

2020-BIOLOGY ANSWER KEY

Part III

Type A

BIO-BOTANY

Part-I

Section-1

1. C. Meristem Culture
2. B.malaivembu & kadambu
3. C.Half red flowered (Compare with Incomplete dominance phenomenon)
4. D. (1)-ii;(2)-iv;(3)-(i); (4)-iii
5. B. Microspore
6. C.GFP
7. C.Bad ozone
8. D.Atomita

Section-2

9. **Cybrid:** (Pg:113)- The fusion product of protoplasts without nucleus of different cells is called a cybrid. (2 mark)
10. **Four uses of seed ball:** (Pg-142)- Any four uses- ($\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$)
11. **Objectives of clean development mechanism:** (Pg-172) - Clean Development Mechanism (CDM) is defined in the Kyoto protocol (2007) which provides project based mechanisms with two objectives to prevent dangerous climate change and to reduce green house gas emissions. CDM projects helps the countries to reduce or limit emission and stimulate sustainable development.
12. **Organic farming:** pg:214 - Organic farming is an alternative agricultural system in which plants/crops are cultivated in natural ways by using biological inputs to maintain soil fertility and ecological balance thereby minimizing pollution and wastage. (2 mark)
13. **Nilavembu**-(Pg-212)- Botanical name- *Andrographis paniculata* (1 mark)Family- Acanthaceae (1/2 mark) and 1 uses of nilavembu- treat liver disorders;effectively used to treat malaria and dengue (1/2 mark)
14. **Enzymes in genetic engineering** (Pg:84)- Restriction endonuclease and DNA ligase (must)-1 mark; Alkaline phosphatase-1

Section-3

15. **Chloroplast Inheritance:**pg:48 F1- Dark green leaved (1Mark)

certain traits are governed either by the chloroplast or mitochondrial genes. This phenomenon is known as extra nuclear inheritance, it involves cytoplasmic organelles such as chloroplast

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and mitochondrion that act as inheritance vectors, it is also called Cytoplasmic inheritance. It is due to the chloroplast gene found in the ovum of the female plant which contributes the cytoplasm during fertilization since the male gamete contribute only the nucleus but not cytoplasm.(2mark)

16. **PBR 322** (Pg-87)- pBR 322 plasmid is a reconstructed plasmid and most widely used as cloning vector (1Mark); it contains 4361 base pairs. In pBR, **p** denotes plasmid, **B** and **R** respectively the names of scientist **B**oliver and **R**odriguez who developed this plasmid (1 Mark) The number **322** is the number of plasmid developed from their laboratory, contains amp^R and tetr two different antibiotic resistance genes and recognition sites (1Mark)
17. **Green house effect**(Pg-170)- 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. The gases that capture heat are called **Green House Gas**.carbon dioxide (CO₂)-60% , methane (CH₄)-20% Nitrous Oxide (N₂O)-6%; CFC-20% and relative contributions of green house gases: carbon dioxide (CO₂)-60% , methane (CH₄)-20% Nitrous Oxide (N₂O)-6%; CFC-20%
18. **Cryopreservation** (Pg.117): Cryo-conservation, is a process by which protoplasts, cells, tissues, organelles, organs, extracellular matrix, enzymes or any other biological materials are subjected to preservation by cooling to very low temperature of -196°C using liquid nitrogen. (2 Mark)
At this extreme low temperature any enzymatic or chemical activity of the biological material will be totally stopped and this leads to preservation of material in dormant status. (1Mark)
19. **Habitat and niche** (Pg-123)- Each point 1 mark (1+1+1)

Section-4

20. (a) **Mode of pollen tube entry to ovule** (pg:22)- Diagram- 2mark and Each type 1 mark Porogamy, Chalazogamy & Mesogamy (1+1+1)
(or)
- (b) **Gene mapping and its uses** (Pg-63,63): The diagrammatic representation of position of genes and related distances between the adjacent genes is called genetic mapping/ Linkage mapping (1Mark); first developed by Morgan's student Alfred H Sturtevant in 1913. It provides clues about where the genes lies on that chromosome(1 Mark); uses (3 Marks): It is used to determine gene order, identify the locus of a gene and calculate the distances between genes(1) They are useful in predicting results of dihybrid and trihybrid crosses(1). It allows the geneticists to understand the overall genetic complexity of particular organism.(1)
21. (a) **Protection of ecosystem**: Pg- 160: Any 5 points
(or)
- (B) (i)Who will get new variety? – Somu (1 mark)- Artificial selection
(ii) Advantages and disadvantages of selection (pg.192)- **Mass selection**: After repeated selection for about five to six years, selected seeds are multiplied and distributed to the

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