a question has parts, please award marks on the right-hand side for each part in the OSM Portal. Marks awarded for different parts of the question will be totaled up by the OSM System.
9	If a question does not have any parts, marks must be awarded in the left-hand margin in the OSM Portal. This may also be followed strictly.

10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of 70 marks as given in Question Paper has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 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.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> ● 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.
14	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.
15	The Examiners should acquaint themselves with the guidelines given in the "Guidelines for Spot Evaluation" before starting the actual evaluation.
16	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.
17	If a candidate attempts both alternatives/options in a question where only one option/ alternative is required to be attempted, the Evaluator shall award marks in both the options. The system will take the higher of two scores and disregard the other response.
18	In a question having two options/alternatives, if a candidate has attempted only one, then the evaluator shall mark "NA" (Not attempted) against the option that has not been attempted by the candidate.

MARKING SCHEME
Biology-VI (Subject Code-044)
(PAPER CODE : 57B) (26-B-44N)

Q.No .	EXPECTED OUTCOMES/VALUE POINTS	Marks	Total Marks
	SECTION – A		
1.	(B) / Diploid	1	1
2.	(B) / Rejects the pollen	1	1
3.	ALL OPTIONS ARE INCORRECT (1 MARK TO BE AWARDED IF ATTEMPTED)	1	1
4.	(C) / Uracil and Adenine	1	1
5.	(C) / Sickle cell Anaemia	1	1
6.	(C)/ y gene	1	1
7.	(C)/ Down's syndrome	1	1
8.	(A) / 20%	1	1
9.	(B) / Lactic acid bacteria	1	1
10.	(A) / Adaptation to different needs	1	1
11.	(C) / They form hydrogen bonds with complementary cut parts	1	1
12.	(D) / Curd	1	1
13.	ALL STATEMENTS ARE INCORRECT (1 MARK TO BE AWARDED IF ATTEMPTED)	1	1

14.	(A) / Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1		
15.	(D) / Assertion (A) is false, but Reason (R) is true.	1	1		
16.	(A) / Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1		
	SECTION – B				
17	<p>(a) Gonadotropin releasing hormone (GnRH) stimulates secretion of Luteinising hormone (LH) , Follicle stimulating hormone(FSH)</p> <p>-LH stimulates synthesis of androgens / testosterone</p> <p>-FSH stimulates spermiogenesis</p> <p>OR</p> <p>(b)</p> <ul style="list-style-type: none">Paired seminal vesicle , prostate gland, bulbourethral glands. <p>(any two)</p> <ul style="list-style-type: none">Function secretion of these glands constitute the seminal plasma which is rich in fructose Calcium and certain enzymes.	<p>½ + ½</p> <p>½</p> <p>½</p> <p>½ + ½</p> <p>1</p>	2		
18.	<p>(a)</p> <ul style="list-style-type: none">Drosophila is an example of ‘XY’ type of sex determination, males are heterogametic (XY) / females are homogametic. (XX)Grasshopper is an example of ‘XO’ type of sex determination , males are heterogametic only one X- chromosome (XO)/ females are homogametic (XX) <p>OR</p> <p>(b)</p> <ul style="list-style-type: none"><table border="1"><tr><td>MENDELIAN DISORDER - refers to a genetic disease which is caused by a alteration or mutation in a single gene.</td><td>CHROMOSOMAL DISORDER - Is caused due to absence or excess or abnormal arrangement of one or more chromosomes</td></tr></table>Two chromosomal disorders – klinefelter’s syndrome / Turner’s syndrome/ Down’s syndrome.	MENDELIAN DISORDER - refers to a genetic disease which is caused by a alteration or mutation in a single gene.	CHROMOSOMAL DISORDER - Is caused due to absence or excess or abnormal arrangement of one or more chromosomes	<p>½+½</p> <p>½+½</p> <p>½+½</p> <p>½+½</p>	
MENDELIAN DISORDER - refers to a genetic disease which is caused by a alteration or mutation in a single gene.	CHROMOSOMAL DISORDER - Is caused due to absence or excess or abnormal arrangement of one or more chromosomes				

	(Any two disorder)		2
19.	(a) Dengue/Malaria/ filariasis/ chikungunya. (Any two) (b) Feed on mosquito larvae	$\frac{1}{2} + \frac{1}{2}$ 1	2
20.	-Restriction enzymes – cut DNA fragments at specific site. -Ligases – join cut DNA fragments to make recombinant DNA. -Cloning vector – Carrier/Vehicle for gene transfer/multiplication -Host organism – Replication of gene/expression of gene/production of useful products (any other correct function)	$\frac{1}{2} \times 4$	2
21.	(a) (i) <ul style="list-style-type: none"> Green plants/Autotrophic organisms Sun/PAR/Solar energy (ii) Approximately 90% of energy (i.e. heat energy) is lost when it transferred from one trophic level to another trophic level leading to increase in overall entropy / They need energy to counteract the universal tendency towards increasing disorderliness (entropy). OR (b) Example- <ul style="list-style-type: none"> The Nile perch introduced into lake Victoria in east Africa led eventually to the extinction of unique assemblage of more than 200 species of cichlid fish in the lake. Weed species like carrot grass/<i>Parthenium</i> / <i>Lantana</i> and water hyacinth/ <i>Eicchornia</i> posed threat to the native species by becoming invasive African catfish /<i>Clarias gariepinus</i> is threat to indigenous catfish. (any two example)	$\frac{1}{2}$ $\frac{1}{2}$ 1 1+1	2
	SECTION – C		
22.	(a) <ul style="list-style-type: none"> -Shoot apex or tip/ Plumule is covered with coleoptile - Root cap or tip/ Radicle is covered with coleorhiza. (b) <ul style="list-style-type: none"> The primary endosperm nucleus (PEN) undergoes successive nuclear divisions to give rise to free nuclei. Coconut water (any correct example)	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	

	(c) <ul style="list-style-type: none"> When fruits develop without fertilisation Banana (any other correct example)	$\frac{1}{2}$ $\frac{1}{2}$	3
23.	(a) <ul style="list-style-type: none"> -Vasa efferentia leaves the testis and opens into epididymis -Vas deferens ascends to the abdomen and loops over the urinary bladder. (b) <ul style="list-style-type: none"> A tiny first haploid polar body formed after unequal division of primary oocyte. After first meiotic division of primary oocyte (c) Graafian follicle transforms into corpus luteum	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1	3
24.	(a) <ul style="list-style-type: none"> -The deoxyribonucleoside triphosphate are the building blocks for the DNA strand /acts as substrates. -They also serve as energy source (in the form of ATP) for polymerisation reaction. (b) <ul style="list-style-type: none"> S-phase of the cell-cycle. Results into polyploidy. 	1 1 $\frac{1}{2}$ $\frac{1}{2}$	3
25.	Steps of process of translation are: <ul style="list-style-type: none"> -Initiation /Ribosome binds to mRNA at start codon (AUG) , Charging of initiator tRNA/Aminoacylation of initiator tRNA -Elongation/The ribosome moves along mRNA and tRNA brings specific amino acid based on mRNA sequence, Forming a chain via peptide bond. -Termination , a release factor binds to stop codons(UAA,UGA,UAG) 	$\frac{1}{2}+\frac{1}{2}$ $\frac{1}{2}+\frac{1}{2}$ $\frac{1}{2}+\frac{1}{2}$	3
26.	<i>Bacillus thuringiensis</i> is used to control butterfly caterpillars these are available in sachets as dried spores, are mixed with water and sprayed into vulnerable plants (brassica,fruit trees) ,when they are eaten by insect larvae in larva's gut the toxin kills it does not destroy other insects.	1x3	3
27.	<ul style="list-style-type: none"> ELISA→ Enzyme Linked Immuno-Sorbent Assay. Principle of antigen - antibody interaction. Infection by pathogen can be detected by the presence of antigens-proteins glycoproteins etc / by detecting the antibodies synthesised against the pathogens. 	1 1 1	3

28.	<p>(a) Mutualism.</p> <p>(b) -The wasp uses the ovary of the flowers for oviposition (egg laying), -The developing seeds are used as food by the larvae.</p> <p>(c) The Mediterranean orchid <i>Ophrys</i> and its pollinator species of bee. (bumble bees and bees)</p> <p style="text-align: right;">(any other correct example)</p>	<p>1</p> <p>½</p> <p>½</p> <p>1</p>	3
	SECTION – D		
29.	<p>(a)</p> <ul style="list-style-type: none"> • To establish identity of an individual/victim • DNA fingerprinting. <p>(b)</p> <ul style="list-style-type: none"> • DNA /Banding pattern of DNA are matched • Yes <p>(c) (i)</p> <ul style="list-style-type: none"> • Satellite DNA are sequences which normally do not code for any protein but form large portion of human genome. • They are used as probe in DNA fingerprinting <p style="text-align: center;">OR</p> <p>(c)</p> <p>(ii) Used in determining population /genetic diversities.</p>	<p>½</p> <p>½</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p>	4

30.	<p>(a) In the early stages when the cancer is small and hasn't spread treatment is effective and curable.</p> <p>(b) Avoid exposure to carcinogens (such as radiation, tobacco ,alcohol etc)/ Healthy lifestyle with balanced diet/staying active /Maintaining healthy weight (any other correct reason)</p> <p>(c) (i)</p> <ul style="list-style-type: none">Transformation of normal cells into cancerous neoplastic cells induced by physical (radiations) or chemical (tobacco) or biological (cancer causing viruses) agentsThey are known as carcinogens. <p style="text-align: center;">OR</p> <p>(c) (ii)</p> <table><tr><td>viral oncogenes</td><td>proto oncogenes</td></tr><tr><td>Cancer causing oncogenic viruses have genes called viral oncogenes</td><td>Genes (c - onc) are found in normal cells which get activated under certain conditions.</td></tr></table>	viral oncogenes	proto oncogenes	Cancer causing oncogenic viruses have genes called viral oncogenes	Genes (c - onc) are found in normal cells which get activated under certain conditions.	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1+1</p>	<p>4</p>
viral oncogenes	proto oncogenes						
Cancer causing oncogenic viruses have genes called viral oncogenes	Genes (c - onc) are found in normal cells which get activated under certain conditions.						
	<p style="text-align: center;">SECTION – E</p>						
31	<p>(a) (i)</p> <p>-Reproductive and child health care programme.</p> <p>- Creating awareness among people about various reproduction related aspects and providing facilities and support for building reproductively healthy society.</p> <p>(ii)</p> <p>-Introduction of sex education in schools should be encouraged to provide right information to the young</p> <p>-Prevents children from believing in myths</p> <p>-Proper information about hygienic sexual practices</p> <p>-Educating people about available birth control options/ care of pregnant mothers/ post-natal care of the mother and child</p> <p>- Importance of breast feeding /equal opportunities for the male and the female child/ bringing up socially conscious healthy families of desired size.</p> <p style="text-align: right;">(any other correct steps)</p> <p>(iii)</p> <ul style="list-style-type: none">Amniocentesis.This test is used to check for the presence of certain genetic disorder	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2} \times 5 = 2\frac{1}{2}$</p> <p>1</p>					

	<p>(down syndrome, sickle cell anaemia etc)/ To determine survivability of the foetus</p> <p style="text-align: center;">OR</p> <p>(b) (i)</p> <ul style="list-style-type: none"> About 9 months/40 weeks/280 days Gestation Period <p>(ii)</p> <ul style="list-style-type: none"> Menarch → The first menstruation begin at puberty . Menopause → Cessation of menstrual cycle (around 50 years of age) . <p>(iii)</p> <p>-Sterilisation methods in males is called vasectomy, A small part of the vas deferens is removed or tied up .</p> <p>-Sterilisation methods in females, tubectomy a small part of fallopian tube is removed or tied up</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>	<p>5</p>
32.	<p>(a)</p> <p>Recombinant DNA technology involves several steps:</p> <ul style="list-style-type: none"> - fragmentation of DNA by restriction endonucleases - Isolation of a desired DNA fragment -ligation of the DNA fragment into a vector -Transferring the recombinant DNA into the host -culturing the host cells in a medium at large scale to get desired product <p style="text-align: center;">OR</p> <p>(b)</p> <p>(i)</p> <ul style="list-style-type: none"> - Treating them with specific concentration of divalent ion (calcium) which creates pores in the cell wall - Recombinant DNA can then be forced into such cells by incubating cells with recombinant DNA on ice followed by placing them at 42 degree Celsius (heat shock) and then placing them back on ice . <p>(ii) (I) Biolistic /Gene gun → In plants the cells are bombarded with high velocity microparticles of gold or tungsten coated with DNA</p> <p>(II) Micro-injection → In an animal cell recombinant DNA is directly injected into the nucleus</p>	<p>1x5</p> <p>1</p> <p>1</p> <p>$\frac{1}{2} + 1$</p> <p>$\frac{1}{2} + 1$</p>	<p>5</p>

33.	<p>(a) (i) It should not show too much variation in productivity from year to year.</p> <p>(ii)</p> <ul style="list-style-type: none">- It must be resistant or resilient to occasional disturbances (natural or man-made)/ Constant productivity year after year- It must be resistant to alien species invasion. <p>(iii)</p> <p>-David Tilman</p> <p>Findings:</p> <ul style="list-style-type: none">-plots with more species showed less year-to year variation in total biomass-Increased diversity contributed to higher productivity. <p style="text-align: center;">OR</p> <p>(b)</p> <p>(i) -Detrivores break down detritus into smaller particles e.g. earthworm.</p> <p>(ii) Catabolism → Bacterial and fungal enzymes degrade detritus into simpler inorganic substances.</p> <p>Humification → Is the process accumulation of a dark coloured amorphous substance called humus (Which is highly resistant to microbial action) .</p> <p>(iii)</p> <table><tr><th colspan="2">Grazing food chain (GFC)</th><th colspan="2">Detritus food chain (DFC)</th></tr><tr><td>(I)</td><td>It begins with producers/green plants</td><td>(I)</td><td>It begins with saprophytes/decomposers</td></tr><tr><td>(II)</td><td>less fraction of energy flows through GFC</td><td>(II)</td><td>Larger fraction of energy flows through detritus food chains</td></tr></table>	Grazing food chain (GFC)		Detritus food chain (DFC)		(I)	It begins with producers/green plants	(I)	It begins with saprophytes/decomposers	(II)	less fraction of energy flows through GFC	(II)	Larger fraction of energy flows through detritus food chains	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>½+½</p> <p>1</p> <p>1</p> <p>1+1</p>	<p>5</p>
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<p style="text-align: center;">- o O o -</p>															