



SHRI KRISHNA ACADEMY

BOARD EXAM(10, +1, +2) NEET, AND JEE COACHING CENTRE
SBM SCHOOL CAMPUS, TRICHY MAIN ROAD, NAMAKKAL

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II MID TERM TEST - NOVEMBER - 2019

TENTATIVE ANSWER KEY

SUBJECT: BOTANY

MARKS : 50

Q.NO	CONTENT	MARK
	PART-I	10X1=10
	CHOOSE THE CORRECT ANSWER:	
1	b) 2-10%	1
2	a) Unidirectional	1
3	d) Mangrove forest	1
4	e) Alien sp. of India - Water hyacinth	1
5	c) Dobson	1
6	c) Disaster management	1
7	b) 1-iii, 2-i, 3-iv, 4-ii	1
8	c) Clonal selection- Sexually propagated	1
9	b) Rice	1
10	b)-18°C	1
	PART-II (ANY FIVE) Q. No 14 Compulsory	5X2=10
11	❖ The deeper region of a pond below the limnetic zone is called profundal zone with no effective light penetration and predominance of heterotrophs. Hence producers are not found here.	2
12	Food chain: The movement of energy from producers upto top carnivores is known as food chain Eg. Producers→Primary Consumers→Secondary Consumers→Tertiary Consumers	2
13.	Ozone hole: The ozone shield is being damaged by chemicals released on the Earth's surface notably the chlorofluorocarbons widely used in refrigeration, aerosols, chemicals used as cleaners in many industries. The decline in the thickness of the ozone layer over restricted area is called Ozone hole	2
14	Green house effect: Green House Effect is a process by which radiant heat from the sun is captured by gases in the atmosphere that increase the temperature of the earth ultimately.	2

15	Heterosis: The superiority of the F1 hybrid in performance over its parents is called heterosis or hybrid vigour.	2
16	Benefits of seed treatment <ul style="list-style-type: none"> ❖ Prevents spread of plant disease. ❖ Protects seed from seedling blights. ❖ Improves germination. ❖ Provides protection from storage insects. ❖ Controls soil insects. 	2
17	Steps in Hybridization <ul style="list-style-type: none"> ❖ Selection of Parents ❖ Emasculation ❖ Bagging ❖ Crossing ❖ 5. Harvesting seeds and raising plants 	2
PART-III (ANY FIVE) Q.No. 20 compulsory		5X3=15
18	The pyramid of energy is always upright The bottom of the pyramid of energy is occupied by the producers. There is a gradual decrease in energy transfer at successive trophic levels from producers to the upper levels. Therefore, the pyramid of energy is always upright.	3
19	How to protect the ecosystem? (Any three) <ul style="list-style-type: none"> ❖ Buy and use only ecofriendly products and recycle them. ❖ Grow more trees ❖ Choose sustained farm products (vegetables, fruits, greens, etc.) ❖ Reduce the use of natural resources. ❖ Recycle the waste and reduce the amount of waste you produce. ❖ Reduce consumption of water and electricity. ❖ Reduce or eliminate the use of house-hold chemicals and pesticides. ❖ Maintain your cars and vehicles properly. (In order to reduce carbon emission) ❖ Create awareness and educate about ecosystem protection among your friends and family members and ask them to find out solution to minimise this problem. 	3
20	(Any three) <ul style="list-style-type: none"> ❖ Promotes adequacy of underground water and water conservation. ❖ Mitigates the effect of drought. ❖ Reduces soil erosion as surface run-off is reduced. ❖ Reduces flood hazards. ❖ Improves groundwater quality and water table / decreases salinity. ❖ No land is wasted for storage purpose and no population displacement is involved. ❖ Storing water underground is an eco-friendly measure and a part of sustainable water storage strategy for local communities 	3

21	Effects of ozone depletion (Any three) <ul style="list-style-type: none"> ❖ Increases the incidence of cataract, throat and lung irritation and aggravation of asthma or emphysema, skin cancer and diminishing the functioning of immune system in human beings. ❖ Juvenile mortality of animals. ❖ Increased incidence of mutations ❖ In plants, photosynthetic chemicals will be affected and therefore photosynthesis will be inhibited. Decreased photosynthesis will result in increased atmospheric CO₂ resulting in global warming and also shortage of food leading to food crisis. ❖ Increase in temperature changes the climate and rainfall pattern which may result in flood / drought, sea water rise, imbalance in ecosystems affecting flora and fauna. 		3
22	How are microbial inoculants used to increase the soil fertility? <ul style="list-style-type: none"> ❖ Bio-fertilizers are defined as preparations containing living cells or latent cells of efficient strains of microorganisms that help crop plants uptake of nutrients by their interactions in the rhizosphere when applied through seed or soil. Advantages: <ul style="list-style-type: none"> ❖ They are efficient in fixing nitrogen, solubilising phosphate and decomposing cellulose. ❖ They are designed to improve the soil fertility, plant growth, and also the number and biological activity of beneficial microorganisms in the soil. ❖ They are eco-friendly organic agro inputs and are more efficient and cost effective than chemical fertilizers. 		3
23	Primary introduction Introduced variety is well adapted to the new environment without any alternation to the original genotype.	Secondary introduction. Introduced variety is subjected to selection to isolate a superior variety and hybridized with a local variety to transfer	3
24	Objectives of Plant Breeding (Any three) <ul style="list-style-type: none"> • To increase yield, vigour and fertility of the crop • To increase tolerance to environmental condition, salinity, temperature and drought. • To prevent the premature falling of buds, fruits etc. • To improve synchronous maturity. • To develop resistance to pathogens and pests. • To develop photosensitive and thermos-sensitive varieties. 		3

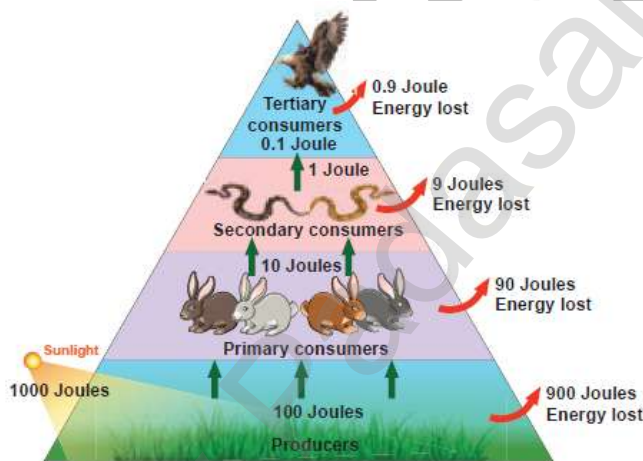
PART-IV

3X5=15

25 a **Ten percent law**

This law was proposed by Lindeman (1942). It states that during transfer of food energy from one trophic level to other, only about 10% stored at every level and rest of them (90%) is lost in respiration, decomposition and in the form of heat. Hence, the law is called ten percent law.

Example: It is shown that of the 1000 Joules of Solar energy trapped by producers. 100 Joules of energy is stored as chemical energy through photosynthesis. The remaining 900 Joules would be lost in the environment. In the next trophic level herbivores, which feed on producers get only 10 Joules of energy and the remaining 90 Joules is lost in the environment. Likewise, in the next trophic level, carnivores, which eat herbivores store only 1 Joule of energy and the remaining 9 Joules is dissipated. Finally, the carnivores are eaten by tertiary consumers which store only 0.1 Joule of energy and the remaining 0.9 Joule is lost in the environment. Thus, at the successive trophic level, only ten percent energy is stored.



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- b** The development of a plant community in an area where an already developed community has been destroyed by some natural disturbance (Fire, flood, human activity) is known as secondary succession. Generally, This succession takes less time than the time taken for primary succession.
Example: The forest destroyed by fire and excessive lumbering may be re-occupied by herbs over period of times.

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26 a **Sacred groves**

These are the patches or grove of cultivated trees which are community protected and are based on strong religious belief systems which usually have a significant religious connotation for protecting community. Each grove is an abode of a deity mostly village God or Goddesses like Aiyanar or Amman. 448 grooves were documented throughout Tamil Nadu, of which 6 groves (Banagudi shola, Thirukurungudi and Udaiyankudikadu, Sittannavasal, Puthupet and Devadanam) were taken up for detailed

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	floristic and faunistic studies. These groves provide a number of ecosystem services to the neighbourhood like protecting watershed, fodder, medicinal plants and micro climate control.	
b	<p>Sewage Disposal</p> <p>Sewage disposal treatment helps to transform raw sewage into an easier manageable waste and to retrieve and reuse treated residual sewage materials. Greenhouse gases like carbon-dioxide, methane, nitrous oxide are produced during sewage treatment which apart from causing the impact on the atmosphere, it also affect the urban ecosystem, aquatic ecosystems. By making use of advanced disposal treatment plants, climate change and pollution can be minimised.</p> <p>Sewage is waste matter such as faeces or used dirty water from homes and factories, which flows away through sewers. Sewage treatment is the process of removing contaminants from waste water, primarily from household sewage. Physical, chemical and biological processes are used to remove contaminants and produce treated waste water, that is safer for the environment. Sewage contains large amounts of organic matter and microbes. This cannot be discharged into natural water bodies like rivers and streams directly. Hence sewage is treated in sewage treatment plants (STPs) to make it less polluting. Sewage treatment generally involves three stages, called primary, secondary and tertiary treatment.</p>	5
27 a	<p>Types of hybridization:</p> <p>i. Intravarietal hybridization - The cross between the plants of same variety. Such crosses are useful only in the self-pollinated crops.</p> <p>ii. Intervarietal hybridization - The cross between the plants belonging to two different varieties of the same species</p> <p>iii. Interspecific hybridization - The cross between the plants belonging to different species belonging to the same genus is also called intra genic hybridization.</p> <p>Example: <i>Gossypium hirsutum</i> x <i>Gossypium arboreum</i> – Deviraj.</p> <p>iv. Intergeneric hybridization – The crosses are made between the plants belonging to two different genera. The disadvantages are hybrid sterility.</p> <p>Example: Raphanobrassica, Triticale.</p>	5
b	<p>Methods of Seed Storage</p> <p>i. Conventional Methods of Seed Storage</p> <p>Conventional storage includes storage in Bamboo structure, mud and earthen structure, wooden structure and underground structure. In village level storage is done in large level in onrete/cement silos, Metal or plastic drums and metal silos. Improved rural level storage structure includes storage in coal tar drum, udaipur bin, bamboo bin, pusa bin and metal bins.</p>	1

ii. Modern Methods of Seed Storage

a. Seed storage in cryopreservation: It is the technique of germplasm conservation (storage of cells, tissue, embryo or seeds) by ultra-low temperature in liquid nitrogen at -196°C . It is not practical for commercial seed storage purpose, but is useful to store the valuable germplasm for use in future which cannot be preserved by conventional methods.

b. Seed storage in gene bank: In gene bank, seed storage is the preservation of seed under controlled environmental condition which will prolong the viability of the seeds for long periods.

The temperature, relative humidity and seed moisture content. Containers and distribution arrangement vary for each and every type of seed.

c. Svalbard seed bank:

The seeds are stored in four ply sealed envelopes, and then placed into plastic tote containers on metal shelving racks. The storage rooms are kept at -18°C . The low temperature and limited access to O_2 will ensure low metabolic activity and delayed seed ageing. The permafrost surrounding will help to maintain low temperature of the seed when the electricity supply fails.

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