SHRI VIDHYABHARATHI MAT.HR.SEC.SCHOOL
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CELL NO: 99655-31727

PUBLIC EXAMINATION–MARCH - 2023

XI – BIO-BOTANY – TENTATIVE ANSWER KEY

MARK : 35

I. Answer all the questions.
Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

	SECTION - I		**8 x 1=8**
	A TYPES	**BTYPES**	
1.	c) Movement of chromosomes towards pole	a) Serotaxonomy	1
2.	a) Bacteria- crown gall	d) Phellogen	1
3.	b) Influx of K+	d) Potato,Tomato,Cotton	1
4.	b) 400 to 700nm	b) Influx of K+	1
5.	a) Serotaxonomy	c) Movement of chromosomes towards pole	1
6.	d) Potato,Tomato,Cotton	a) Bacteria- crown gall	1
7.	d) Phellogen	d) Foliarbud, cauline bud	1
8.	d) Foliarbud, cauline bud	b) 400 to 700nm	1
	SECTION - II		**4X2=8**
	Answer any four questions.		
9.	**Plectostele**: ➢ Xylem plates alternates with phloem plates. Example: *Lycopodium clavatum.*		1 1
10.	**Aggregate fruit with multiple fruit.**		2

Aggregate Fruit	**Multiple Fruit**
Aggregate fruits develop from a single flower having an apocarpous pistil.	A Multiple or composite fruit develops from the whole inflorescence along with its peduncle
Each of the free carpel is develops into a simple fruitlet.	Flowers fused together by succulent perianth
A collection of simple fruitlets makes an **aggregate fruit**.	Whole inflorescence forms a compact structure is called Multiple fruit.
Example: *Magnolia*, Raspberry, *Annona, Polyalthia*	Example: Pineapple, Jack fruit, Mulberry

11. **Transmission electron microscope:** — 2

- This is the most commonly used electron microscope which provides two dimensional image.
- A beam of electron passes through the specimen to form an image on fluorescent screen.
- The magnification is 1–3 lakhs times and resolving power is 2–10 Å.
- It is used for studying detailed structrue of viruses, mycoplasma, cellular organelles, etc.

12. (any 2) 2

Enzyme	Source	uses
Bacterial protease	Bacillus	Biological detergents
Bacterial glucose isomerase	Bacillus	Fructose syrup manufacture
Fungal lactase	Kluyvero-myces	Breaking down of lactose to glucose and galactose
Amylases	Aspergillus	Removal of starch in woven cloth production

13. 2

Porous wood or Hard wood, Example: *Morus*	**Non porous wood or Soft wood, Example: *Pinus***
Common in angiosperms	Common in gymnosperms
Porous because it contains vessels	Non-porous because it does not contain vessels

14. **The atmosphere in huge amount but higher plants fail to utilize it. Why?** — 2

- Plant absorb minerals from the soil along with water with the help of Roots Minerals are absorbed as salts
- Nitrogen is present in large quantities in the atmosphere in gaseous form.
- The gaseous nitrogen must be fixed in the form of Nitrate salts in the soil to facilitate absorption by plant.
- Nitrogen fixation can occur only by Non Biological means (Industrial processes or by lightning) and Biological means (Bacteria / Cyanobacteria Fungi)
- Therefore higher plants cannot utilize the atmospheric Nitrogen.

SECTION -III — **3X3=9**

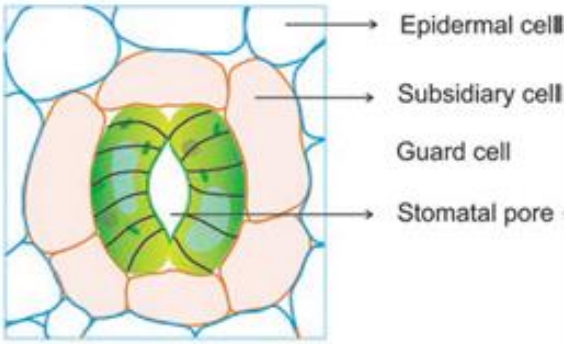
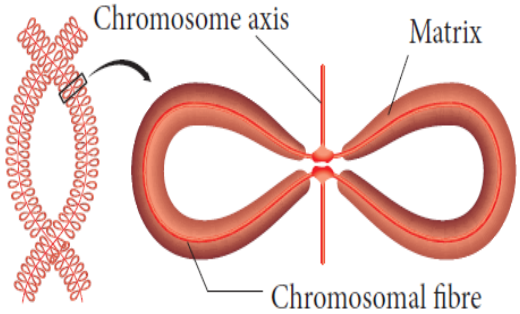
Question no. 19 compulsory

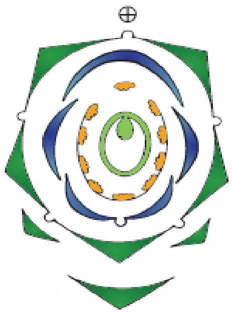
15. **Merits** — 1½

- The classification is based on the complexity of cell structure and organization of thallus.
- It is based on the mode of nutrition
- Separation of fungi from plants
- It shows the phylogeny of the organisms

Demerits — 1½

- The Kingdom Monera and protista accommodate both autotrophic and heterotrophic organisms, cell wall lacking and cell wall bearing organisms thus making these two groups more heterogeneous.
- Viruses were not included in the system.

16.	**Pitcher** ➢ The leaf becomes modified into a pitcher in *Nepenthes* and *Sarracenia*. In *Nepenthes* the basal part of the leaf is laminar and the midrib continues as a coiled tendrillar structure. The apical part of the leaf is modified into a pitcher the mouth of the pitcher is closed by a lid which is the modification of leaf apex. 	3
17.		2+1
18.	**Programmed cell death (PCD)** Senescence is controlled by plants own genetic programme and death of the plant or plant part consequent to senescence is called **Programmed Cell Death**. In short senescence of an individual cell is called **PCD**. The proteolytic enzymes involving PCD in plants are **phytaspases** and in animals are **caspases**.	3
19.	**Lampbrush chromosomes** occur at the diplotene stage of first meiotic prophase in oocytes of an animal **Salamandar** and in giant nucleus of the unicellular alga *Acetabularia*. It was first observed by **Flemming** in 1882. The highly condensed chromosome forms the chromosomal axis, from which lateral loops of DNA extend as a result of intense RNA synthesis. 	2+1

	SECTION - IV	2X5=10
20.	**The floral characters of clitoria ternatea.** **Inflorescence**: Solitary, Axillary **Flower:** Complete, bisexual, pentamerous, zygomorphic **Calyx:** Sepals 5, green, valvate aestivation. **Corolla:** Petals 5, Papilionaceous corolla imbricate aestivation. **Androecium:** Stamens 10, diadelphous (9)+1 Dithecous **Gynoecium:** Superior ovary, unilocular, Marginal Placentation **Fruit:** Legume **Seed :** Non-endospermous  Floral diagram Floral formula Br.,Brl.,%,⚥ $K_{(5)}$, C_5, $A_{(9)+1}$, $\underline{G}_1$	3 1 1
(OR)	**Economic importance of fungi :** ➢ Fungi provide delicious and nutritious food called mushrooms. They recycle the minerals by decomposing the litter thus adding fertility to the soil. Dairy industry is based on a single celled fungus called yeast. They deteriorate the timber. Fungi cause food poisoning due the production of toxins. **Beneficial activities** **Food** ➢ Mushrooms like *Lentinus edodes, Agaricus bisporus, Volvariella volvaceae* are consumed for their high nutritive value. Yeasts provide vitamin B and *Eremothecium ashbyii* is a rich source of Vitamin B12. **Medicine** ➢ Fungi produce antibiotics which arrest the growth or destroy the bacteria. Some of the antibiotics produced by fungi include Penicillin (*Penicillium notatum*) Cephalosporins (*Acremonium chrysogenum*) Griseofulvin (*Penicillium griseofulvum*). Ergot alkaloids (Ergotamine) produced by *Claviceps purpurea* is used as vasoconstrictors. **Industries** ➢ **Production of Organic acid:** For the commercial production of organic acids fungi are employed in the Industries. Some of the organic acids and fungi which help in the production of organic acids are: citric acid and gluconic acid – *Aspergillus niger*, Itaconic acid – *Aspergillus terreus*, Kojic acid – *Aspergillus oryzae.* **Bakery and Brewery** ➢ Yeast(*Saccharomyces cerevisiae*) is used for fermentation of sugars to	5

yield alcohol.Bakeries utilize yeast for the production of Bakery products like Bread, buns, rolls etc., *Penicillium roquefortii* and *Penicillium camemberti* were employed in cheese production.

Production of enzymes

- *Aspergillus oryzae*, *Aspergillus niger* were employed in the production of enzymes like amylase, protease, lactase etc. **Rennet** which helps in the coagulation of milk in cheese manufacturing is derived from *Mucor* spp.

Agriculture

- Mycorrhiza forming fungi like *Rhizoctonia, Phallus*, *Scleroderma* helps in absorption of water and minerals.
- Fungi like *Beauveria bassiana, Metarhizium anisopliae* are used as Biopesticides to eradicate the pests of crops. Gibberellin, produced by a fungus *Gibberella fujikuroi* induce the plant growth and is used as growth promoter.

Harmful activities

- Fungi like *Amanita phalloides*, *Amanita verna*, *Boletus satanus* are highly poisonous due to the production of Toxins. These fungi are commonly referred as **"Toad stools"**.

21.

Anatomical differences between dicot root and monocot root

S.N	Characters	Dicot root	Monocot root
1.	Pericyle	Gives rise to lateral roots, phellogen and a part of vascular cambium.	Gives rise to lateral roots only.
2.	Vascular tissue	Usually limited number of xylem and phloem strips.	Usually more number of xylem and phloem strips,
3.	Conjunctive tissue	Parenchymatous; Its cells are differentiated into vascular cambium.	Mostly sclerenchymatous but sometimes parenchymatous. It is never differentiated in to vascular cambium.
4.	Cambium	It appears as a secondary meristem at the time of secondary growth.	It is altogether absent.
5.	xylem	Usually tetrach	Usually polyarch

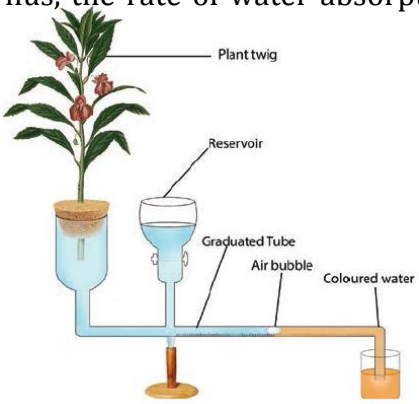
5

(OR)

Ganongs potometer

- Ganongs potometer is used to measure the rate of transpiration indirectly. In this, the amount of water absorbed is measured and assumed that this amount is equal to the amount of water transpired.
- Apparatus consists of a horizontal graduated tube which is bent in opposite directions at the ends. One bent end is wide and the other is narrow. A reservoir is fixed to the horizontal tube near the wider end. The reservoir has a stopcock to regulate water flow.
- The apparatus is filled with water from reservoir. A twig or a small plant is fixed to the wider arm through a split cock. The other bent end of the horizontal tube is dipped into a beaker containing coloured

3

	water. ➢ An air bubble is introduced into the graduated tube at the narrow end (Figure 11.19). keep this apparatus in bright sunlight and observe.As transpiration takes place, the air bubble will move towards the twig. The loss is compensated by water absorption through the xylem portion of the twig. Thus, the rate of water absorption is equal to the rate of transpiration.  	2

MARK ANALYSIS

(WITHOUT CHOICE)

PART	Questions	Total Questions	Book Back Questions	Interior Questions
I	1 Mark	8	5	2+1(NEET)
II	2 Marks	6	4	2
6	3 Marks	5	2	3
IV	5 Marks	4	2	2
Total Marks		**55**	**29**	**26**
Percentage		100 %	53%	47 %

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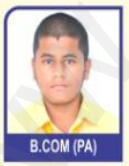
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99%
REVANTH S


98%
SHANMUGAKARTHICK G

மாதத்தில் ஒவ்வொரு சனி மற்றும் ஞாயிற்றுக்கிழமைகளில் 10 மற்றும் 11- ஆம் வகுப்பு சேர்க்கைக்கான SCHOLARSHIP ENTRANCE EXAM நடைபெறும்

Time : 10.00am Onwards

Venue : SVB SCHOOL CAMPUS.