BOTANY : : 2006

1. Study the following :

List – I	**List – II**
A. Zacharias Janssen	I. Sexual reproduction
B. Camerarius	II. Conduction of water
C. Stephen Hales	III. Compound microscope
D. Knoll and Ruska	IV. Crystallization of urease
	V. Electron microscope

The correct match is :

	A	B	C	D		A	B	C	D
(1)	V	II	IV	III	(2)	III	I	II	V
(3)	II	IV	I	III	(4)	V	II	III	I

2. Which one of the following has epiphytic features and flattened photosynthetic roots, without formal organisation of stem and leaves ?
(1) Tinospora (2) Trapa (3) Taeniophyllum (4) Vanda

3. Parts of two plants were observed, structure A developed aerially and produces roots when comes in contact with the soil. Structure B develops from underground part of the stem, grows obliquely becomes aerial and produces roots on its lower surface. Identify, respectively the structures of A and B
(1) Sucker, Stolon (2) Stolon, Runner
(3) Stolon, Sucker (4) Runner, Stolon

4. Study the following table :

I. Polyslphonous Pollen	Floral nectaries	Simple
II. Angular collocyte	Monosiphonous	Synandry
III. Inserted stamens	Simple leaves	Spines
IV. Exerted Stamens	Reticulate diver gent venation	Pepo

Select the correct pair of answers in which the former in the pair shows the set of characters present in Cucurbita and the latter in the pair shows the set of character absent in Acacia:
(1) I and III (2) I and II (3) II and III (4) III and IV

5. Arrange the following plants in the ascending order based in the number of carpels they possess :
l. Oenothera II. Acacia melanoxylon
III. Squill IV. Lettuce
(1) IV, III, I, II (2) II, IV, III, I
(3) II, III, IV, I (4) I, IV, III, II

6. In the fully organised polygonum type of embryosac, what is the ratio of haploid, diploid and triploid nuclei?
(1)3:1:3 (2)6:0:1 (3) 6 : 1 : 0 (4) 3 : 2 : 3

7. What type of cell division takes place in the functional megaspore initially in angiosperms ?
(1) Homeotypic without cytokinesis (2) Reductional without cytokinesis
(3) Somatic followed by cytokinesis (4) Meotic followed by cytokinesis

8. Coffee plant has chormosome number of 2n in its somatic cells. What is the chromosome number in the edible part of coffee seed ?
(1) n (2) 2n (3) 3n (4) 4n

9. Two dry fruits (A and B) were observed. Both developed from unilocular ovaries of monocarpellary gynoecia. In fruit A, pericarp and seed coat are free. It liberated the seeds only after the disintegration of

the. pericarp. Fruit B dehisced dorsiventrally liberating the seeds. In the following the former in the pair represents A and latter B. To which types of fruits, A and B respectively belong

(1) Achene and legume (2) Nut and follicle

(3) Cypsela and siliqua (4) Pyxidium and septicidal capsule

10. In which one of the following the usual taxonomic hierarchy is not followed ?

(1) Polypetalae and Gamopetalae (2) Gamopetalae and Monochlamydae

(3) Monochlamydae and Monocots (4) Polypetalae and Monocots

11. *Assertion (A) :* A morphology based approach to taxonomy is called 'alpha taxonomy' and it is old fashioned.

Reason *(R) :* A multi-disciplinary approach to taxonomy called 'Omega taxonomy' is favoured in recent years, as it excludes morphological features.

(1) A and R are true and R is the correct explanation of A

(2) A and R are true but R is not the correct explanation of A .

(3) A is true but R is false

(4) A is false but R is true

12. Study the following lists :

List – I	List –II
A. Lactuca	I. Next to Heteromerae
B. Physalis	II. Before Calyciflorae
C. Althea	III. Next to Disciflorae
D. Derris	IV. Between Calyciflorae and Heteromerae
	V. Between Thalamiflorae and Calyciflorae

Correct match is :

	A	B	C	D		A	B	C	D
(1)	V	IV	III	I	(2)	IV	II	I	V
(3)	IV	I	II	III	(4)	II	III	I	IV

13. The raw material obtained from which one of the following plants is used in paper making?

(1) Jerusalem artichoke (2) Oryza sativa

(3) Sorghum vulgare (4) Butea monosperma

14. The triploid number of chromosomes of the first taxon is 10 times more than the haploid number of chromosomes of the second taxon, while the diploid number of the third taxon is 6 times than the haploid number of the fourth taxon. Which one of the following shows the ascending order of the number of chromosomes in their respective endosperm ?

(1) Oryza - Allium - Saccharum - Nicotiana

(2) Allium - Oryza - Nicotiana - Saccharum

(3) Nicotiana - Saccharum - Oryza - Allium

(4) Sccharum - Oryza - Nicotiana - Allium

15 Study the following lists :

List – I	List – II
A. Trapa	I. Trichosc1ereids
B. Casuarina	II. Lacunar collocytes
C. Drimys	III. Swollen petiole
D. Lactuca	IV. Chalazogamy
	V. Vesselless

Correct match is :

	A	B	C	D		A	B	C	D
(1)	IV	I	V	III	(2)	III	IV	V	II
(3)	V	II	IV	I	(4)	III	V	II	IV

16. *Assertion (A) :* Libriform fibres are true fibres.
Reason (R) : tibriform fibres develop from non-functional tracheids by reduction.
(1) A and R are true and R is the explanation for A
(2) A and R are true but R is not the explanation for A
(3) A is true but R is false
(4) A is false but R is true

17. Which of the following statements is correct, for "Bundle sheath of monocot leaves is similar to that of monocot stem", as both them:
(1) possess outer layer of chlorenchyma and inner layer of thick walled cells without chloroplasts
(2) Possess extensions made up of sclerenchyma
(3) Resemble' the endodermis in possession of casparian strips
(4) Encircle the vascular bundles, which are conjoint and collateral

18. Which of the following is indicative of the term alburnum ?
(1) Spring wood (2) Autumn wood (3) Heart wood (4) Sap wood

19. Study the following lists:

List – I	List – II
A. Population	I. Part of the earth consisting of all the ecosystems of the world
B. Community	II. Assemblage of. all the individuals belonging to different species occurring In an area
C. Ecosystem	III. Group of similar individuals belonging to the same species found, in an area
D. Ecosphere	IV. Interaction between the living organisms and their physical environmental components
	V. Classification of organisms based on the type of environment.

The correct match is :

	A	B	C	D		A	B	C	D
. (1)	I	IV	V	III	(2)	V	II	III	I
(3)	II	III	V	IV	(4)	III	II	IV	I

20. A student collected a hydrophyte with swollen petiole and with a single vascular bundle in the root. The plant which he collected was :
(1) Jussiaeo (2) Trapa (3) Ceratophyllum (4) Potamogeton

21. Study the following lists :

List –I	**List – II**
A. Apophysis	I. Funaria
B. Columella	II. Cycas
C. Columella	III. Funaria
D. Apophysis	IV. Spirogyra
	V. Rhizopus

	A	B	C	D		A	B	C	D
(1)	I	IV	III	II	(2)	III	V	I	II
(3)	II	I	V	III	(4)	III	II	I	V

22. If sexual reproduction takes place between the filaments of rhizopus of different strains, one with 80 nuclei and another with 24 nuclei, what would be the total number of spores of different strains put together?
(1) 24 (2) 48 (3) 96 (4) 114

23. Study the following lists :

List –I	List – II
A. Apospory in *pteris* takes place in	I. Sporophyte
B. Endosperm in *cycas*	II. Gametophyte
C. Calyptra in funaria	III. Gametophyte
D. Nucellus in cycas	IV. Gametophyte
	V. Gametophyte

The correct match is :

	A	B	C	D		A	B	C	D
(1)	I	IV	V	III	(2)	I	V	III	IV
(3)	IV	I	V	III	(4)	III	II	I	IV

24. What is the ratio of equational divisions that take place in cycas and angiosperms respectively during the formation of male gametes from pollen gains?
(1) 3 : 2 (2) 3 : 1 (3) 2 : 1 (4) 2: 3

25. Study the following lists :

List – I	**List – II**
A. Streptomyces rimosus	I. Cycloheximide
B. Streptomyces nodosus	II. Neomycin
C. Streptomyces griseus	III. Oxytetracycline
D. Streptomyces fradiae	IV. Amphoterican
	V. Bacitracin

The correct match is :

	A	B	C	D		A	B	C	D
(1)	III	IV	I	II	(2)	III	I	V	II
(3)	II	III	V	IV	(4)	I	II	III	V

26. Which phytohormone has viralinhibitory property?
(1) 1M (2) GA3 (3) ABA (4) 2,4-D

27. Which organism forms perithecia in its life cycle ?
(1) Colletotrichum (2) Pyricularia (3) Helminthosporium (4) Sphacelotheca

28. *Assertion (A) :* Clonal selection is a method of breeding in sugarcane
Reason (R) : Sugarcane is propagated through suckers
(1) A and R are true and R is the explanation for A
(2) A and R are true but R is not the explanation for A
(3) A is true but R is false
(4) A is false but R is true

29. Triticale is a hybrid formed from the members belonging to the following families:
(1) Brassicaceae and Poaceae (2) Poaceae and Poaceae
(3) Poaceae and Fabaceae (4) Alismaceae and Poaceae

30. *Assertion (A) :* Restriction endonucleases are also called "molecular scissors' .

Reason (R) When fragments generated by restriction endonucleases are mixed, they join together due to their sticky ends

(1) A and R are true R is the correct explanation for A

(2) A and R are true but R is not the correct explanation for A

(3) A is true but R is false

(4) A is false but R is true

31. Through which method, more number of female plants can be produced in papaya? .

(1) Spraying ethephon (2) Genetic engineering

(3) Polyploidy breeding (4) Tissue culture

32. A soil sample is found to have 25% of its volume occupied by soil water. Of this, 10% is hygroscopic water and .the remaining is capillary water. What is the field capacity of this soil?

(1) 10% (2) 15% (3) 25% (4) 35%

33. By which mechanism, the salt resistant plants can get rid off excess Na^+ ions to the outer side, through the roots?

.(1) H^+ - ATPase uniport system (2) Na^+ - ATPase uniport system

(3) H^+ - Cl^- symport system (4) Na^+ - H^+ antiport system

34. Which one of the following is the reason for higher rate of transpiration in sorghum as compared to maize?

(1) Increased shoot/root ratio (2) Increased rate of respiratory quotient

(3) Increased rate of photosynthesis (4) Decreased shoot/root ratio

35. Study the following lists:

List – I	**List II**
A. Water potential of 10% salt solution	I. Positive
B. Pressure potential in a normal cell	II. Negative
C. Pressure potential in a plasmolysed cell	III. Positive
D. Matric potential on the surface of the wood	IV. Negative
	V. Zero

The correct match is :

	A	**B**	**C**	**D**		**A**	**B**	**C**	**D**
(1)	II	III	V	IV	(2)	III	IV	II	I
(3)	I	II	IV	III	(4)	V	IV	II	I

36. Study the following :

List –I	**List II**
A. Oxygen evolving complex ferric oxalate	I. Potassium
B. Proton gradient concentration	II. High oxygen
C. Hill reagent	III. ATP synthesis
D. Photo-respiration	IV. Pheophytin
	V. Photolysis of water

The correct match is :

	A	B	C	D
(1)	V	III	I	II
(2)	I	II	IV	V
(3)	V	I	IV	II
(4)	I	IV	III	V

37. Study the following :

I. Dehydration	Condensation	Docarboxylation
II. Isomerisation	Decarboxylation	Hydration
III. Decarboxylation	Condensation	Hydration
IV.Condensation	Decarboxylation	Isomerisation

Select the correct pair of answers in which the former in the pair shows the set of reactions taking place during Kreb's cycle and the latter in the pair shows the set of reactions that do not take place during glycolysis :

(1) I and III (2) I and II (3) II and III (4) II and IV

38. In *E.coll*, a finished polypeptide has 162 amino acids of which the first amino acid is not a methionine compound. How many nucleotides of DNA are required to code this polypeptide?

(1) 486 (2) 54 (3) 489 (4) 492

39. The following statements are given about plant growth hormones:

I. Kinetin is a degradative substance from DNA molecule

II. ABA is present in all the plants

III. Low ratio of cytokinins to auxins favours root formation only

IV. ABA is synthesized catabolically through mevalonate pathway

The correct combination is :

(1) I and II (2) II and III (3) I and III (4) III and IV

40. Which of the following substances induces mobilization of carbohydrates during germination of barley seeds?

(1) Auxin (2) Gibberellin (3) Cytokinin (4) Abscisic acid

(1) 2	**(2) 3**	**(3) 3**	**(4) 1&2**	**(5) 2**	**(6) 3**	**(7) 1**	**(8) 2**	**(9) 1**	**(10) 3**
(11) 3	**(12) 3**	**(13) 2&3**	**(14)2**	**(15) 2**	**(16) 3**	**(17) 4**	**(18) 4**	**(19) 4**	**(20) 2**
(21) 2&3	**(22)3**	**(23) 1**	**(24) 3**	**(25) 1**	**(26) 4**	**(27) 1**	**(28) 3**	**(29) 2**	**(30) 2**
(31) 4	**(32) 3**	**(33) 4**	**(34) 4**	**(35) 1**	**(36) 1**	**(37) 1**	**(38) 4**	**(39) 3**	**(40) 2**