# BOTANY :: 2007

1. Study the following lists :

| List I | List II |
|---|---|
| (A) Rendle | I. Plant environment |
| (B) Sawada | II. Taxon of Zygnemataceae |
| (C) Majumdar | III. Fungal secretion |
| (D) M,O.P. Iyengar | IV. Plant classification |
| | V. Group of cell saIike in form and function |

The correct match is :

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

2. The Scientist who through his extensive researches found that the regular recurrence of rust disease every year on wheat plants in India is due to the pathogenic fungal inoculum carried through wind currents from hills to plains

(1) M.O.P Iyengar (2) M.S. Swaminathan
(3) P Maheswari (4) K.C. Mehta

3. The aerial, shori and branched roots of an autotrophic plant that provide stability are known as

(1) Lateral roots (2) Haustoria (3) Velamen roots (4) Clinging roots

4. Study the following statements :

(I) Bulb of Allium cepa is a modified stem
(II) "Cloves" of Allium sativum are fleshy scale leaves
(III) Corm of Colacasia is a modified root
(IV) Tendril in Vitis vinifera is a modified axilary bud

Identify the correct pair :

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

5. Arrange the following plants in the ascending order based on the number of leaflets in a leaf:

(I) Hardwickia (II) Gynandropsis (III) Marselia (IV) Cirtrus

The correct sequence is :

(1) I, III, II, IV (2) IV, I, III, II (3) IV,I, II, III (4) 11, IV, III, I

6. **Assertion (A) :** The type of inflorescence in Sphaeranthus is cyathium.
**Reason (R) :** In cyathium type of inflorescnce, the flowers are achlamydeous.
The correct answer is
( 1) A and R are true and R is the correct explanation of A
(2) A and R true out R is not the correct explanation of A
(3) A is true but R is false
(4) A is false but R is true

7. In a tetradynamous androecium, one of the following is seen :
(1) Outer whorl of 4 smaller stamens and inner whorl of 2 larger stamens
(2) Outer whorl of 2 larger stamens and inner whorl of 4 smaller stamens
(3) Outer whorl of 4 larger stamens and inner whorl of 2 smaller stamens
(4) Outer whorl of 2 smaller stamens and inner whorl of 4 larger stamens

8. Waering isolated a dormancy inducing substance from the leaves of a plant. From which type of gynoecium does the fruit of that plant develop?
   (1) Bicarpellary syncarpous gynoecium with inferior ovary
   (2) Bicarpellary syncarpous gynoecium with superior ovary
   (3) Tricarpellary syncaqJous gynoecium with superior ovary
   (4) Monocarpellary gynoecium with half inferior ovary
9. Arrange the following plants in the descending order based on the number of their mericarps :
   (I) Ricinus (II) Coriandrum (III) Ocimum (IV) Abutilon
   The correct sequence is :
   (1) IV, III, II, I (2) II, I, III, IV (3) IV, III, I, II (4) I, IV, II, III .
10. Which of the following pairs in angiosperms are diploid and triploid, respectively ?
   (1) Secondary nucleus and endosperm
   (2) Microspore mother cell and egg cell
   (3) Polar nucleus and secondary nucleus
   (4) Endosperm and antipodal cells
11. Which one of the following statements is incorrect about the properties of DNA ?
   (1) DNA is denatured when heated upto 70°C
   (2) DNA shows high absorption of UV radiation at 260 mμ
   (3) DNA directly participates in protein synthesis.
   (4) Pyrimidines of DNA are cytosine and thymine
12. **Assertion (A)** : Ribosomes are considered as the most primitive cell organelles.
   **Reason (R) :** Ribsomes occur in all eukaryotic organisins.
   The correct answer is :
   (1) A and R 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
13. The internal structure of a plant stem is observed. There is a discontinuous ring of angular collenchyma below the epidermis. Type of vascular bundles are of the same type as in the stems of solanaceous plants. Sieve tube elements possess simple sieve plates identify the plant
   (1) Helianthus (2) Cucurbita (3) Zea (4) Hydrilla
14. Arrange the following plants in ascending order based on the number of xylem strands in their roots :
   (I) Trapa (II) Pisum (III) Castanea (IV) Nicotiana
   (1) II, IV, III, I (2) III, IV, II, I (3) IV, III, I, II (4) I, IV, II, III
15. Which one of the following is the correct sequence of tissues present in dicot stem during secondary growth?
   (1) Phellogen, cork, primary cortex, secondary cortex
   (2) Cork, primary cortex, secondary coretx, phellogen
   (3) Primary cortex, secondary cortex, phellogen, cork
   (4) Secondary cortex, cork, phellogen primary cortex
16. The source of intoxicating bevera called 'Saky' is
   (1) Sorghum vulgare (2) Arachis hypogea
   (3) Oryza sativa (4) Mangifera indica

17. Study the following lists :

| **List – I** | **List – II** |
|---|---|
| (A) Laxative | I. Neem |
| (B) Anticorrosion | II. Groundnut |
| (C) Lubricants | III. Cotton |
| (D) Nitro cellulose | IV. Mango |
| | V. Rice |

The correct match is :

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

18. Which one of the following families shows both freedom and fusion info successive whorls of the flower fro exterior in different members ?
(1) Malvacae (2) Solanaceae (3) Asteraceae (4) Liliaceae

19. The parthenospores of Rhizopus are
(1) Uninulceate (2) Binucleate (3) Trinucleate (4) Multinucleate

20. **Assertion (A) :** Both apospory a apogamy are observed in *Pteris*
**Reason (R) :** They are evident by production of haploid sporophyte apospory and diploid gametophyte apogamy.
The correct answer is :
(1) A and R are true and R is the correct explanation of A
(2) A and R are true but R is not correct explanation of A
(3) A is true but R is false (4) A is false but R s true

21. Study the following and identify the characters found in both *Cycas* a *Pteris*.
(I) Formation of motile malegametes
(II) Formation of haploid endosperm
(III) Formation of sporophyte direction from gametophyte without gametic union
(IV) Formation of archegonia female gametophyte
The correct pair is
(1) I and IV (2) I and III (3) II and IV (4) III and IV

22. Study the following lists :

| **List – I** | **List – II** |
|---|---|
| (A) Epulopiscium fishelsoni | I. Vector |
| (B) Bacillus thuringiensis | II. Acanthurus |
| (C) Treponema pallidum | III. Bacitracin |
| (D) Agrobacterium tumefaciens | IV. Bioinsecticide |
| | V. Syphilis |

The correct match is :

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

23. Which of the following are correct to describe viruses ?
(I) Simple and unicellular organisms

(II) Contain DNA or RNA and enclosed by protein coat
(III) Possess own metabolic systems and respond to stimuli
(IV) Maintain genetic continuity and undergo mutations
The correct combination is :
(1) I and II (2) II and IV (3) II and III (4) I and III

24. Study the following lists:

| **List – I** | **List – II** |
|---|---|
| (A) Sphacelotheca conidia | I. Three celled |
| (B) Colletotrichum | II. Zoospores |
| (C) Pyricularia | III. Falcate conidia |
| (D) Olpidium | IV. Suspensor |
| | V. Columella |

The correct match is :

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

25. Identify the diseases that are caused by the organisms of the same subdivision of Eumycota
(I) Citrus canker
(II) Red rot of sugarcane
(III) Grain smut of Sorghum
(IV) Black neck of Rice
The correct pair is
(1) I and IV (2) I and III (3) II and III (4) II and IV

26. Study the following lists :

| **List – I** | **List – II** |
|---|---|
| (A) Ephemeral | I. Nerium |
| (B) Mucilage | II. Ziziphus |
| (C) Multiple epidermis | III. Calotropis |
| (D) Spine | IV. Tribulus |
| | V. Aloe |

The correct match is

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

27. Seeds possess spongy aril in
(1) Eichhornia (2) Potamogeton (3) Sagittaria (4) Nymphaea

28. What type of plant is formed when colchicine is used in the process of development of Raphanobrassica ?
(1) Triploid (2) Haploid (3) Autotetraploid (4) Allotetraploid

29. Study the following lists :

| List I | List II |
|---|---|
| (A) Synthetic | I. Anther cultureseeds |

| | |
|---|---|
| (B) Gene cloning | II. Interspecific hybridization |
| | III. Polymerase chain reaction |
| (D) Transgenic plants | IV. Recombinant DNA technology |
| | V. Somatic embryogenesis |

The correct match is

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

30. ***Assertion (A) :*** K' ion accumulation found in Nitella depends on its respiratory activity.
***Reason (R) :*** Absorption of all ions in plants completely depends on the usage of metabolic energy.
The correct answer is
(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

31. When pea seeds and wheat grains are soaked in water, pea seeds showed more swelling than the wheat. The reason is
(1) Imbibition capacity of proteins is more than that of starch
(2) Presence of less hydrophilic colloids in the wheat grains .
(3) Cell membrane of pea seeds is more permeable
(4) Cell walls of wheat grains are less permeable

32. Which one of the following denotes the water potential of the mesophyll cell in wilted condition ?
(1) Equal to the value of osmotic potential
(2) Equal to the value of pressure potential
(3) Greater than the value of its osmotic potential (4) Equal to zero

33. Identify the correct combinations of the following :

| **Substrate** | **Enzyme** | **Product** |
|---|---|---|
| I. Phosphoenol pyruvate | PEP Carboxylase | $C_4$ acid |
| II. Malate | Malic enzyme | $C_4$ acid |
| III. RuBP | Ribulose 5-phos- phate Kinase | $C_3$ acid |
| IV. Pyruvate | Pyruvate dikinase | $C_3$ acid |

The correct combination is
(1) III and IV (2) I and II (3) II and III (4) I and IV

34. In which one of the following reactions, oxidative decarboxylation does not occur?
(1) Malic acid $\rightarrow$ Pyruvic acid
(2) (2) Pyruvic acid $\rightarrow$ Acetyl COA
(3) Glyceral dehyde 3 - phosphate $\rightarrow$ 1, 3 - bisphosphoglyceric acid
(4) $\alpha$ - ketoglutaric acid $\rightarrow$ Succinyl COA

35. From among the following, identify the substrate required for the only oxidative reaction that occurs in the process of glycolysis
( 1) 3 - phosphoglyceric acid
(2) Glyceral dehyde -3 - phosphate
(3) Fructose - 6 – phosphate
(4) Glucose - 6 - Phosphate

36. Which, one of the following enzymes has no role in protein synthesis?
(1) RNA Polymerase
(2) Restriction endonuclease
(3) Amino acyl sythetase
(4) Peptidyl transferas.e

37. ***Assertion (A) :*** Decapitation of shoot tip in plants inhibits the growth of their lateral buds.
***Reason (R) :*** Accumulation of auxins in lateral buds causes inhibition of their growth.
The correct answer is
(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

38. ***Assertion (A) :*** Ethylene stimulates growth in case of wounds and thus helps in wound healing.
***Reason (R) :*** Ethylene causes 'triple response growth' in plants.
The correct answer is
(1) Both A and R are true and R is the correct explanation of A
(2) Both 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

39. Identify the characters of gynoecium found in members of Asteracea Fabaceae, Liliaceae and Solanacea, respectively
(1) Tricarpellary syncarpous, ovary superior and trilocular
(II) Bicarpellary syncarpous, ovary superior and usually bilocular
(III) Bicarpellary syncarpous, ovary inferior and unilocuiar
(IV) Monocarpellary, ovary hall inferior and unilocular
The correct sequence is :
(1). II, I, III, IV (2) III, IV,I, II
(3) IV, III, II, I (4)1, II, IV,III

40. Two plants 'A' and 'B' belonging solanaceae are observed. In plant ‘A’ the number of locules in the ovary a flower is half of that of its carpel number. In plant 'B', the number locules in the ovary of a flower is double the number of carpels, Identify the plants 'A' and ‘B’ respectively
(1) Capsicum, Datura
(2) Cestrum, Petunia
(3) Withania, Solanum
(4) (4) Lycopersicon, Nicotiana

## ANSWERS

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