BSEH MARKING SCHEME

(Academic)

CLASS- XII Biology (Model Paper 2026-27) Code: A

- **The answer points given in the marking scheme are not final. These are suggestive and indicative. If the examinee has given different, but appropriate answers, then appropriate marks should be given.**

Q. No.	Part no.	Answers	Marks	Total Marks
1.	---	b) Scutellum	1	1
2.	---	c) Lippes loop	1	1
3.	---	b) 32	1	1
4.	---	a) 200	1	1
5.	---	c) *Plasmodium*	1	1
6.	---	c) *Trichoderma*	1	1
7.	---	c) 3	1	1
8.	---	d) None of these	1	1
9.	---	c) 3	1	1
10.	---	zero	1	1
11.	---	Benign/ non-malignant	1	1
12.	---	*Saccharomyces cerevisiae*	1	1

13.	---	Ethidium bromide	1	1
14.	---	Phytophagous	1	1
15.	---	Parasitism in which the parasitic bird lays its eggs in the nest of its host and lets the host incubate them.	1	1
16.	---	c) A is true but R is false.	1	1
17.	---	d) A is false but R is true.	1	1
18.	---	a) Both A and R are true, and R is the correct explanation of A.	1	1
19.		Gonorrhoea, syphilis, chlamydiasis, genital warts, trichomoniasis.	Any four, ½ each	2
	Or			
		Artificial insemination	½	
		Used for infertility cases either i) due to inability of the male partner to inseminate the female ii) due to very low sperm counts in the ejaculates	½ ½	
		In this technique, the semen (collected either from the husband or a healthy donor) is artificially introduced either into the vagina or into the uterus	½	

20.		inner cell mass	1	2
		These have the potency to give rise to all the tissues and organs.	1	
21.		Co-dominance	½	2
		Multiple allelism	½	
		When two different alleles (I^A & I^B) dominate together in AB blood group. Or Occurrence of more than two alleles (I^A, I^B & i) of a trait in a population.	1	
22.		National AIDS Control Organisation	1	2
		Mucus Associated Lymphoid Tissue	1	
23.		Antigen-antibody interaction	1	2
		Infection by pathogen can be detected: by the presence of antigens (proteins, glycoproteins, etc.) by detecting the antibodies synthesised against the pathogen.	½ ½	
		Or		

		The method of producing thousands of plants through tissue culture is called micro-propagation.	1	
		Even if the plant is infected, the meristem (apical and axillary) is free of infection. Hence, one can remove the meristem and grow it in vitro to obtain disease-free plants.	1	
24.		Animals that have had their DNA manipulated to possess and express an extra (foreign) gene are known as transgenic animals.	1	2
		Cancer, cystic fibrosis, rheumatoid arthritis and Alzheimer's.	Any two, ½ mark each	
25.		Graphical expression of the food or energy relationship between organisms at different trophic level in an ecosystem.	1	2
		The pyramid of biomass in sea is generally inverted because the biomass of fishes far exceeds that of phytoplankton.	1	
	Or			
		Productivity	½	
		Decomposition	½	

		Energy flow	½	
		Nutrient cycling	½	
26.		hCG (human chorionic gonadotropin);	½	3
		corpus luteum	½	
		hPL (human placental lactogen);	½	
		corpus luteum	½	
		Relaxin;	½	
		Ovary	½	
27.		The gene pool (total genes and their alleles) in a population remains a constant. This is called genetic equilibrium.	1	3
		gene migration or gene flow, genetic drift, mutation, genetic recombination and natural selection.	Any four, ½ mark each	
28.		i) They could be grown on simple synthetic medium in the laboratory.	Any three, 1 mark each	3
		ii) They complete their life cycle in about two weeks.		
		iii) a single mating could produce a large number of progeny flies.		
		iv) The male and female flies are easily distinguishable.		

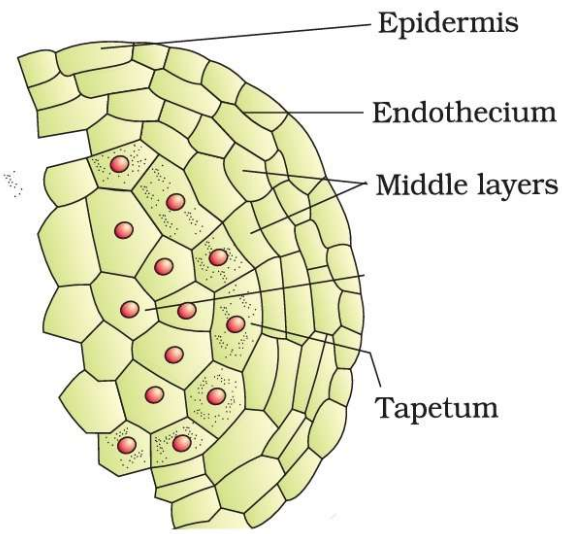
		v) It has many types of hereditary variations that can be seen with low power microscopes.		
		Or		
		Analysis of traits in a several of generations of a family is called the pedigree analysis.	1	
		Autosomal dominant	½	
		Autosomal recessive	½	
		X-linked dominant	½	
		X-linked recessive	½	
29.		Bacteria like ***Rhizobium/Azospirillum/Azotobacter*** fix atmospheric nitrogen to organic forms.	Any one ½ ½	3
		Fungi form **mycorrhiza** with plant roots.	½	
		The fungal part absorbs phosphorus from soil/ provides resistance to root-borne pathogens/ provides tolerance to salinity and drought.	Any one ½	
		Cyanobacteria like ***Anabaena/Nostoc/ Oscillatoria***	Any one ½	

		Can fix atmospheric nitrogen in aquatic and terrestrial environments/ paddy fields/ add organic matter to the soil and increase its fertility	Any one ½	
30.		Typhoid	½	3
		Salmonella typhi Through contaminated food and water	1 ½	
		Sustained high fever, Weakness/ stomach pain/ constipation /headache /loss of appetite	½ Any one, ½	
		Or		
		Erythroxylum coca	1	
		Datura	1	
		Atropa belladona	1	
31.	i)	Hydrogen bonding	1	4
	ii)	Structural Gene Or The DNA strand which is not transcribed is called coding strand.	1 1	

<table>
<tr><td></td><td>iii)</td><td>Prokaryotic Transcription</td><td>Eukaryotic Transcription</td><td rowspan="4">Any two correct differences , 1 mark each</td><td rowspan="4"></td></tr>
<tr><td></td><td></td><td>No Splicing is required</td><td>Splicing is required</td><td></td><td></td></tr>
<tr><td></td><td></td><td>Single RNA polymerase is used</td><td>Three different RNA polymerase are used</td><td></td><td></td></tr>
<tr><td></td><td></td><td>Capping & tailing is not found</td><td>Capping & tailing is found</td><td></td><td></td></tr>
<tr><td>32.</td><td>i)</td><td colspan="2">$\log S = \log C + \mathrm{Z} \log A$</td><td>2</td><td rowspan="3">4</td></tr>
<tr><td></td><td>ii)</td><td colspan="2">endemism means that certain species are confined to one region and are not found anywhere else.</td><td>1</td><td></td></tr>
<tr><td></td><td>iii)</td><td colspan="2">34
Or
0.6 – 1.2</td><td>1

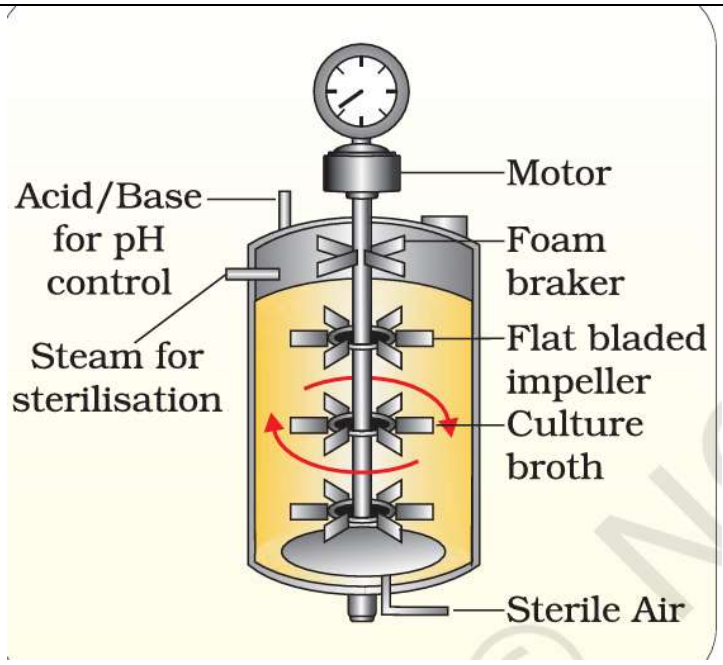
1</td><td></td></tr>
<tr><td>33.</td><td>a)</td><td colspan="2">Devices used by plants to discourage self-pollination and to encourage cross-pollination.</td><td>1</td><td rowspan="2">5</td></tr>
<tr><td></td><td></td><td colspan="2">Self-incompatibility:
This is a genetic mechanism and prevents self-pollen (from the same flower or other flowers of the same plant) from fertilising the ovules by inhibiting pollen germination or pollen tube growth in the pistil.</td><td>1

1</td><td></td></tr>
</table>

	b)	Outbreeding devices promote cross-pollination to avoid inbreeding depression.	1	
	c)	Dioecy in plants i.e. male and female flowers are present on different plants.	1	
		Or		
	a)		1 mark for correct diagram. ½ mark for each correct label	
	b)	Cells: vegetative cell, generative cell	½ + ½	
		Layers: Exine, intine	½ + ½	
34.	a)	i) transcriptional level (formation of primary transcript)	½	5
		ii) processing level (regulation of splicing)	½	
		iii) transport of mRNA from nucleus to the cytoplasm	½	
		iv) translational level	½	

	b)	The repressor protein binds to the operator region of the operon and prevents RNA polymerase from transcribing the operon.	1	
	c)	The y gene codes for permease	1	
		It increases permeability of the cell to β-galactosides.	1	
		Or		
	a)	i) It should be able to generate its replica (Replication).	1	
		ii) It should be stable chemically and structurally.	½	
		iii) It should provide the scope for slow changes (mutation) that are required for evolution.	1	
		iv) It should be able to express itself in the form of 'Mendelian Characters'.	½	
	b)	i) 2'-OH group present at every nucleotide in RNA is a reactive group and makes RNA labile and easily degradable.	1	
		ii) the presence of thymine at the place of uracil also confers additional stability to DNA.	1	

35.	a)	Biotechnology is controlled use of living organisms for human welfare. or The integration of natural science and organisms, cells, parts thereof, and molecular analogues for products and services.	1	5
		Genetic engineering: Techniques to alter the chemistry of genetic material (DNA and RNA), to introduce these into host organisms and thus change the phenotype of the host organism.	½ ½	
		Bioprocess engineering: Maintenance of sterile ambience in chemical engineering processes to enable growth of only the desired microbe/eukaryotic cell in large quantities.	½ ½	
	b)	This is a sequence from where replication starts and any piece of DNA when linked to this	1	

		sequence can be made to replicate within the host cells.		
		This sequence is also responsible for controlling the copy number of the linked DNA.	1	
		Or		
	a)	*Thermus aquaticus*	1	
		It is sourced for a **thermostable DNA polymerase** which remain active during the high temperature induced denaturation of double stranded DNA in *in-vitro* amplification of DNA	½ ½	
	b)		1 mark for correct diagram. ½ mark each for any four correct labels	