

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
8		<ul style="list-style-type: none"> * Combust hydrocarbons are converted into CO_2 & water * Carbon monoxide is changed to CO_2 * Nitric oxide is changed to free Nitrogen <p>(Any two points) [Any two relevant points related to air pollution]</p>	2	2
9.		<ul style="list-style-type: none"> * Selection of disease free and suitable breeds of poultry * Proper and safe farm conditions * Proper feed and water * Proper hygiene <p>[Any two relevant points]</p>	2	2
10		<ul style="list-style-type: none"> * In <u>Vallisneria</u> the female flower reach the surface of water by long stalk and the male flowers or pollengrains are released onto the surface of water * In <u>Zostera</u> the female flowers remain submerged in water and the pollengrains are released inside the water * Pollengrains in many species are ribbon like. 		

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		<p>* In some species pollen grains are protected from wetting by a mucilaginous covering (Any two points)</p>	2	2
11		<p>* Loss of unnecessary sense organs * Presence of adhesive organ / suckers * Loss of digestive system * High reproductive capacity [Any two points]</p>	2	2
12		<p>Excessive growth of planktonic algae / Algal bloom</p> <p>* Deterioration of the water quality and fish mortality * Eutrophication * Biomagnification [Any two points]</p>	2	2
13		<p>a Human Alpha lactalbumin - 4. Rosie b. Antigen Antibody Interactions: ELISA c Genetically Engineered Insulin d Cry I Ab</p> <p>2. Elililly 3. Corn based</p>	2	2

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14		<ul style="list-style-type: none"> * Humus (1) * High resistant microbial action * Decomposition at an extremely slow rate * Serves as a reservoir of nutrients * Release of inorganic nutrients <p>(Any three)</p>	-11)	2
15	(a)	<p>Isolated Bt. toxin gene from <u>Bacillus thuringiensis</u> and incorporated into cotton plant. / Cry gene</p>	1 1/2	
	(b)	<ul style="list-style-type: none"> * Bt. Cotton has insecticidal proteins / protoxins / inactive toxin * Insects ingest the inactive toxin * The inactive toxin converted into an active form of toxin due to the alkaline pH of the gut of insect * The activated toxin binds to the surface of midgut epithelial cells and cause cell swelling and lysis and eventually cause death. 		3
		Correct explanation	1 1/2	

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16		<p>* Autogamy - Pollination within a flower Definition of Autogamy.</p> <p>* Creitonogamy - Pollination within a plant Definition of Creitonogamy.</p> <p>* Xenogamy - Pollination between two plants of the same sps Definition of Xenogamy.</p>	3	3
17		<p>Phytoplanktons. Submerged plant stage Submerged free floating plant stage Reed - swamp stage Marsh - meadow stage Scurb stage Forest (in correct order) or</p> <ul style="list-style-type: none"> * Phyto planktons * rooted submerged plants * rooted - floating angiosperms * free - floating plants * Reed swamp * Marsh meadow, * scurb * Trees (in correct order) <p>[Any three correct sequential order]</p>	3	3

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18		<p>Hind II</p> <ul style="list-style-type: none"> * First letter indicates Genus name of the bacteria from which the enzyme isolated * Second and third letter - species of bacteria * Fourth letter - strain * Roman letter - Order in which the enzyme was isolated 	<p>1</p> <p>2</p>	<p>3</p>

1. Kumari Jini

St. George's VHS

Chowalass
Kollom

9447032776



2. Meena N-Jacob

Mar Elias H.S.S

Kottappady
Ernakulam

9447303545



3. Sujia PK

LVHSS For Deaf Kunnankulam

Toissar

9847865461



4. Anila Cheriyan

M. S H S S Ranny

Pathanamthitta

- 9447207388 AnilaCherian

5. Robins PJ

St. Joseph HSS.

Pavuratty. 8078

9288650961. TLR.



6. Sulfi M

Janatha H.S.S (1053)

Thembamoodu

Thiruvananthapuram

9496154587.



Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1.		c) 100	1	1
2.		Tubectomy	1	1
3.		Typhoid.	1	1
4.		a) Sexually Transmitted Disease b) (Any two points). 1. Avoid sex with unknown partners 2. Use condom during coitus 3. Proper awareness regarding STD's 4. Treatment from a qualified doctor.	1 1/2 1/2	2
5.		a. Test cross b. To determine whether F ₁ or F ₂ parents are homozygous dominant or heterozygous To test the purity of gametes	1 1	2
6.		a. Second amino acid chain or 2nd. b. 6th position glutamic acid is replaced by valine. c. Substitution of only a single base GAG - GUG in the triplet codon, resulting in a change in the amino acid of the polypeptide chain.	1/2 1/2 1	2.

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7	1. 2. 3. 4.	13-year long project Estimated cost of the project is 9 billion US dollars It has approximately 3×10^9 bp Enormous amount of data to be stored in computers (Any two points).	1 1	2
8.	a b.	Lac operon. A - β galactosidase B - Permease C - Trans acetylase	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
9.		<u>Primary Treatment</u> : Physical removal of materials by sequential filtration or sedimentation. <u>Secondary Treatment</u> : Biological treatment aeration and constant agitation to improve growth of bacteria associated with fungal filaments to form flocs.	1 1	2
10		Briefly describe methods of 1. In situ conservation. 2. Ex situ conservation	1 1	2

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11	a b.	<p>From bacteria to human being each triplet codon codes for the same amino acid. It is same in almost all organism.</p> <ol style="list-style-type: none"> 1. Unambiguous and specific 2. Degenerate 3. Triplet 4. Commaless 5. Non-overlapping. 6. Degeneracy 7. Initiator codon. 8. Terminator codon. (Any two) 	<p align="center">1</p> <p align="center">1/2</p> <p align="center">1/2</p>	<p align="center">2</p>
12		<ol style="list-style-type: none"> a. Hardy Weinberg Principle. b. Gene flow, genetic drift, mutation, recombination, natural selection. (Any three) 	<p align="center">1/2</p> <p align="center">1 1/2</p>	<p align="center">2</p>
13		<p>Genotype of child 'O' group is</p> <p>Father A i</p> <p>Mother B i</p>	<p align="center">1</p> <p align="center">1/2</p> <p align="center">1/2</p>	<p align="center">2</p>
14	1. 2.	<p>Divergent evolution</p> <p>Organs with common ancestry and hence structurally similar but functionally dissimilar</p>	<p align="center">1</p> <p align="center">1</p>	<p align="center">2</p>

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15	1.	Ovulation - graafian follicle - LH	1	3
	2.	Implantation - Endometrium - Progesterone	1	
	3.	Gestation - Uterus - hCG	1	
16.		Ramapithecus ↓ Australopithecus ↓ Homo habilis ↓ Homo erectus ↓ Neanderthal ↓ Homo sapiens	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	3
17.		Physical barrier - Skin, mucus Physiological barrier - Acid in stomach, saliva Cellular barrier - WBCs, Monocyte	1 1 1	3

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
18		<p>SNP - Single Nucleotide polymorphism</p> <p>BAC - Bacterial Artificial Chromosome</p> <p>YAC - Yeast Artificial Chromosome</p>	1 1 1	3

1. Kurian Jacob A. NVT, ^{Baleg} SSMHSS - Edakkayy - Mob. 9846677303

2. Musthafa A, ^{Akuni} asst. Pr. in Zoology
St John's V-H.S.S. Ummannoor -

Musthafa
9745094807