



HIGHER SECONDARY SECOND YEAR PUBLIC EXAMINATION – MARCH -2025

BIO-BOTANY –ANSWER KEY

Instructions: Use Blue or Black ink to write and underline and pencil to draw diagrams.

Marks: 35

SECTION – I

Note: (i) Answer all the questions.

8x1=8

(ii) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.

Q.No	Options	A type	Q.No	Options	B type	Marks
1	(a)	7	1	(c)	Soil	1
2	(d)	2 – 10%	2	(d)	Meristem culture	1
3	(c)	seed	3	(d)	2 – 10%	1
4	(d)	DNA	4	(a)	Appiko movement	1
5	(d)	Meristem culture	5	(a)	Pod shape in garden pea	1
6	(a)	Appiko movement	6	(c)	seed	1
7	(c)	Soil	7	(a)	7	1
8	(a)	Pod shape in garden pea	8	(d)	DNA	1

SECTION – II

Note: Answer any four of the following questions.

4X2=8

9	Pollination by bees	2
10	Pollenkitt is contributed by the tapetum and coloured yellow or orange and is chiefly made of carotenoids or flavonoids. It is an oily layer forming a thick viscous coating over pollen surface. It attracts insects and protects damage from UV radiation.	2
11	<ul style="list-style-type: none"> Many polyploids are more vigorous and more adaptable than diploids. Many ornamental plants are autotetraploids and have larger flower and longer flowering duration than diploids. Autopolyploids usually have increase in fresh weight due to more water content. Aneuploids are useful to determine the phenotypic effects of loss or gain of different chromosomes. Many angiosperms are allopolyploids and they play a role in an evolution of plants. (any2) 	1+1=2
12	pineapple, banana, strawberry and potato.	2
13	<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. (any2) 	1+1=2
14	Biomedicines The medicinally useful molecules obtained from plants that are marketed as drugs are called Biomedicines. Botanical medicines Medicinal plants which are marketed as powders or in other modified forms are known as Botanical medicines.	2

SECTION – III

Note: Answer any three of the following questions. Question No. 19 is compulsory.

3X3=9

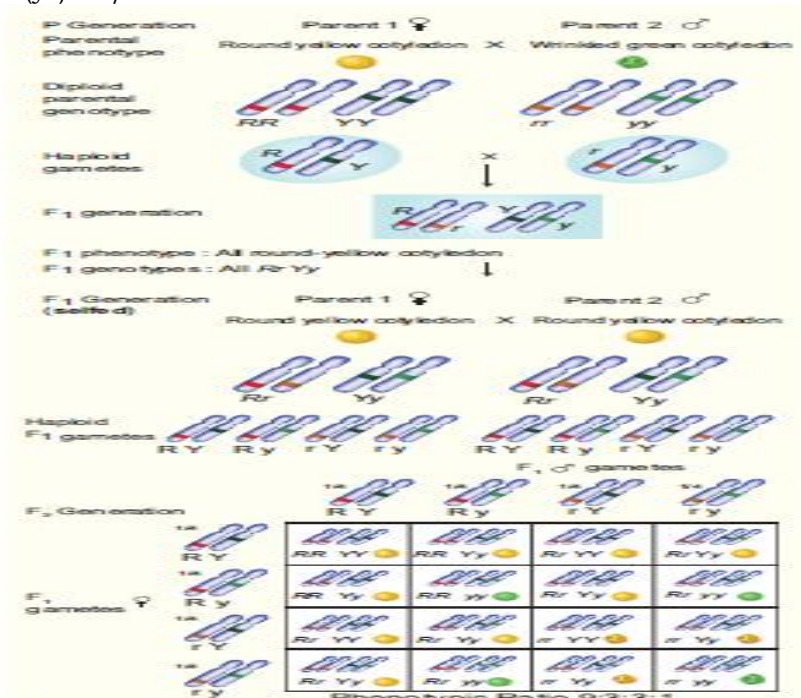
15	<p style="text-align: center;">(Any 3)</p>	3
16	• Millions of artificial seeds can be produced at any time at low cost.	3

	<ul style="list-style-type: none"> • They provide an easy method to produce genetically engineered plants with desirable traits. • It is easy to test the genotype of plants. • They can potentially stored for long time under cryopreservation method. • Artificial seeds produce identical plants • The period of dormancy of artificial seeds is greatly reduced, hence growth is faster with a shortened life cycle. (any3) 	
17	Casuarina Eucalyptus Malai Vembu Teak Kadambu trees.	3
18	The superiority of the F1 hybrid in performance over its parents is called heterosis or hybrid vigour. Vigour refers to increase in growth, yield, greater adaptability of resistance to diseases, pest and drought.	3
19	<ul style="list-style-type: none"> • Rice is the easily digestible calorie rich cereal food which is used as a staple food in Southern and North East India. • Various rice products such as Flaked rice (Aval), Puffed rice / parched rice (Pori) are used as breakfast cereal or as snack food in different parts of India. • Rice bran oil obtained from the rice bran is used in culinary and industrial purposes. • Husks are used as fuel, and in the manufacture of packing material and fertilizer. (any3) 	3

SECTION - IV

Note: Answer all the questions.

2X5=10

20 (a)	<p>Dihybrid cross</p> <p>The crossing of two plants differing in two pairs of contrasting traits is called dihybrid cross. In dihybrid cross, two characters (colour and shape) are considered at a time. Mendel considered the seed shape (round and wrinkled) and cotyledon colour (yellow & green) as the two characters. In seed shape round (R) is dominant over wrinkled (r) ; in cotyledon colour yellow (Y) is dominant over green (y). Hence the pure breeding round yellow parent is represented by the genotype RRYT and the pure breeding green wrinkled parent is represented by the genotype rryy. During gamete formation the paired genes of a character assort out independently of the other pair. During the F1 x F1 fertilization each zygote with an equal probability receives one of the four combinations from each parent. The resultant gametes thus will be genetically different and they are of the following four types:</p> <ol style="list-style-type: none"> 1) Yellow round (YR) - 9/16 2) Yellow wrinkled (Yr) - 3/16 3) Green round (yR) - 3/16 4) Green wrinkled (yr) - 1/16 	3
		1
		1

(b)	<p>Advantages</p> <p>The advantages of Bt cotton are:</p> <ul style="list-style-type: none"> • Yield of cotton is increased due to effective control of bollworms. • Reduction in insecticide use in the cultivation of Bt cotton • Potential reduction in the cost of cultivation. <p>Disadvantages</p> <p>Bt cotton has some limitations:</p> <ul style="list-style-type: none"> • Cost of Bt cotton seed is high. • Effectiveness up to 120 days after that efficiency is reduced • Ineffective against sucking pests like jassids, aphids and whitefly. • Affects pollinating insects and thus yield. 	5
21 (a)	<ul style="list-style-type: none"> • The temperate halophytes are herbaceous but the tropical halophytes are mostly bushy • In addition to the normal roots, many stilt roots are developed • A special type of negatively geotropic roots called pneumatophores with pneumathodes to get sufficient aeration are also present. They are called breathing roots. Example: <i>Avicennia</i> • Presence of thick cuticle on the aerial parts of the plant body • Leaves are thick, entire, succulent and glossy. Some species are aphyllous (without leaves). • Vivipary mode of seed germination is found in halophytes 	5
(b)	<p>i) The inter-locking pattern of a number of food chain form a web like arrangement called food web.</p> <p>ii) Significance of food web</p> <ul style="list-style-type: none"> • Food web is constructed to describe species interaction called direct interaction. • It can be used to illustrate indirect interactions among different species. • It can be used to study bottom- up o top-down control of community structure. • It can be used to reveal different patterns of energy transfer in terrestrial and aquatic ecosystems. 	<p>2</p> <p>3</p>

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