1 Mark Questions

1. The development of embryos from the cells of nucellus or integument is known as
   (a) apogamy (b) apospory
   (c) parthenogenesis (d) adventive embryony

2. Synthesis of DNA polymerase occurs at
   (a) G_1 (b) S
   (c) G_2 (d) M

3. When the gynoecium is present in the top most position of thalamus, the flower is known as
   (a) epigynous (b) hypogynous
   (c) perigynous (d) inferior

4. Synthetic seed is produced by encapsulating somatic embryo with
   (a) sodium alginate (b) sodium nitrate
   (c) sodium acetate (d) sodium sulphate

5. Which of the following acts as a precursor of IAA biosynthesis?
   (a) Tryptophan
   (b) Methionine
   (c) Putrescine
   (d) Geranyl geranyl pyrophosphate

6. Change from purine to pyrimidine or pyrimidine to purine is
   (a) transition (b) transversion
   (c) frameshift (d) reversion

7. Genetic engineering for male sterility utilises the gene
   (a) aro A (b) Barnase
   (c) *Bt* (d) Ctr I

8. Which plant part of *Crocus sativus* yields saffron, a food colourant?
   (a) Root (b) Leaf
   (c) Stigma (d) Seed

9. A form of disease reaction with complete resistance to some races and complete susceptibility to other races is termed as
   (a) vertical resistance
   (b) polygenic resistance
   (c) horizontal resistance
   (d) partial resistance

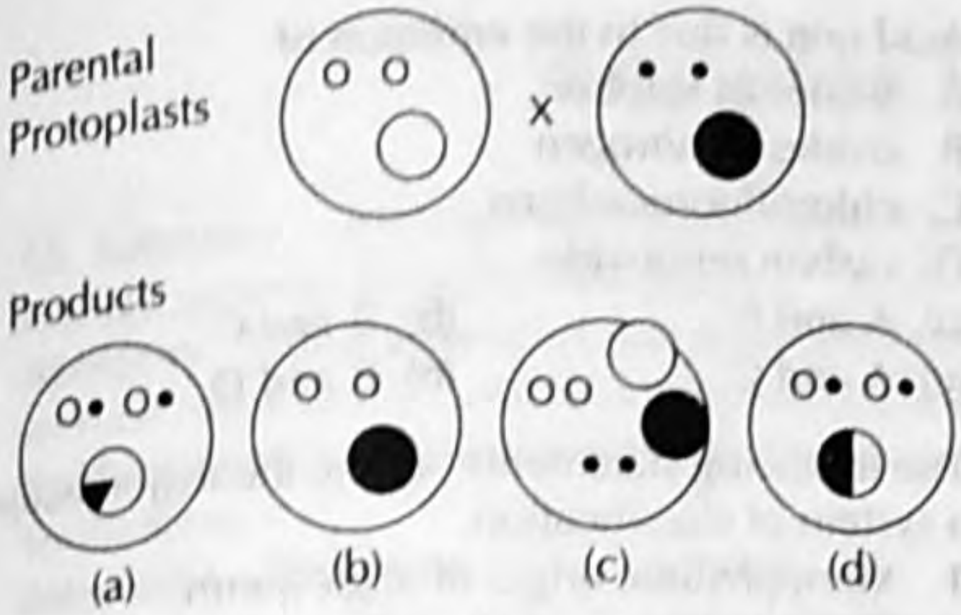
10. Which of the following is a logical sequence of carbon cycle?
    (a) Producer → Decomposer → Consumer
    (b) Consumer → Producer → Decomposer
    (c) Producer → Consumer → Decomposer
    (d) Decomposer → Consumer → Producer

2 Marks Questions

11. A transverse section of monocot stem can be distinguished from that of a dicot stem by observing the
    (a) scattered and collateral closed vascular bundle
    (b) cortex and collenchymatous hypodermis
    (c) collateral open vascular bundle with medullary rays
    (d) absence of bundle sheath and presence of pith

12. Choose the right combination for 'Kranz anatomy' from the following features
    A. Radially arranged parenchymatous cells around each vascular bundle.
    B. Vascular bundle is enclosed by loosely packed spongy mesophyll cells.
    C. The leaf cells possess one type of chloroplast.
    D. Mesophyll cells differentiated into palisade and spongy parenchyma.
    (a) A and C (b) A and B
    (c) B and C (d) B and D

13. In the given diagram, fusion of two protoplasts along with the products are presented. Identify which one is the cybrid?



14. The storage protein found in wheat and pea are
(a) glutenin and patatin
(b) glutenin and vicilin
(c) zein and vicilin
(d) vicilin and patatin

15. Two cells X and Y are adjacent with each other. The cell X has an osmotic potential of –20 bars and turgor pressure of 12 bars. Cell Y has an osmotic potential of –16 bars and turgor pressure of 6 bars. In which direction water will move?
(a) From cell X to cell Y
(b) From cell Y to cell X
(c) There will be no movement of water
(d) Water can move either from cell X to cell Y or from Y to X

16. In photorespiration, glycolate and glyoxylate are produced sequentially in the following organelles. Choose the correct sequence.
(a) Chloroplast and mitochondria
(b) Chloroplast and peroxisome
(c) Peroxisome and mitochondria
(d) Peroxisome and chloroplast

17. $NH_4^+ \xrightarrow{Nitrosomonas} I \xrightarrow{Nitrobacter} II$

In the given reaction sequence, which of the following statement is correct?
(a) I is NO_2, II is N_2O (b) I is NO_3, II is NO_2
(c) I is NO_2, II is NO_3 (d) I is N_2O, II is NO_2

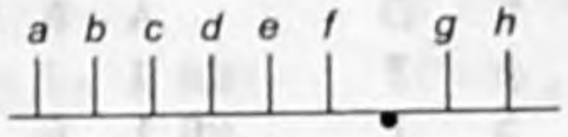
18. $NADH \rightarrow Q \rightarrow Cyt\text{-}b \rightarrow Cyt\text{-}c_1 \rightarrow Cyt\text{-}c \rightarrow Cyt(a + a_3) \rightarrow O_2$

Sequence of electron transfer in oxidative phosphorylation is given above. Which of the following pair of inhibitors block the electron transfer in the steps marked with ⊕?
(a) Rotenone and CO
(b) Antimycin-A and CO
(c) Antimycin-A and DCMU
(d) DCMU and CO

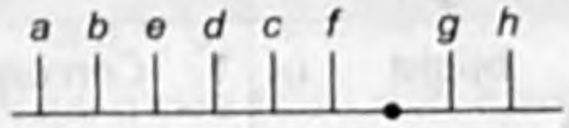
19. Purple leaves (Pl) dominant to green leaves (pl) and pigmy plant (pg) recessive to normal plant size (Pg) are two genes on chromosome number 6 of maize. Hybrids from the cross Plpg / Plpg × plPg/plPg where test crossed and the following progenies were obtained in the F_2
419 : Normal size plants with green leaves
381 : Pigmy plants with purple leaves
79 : Normal size plants with purple leaves
121 : Pigmy plants with green leaves
What would be the map distance between Pl and pg?
(a) 10 cM (b) 15 cM
(c) 20 cM (d) 30 cM

20. Which of the following pairs of DNA sequences could qualify as terminal parts of a bacterial IS elements?
(a) 5′-GAATCCGCA-3′ and 5′-ACGCCTAAG-3′
(b) 5′-GAATCCGCA-3′ and 5′-CTTAGGCGT-3′
(c) 5′-GAATCCGCA-3′ and 5′-GAATCCGCA-3′
(d) 5′-GAATCCGCA-3′ and 5′-TGCGGATTC-3′

21. Assume a chromosome with the following gene sequence.



The following aberrations in this chromosome were observed



What would be the kind of aberration?
(a) Deletion (b) Translocation
(c) Inversion (d) Duplication

Q. No. 22 to 25 are Matching Exercises
In each question, each item A, B, C and D in Group I matches one of the items in Group II. Choose the correct match from the alternatives (a), (b), (c) and (d).

22.

Group I	Group II
A. Meristem culture	1. Virus elimination
B. Suspension culture	2. Homozygosity
C. Protoplast culture	3. Packed-cell volume
D. Anther culture	4. Embryo rescue
	5. Macerozyme
	6. Liposome

Codes

	A	B	C	D		A	B	C	D
(a)	2	1	4	6	(b)	1	3	5	2
(c)	3	2	5	4	(d)	5	6	2	1

23.

Group I	Group II
A. Biolistic	1. Gene pulser
B. *Agrobacterium*	2. PDS1000He
C. Electroporation	3. Micromanipulator
D. Microinjection	4. Silicon carbide
	5. *vir* operons
	6. *rol C*

Codes

	A	B	C	D
(a)	2	5	1	3
(c)	5	6	2	4

	A	B	C	D
(b)	2	1	6	4
(d)	1	5	4	2

24.

Group I	Group II
A. Reserpine	1. *Thea sinensis*
B. Camphor	2. *Taxus brevifolia*
C. Pyrethrin	3. *Rauwolfia serpentina*
D. Catechin	4. *Ocimum americanum*
	5. *Chrysanthemum cinerarifolium*
	6. *Gloriosa superba*

Codes

	A	B	C	D
(a)	2	3	6	2
(c)	3	4	5	1

	A	B	C	D
(b)	4	2	6	3
(d)	1	6	3	5

25.

Group I	Group II
A. Early blight of potato	1. *Cercospora personata*
B. Panama disease of banana	2. *Alternaria solani*
C. Tikka disease of groundnut	3. *Plasmodiophora brassicae*
D. Club root disease of cabbage	4. *Fusarium oxysporum*
	5. *Helminthosporium oryzae*
	6. *Macrophomina phaseolina*

Codes

	A	B	C	D
(a)	1	3	2	4
(c)	4	2	5	6

	A	B	C	D
(b)	2	4	1	3
(d)	6	5	2	3

26. Acid rain is due to the emission of
A. oxides of sulphur
B. oxides of nitrogen
C. chlorofluorocarbons
D. carbon monoxide
(a) A and B (b) B and C
(c) A and C (d) B and D

27. The following statements outline the major features a system of classification.
1. Monophyletic origin of angiosperm.
2. Dicotyledons are the primitive monocotyledons.
3. Division of dicotyledonae into Lignosae and Herbaceae.

Which of the following system of classification represents above features?
(a) Linnaeus (b) Bentham and Hooker
(c) Engler and Prantl (d) Hutchinson

28. Following are the symptoms of a disease in wheat
1. Spikelets transformed into a mass of black or olive green powdery spores.
2. Spores in young spikelets are covered by a delicate silvery membrane.
3. After liberation of spores, rachis of the spikelet is left behind as a naked stalk.

Identify the disease, which manifests these symptoms.
(a) Stem rust of wheat
(b) Loose smut of wheat
(c) Bunt of wheat
(d) Ear rot of wheat

29. Which of the following pair of compounds involved in pathogenecity represents phytoalexin and toxin?
(a) Ipomeamarone and Rishitin
(b) Piricularin and Victorin
(c) Lycomarasmine and Pisatin
(d) Medicarpin and Abrin

30. There are three kinds of RNA polymerases (I, II, III) in eukaryotic cells, each specific for one class of RNA molecule.
Which of the following is a correct match?
(a) RNA pol I - *r*RNA, RNA pol II - *t*RNA
(b) RNA pol II - *m*RNA, RNA pol III - *r*RNA
(c) RNA pol I - *r*RNA, RNA pol II - *m*RNA
(d) RNA pol I - *t*RNA, RNA pol III - *r*RNA