

L : Botany

Q.1 – 10 carry one mark each

- Q.1 The development of embryos from the cells of nucellus or integument is known as
- (A) Apogamy (B) Apospory
(C) Parthenogenesis (D) Adventive embryony
- Q.2 Synthesis of DNA polymerase occurs at
- (A) G1 (B) S
(C) G2 (D) M
- Q.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
- Q.4 Synthetic seed is produced by encapsulating somatic embryo with
- (A) Sodium alginate (B) Sodium nitrate
(C) Sodium acetate (D) Sodium sulphate
- Q.5 Which of the following acts as a precursor of IAA biosynthesis?
- (A) Tryptophan (B) Methionine
(C) Putrescine (D) Geranyl geranyl pyrophosphate
- Q.6 Change from purine to pyrimidine or pyrimidine to purine is
- (A) Transition (B) Transversion
(C) Frame shift (D) Reversion
- Q.7 Genetic engineering for male sterility utilizes the gene
- (A) *aroA* (B) *Barnase*
(C) *Bt* (D) *CrtI*
- Q.8 Which plant part of *Crocus sativus* yields saffron, a food colorant?
- (A) Root (B) Leaf
(C) Stigma (D) Seed
- Q.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

Q.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

Q.11 – 30 carry two marks each

Q.11 A transverse section of monocot stem can be distinguished from that of a dicot stem by observing the

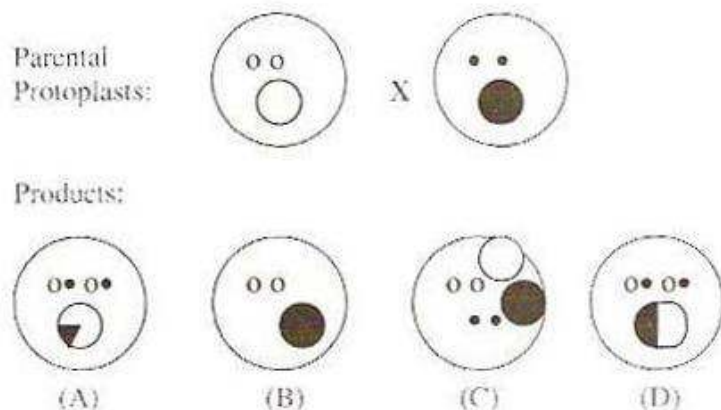
- (A) Scattered and collateral closed vascular bundle
- (B) Cortex and collenchymatous hypodermis
- (C) Collateral open vascular bundle with medullary rays
- (D) Absence of bundle sheath and presence of pith

Q.12 Choose the right combination for 'Kranz anatomy' from the following features

- P Radially arranged parenchymatous cells around each vascular bundle
- Q Vascular bundle is enclosed by loosely packed spongy mesophyll cells
- R The leaf cells possess one type of chloroplast
- S Mesophyll cells differentiated into palisade and spongy parenchyma

- (A) P, R
- (B) P, Q
- (C) Q, R
- (D) Q, S

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



Q.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

- Q.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

- Q.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

- Q.17 $\text{NH}_4^+ \xrightarrow{\text{Nitrosomonas}} \text{I} \xrightarrow{\text{Nitrobacter}} \text{II}$
 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

- Q.18 $\text{NADH} \rightarrow \text{Q} \xrightarrow{\oplus} \text{Cytb} \rightarrow \text{Cyt}c_1 \rightarrow \text{Cyt}c \xrightarrow{\oplus} \text{Cyt}(a + a_3) \rightarrow \text{O}_2$

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 \oplus ?

- (A) Rotenone and CO (B) Antimycin-A and CO
 (C) Antimycin-A and DCMU (D) DCMU and CO

- Q.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 $\text{Plpg} / \text{Plpg} \times \text{plPg} / \text{plPg}$ 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

- Q.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'

Q.24	Group 1		Group 2	
	P	Reserpine	1	<i>Thea sinensis</i>
	Q	Camphor	2	<i>Taxus brevifolia</i>
	R	Pyrethrin	3	<i>Rauwolfia serpentina</i>
	S	Catechin	4	<i>Ocimum americanum</i>
		5	<i>Chrysanthemum cinerarifolium</i>	
		6	<i>Gloriosa superba</i>	
	(A)	(B)	(C)	(D)
	P-2	P-4	P-3	P-1
	Q-3	Q-2	Q-4	Q-6
	R-6	R-6	R-5	R-3
	S-2	S-3	S-1	S-5

Q.25	Group 1		Group 2	
	P	Early blight of potato	1	<i>Cercospora personata</i>
	Q	Panama disease of banana	2	<i>Alternaria solani</i>
	R	Tikka disease of groundnut	3	<i>Plasmodiophora brassicae</i>
	S	Club root disease of cabbage	4	<i>Fusarium oxysporum</i>
		5	<i>Helminthosporium oryzae</i>	
		6	<i>Macrophomina phaseolina</i>	
	(A)	(B)	(C)	(D)
	P-1	P-2	P-4	P-6
	Q-3	Q-4	Q-2	Q-5
	R-2	R-1	R-5	R-2
	S-4	S-3	S-6	S-3

Q.26 Acid rain is due to the emission of

- P Oxides of sulphur
- Q Oxides of nitrogen
- R Chlorofluorocarbons
- S Carbon monoxide

Choose the right combination

- | | |
|----------|----------|
| (A) P, Q | (B) Q, R |
| (C) P, R | (D) Q, S |

Q.27 The following statements outline the major features of a system of classification

- Monophyletic origin of angiosperm
- Dicotyledons are the primitive over monocotyledons
- Division of dicotyledonae into Lignosae and Herbaceae

Which of the following system of classifications represents above features?

- (A) Linnacus
- (B) Bentham and Hooker
- (C) Engler and Prantl
- (D) Hutchinson

Q.28 Following are the symptoms of a disease in wheat

- Spikelets transformed into a mass of black or olive green powdery spores
- Spores in young spikelets are covered by a delicate silvery membrane
- 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

Q.29 Which of the following pair of compounds involved in pathogenicity represents phytoalexin and toxin?

- (A) Ipomeamarone and Rishitin
- (B) Piricularin and Victorin
- (C) Lycomarasmine and Pisatin
- (D) Medicarpin and Abrin

Q.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 – rRNA, RNA pol II – tRNA
- (B) RNA pol II – mRNA, RNA pol III – rRNA
- (C) RNA pol I – rRNA, RNA pol II – mRNA
- (D) RNA pol I – tRNA, RNA pol III – rRNA

End of Section L