

## BOTANY :: 2004

1. Study the following table :

### List –I

- A. M.O.P. Iyengar
- B. M.S.Swaminathan
- C. Birbal Sahni
- D. P. Maheswari

### List – II

- I. Williamsonia Sewardiana
- II. Fertilization of Plant in test tubes
- III. Dwarf varieties of Wheat
- IV. Rust research
- V. Fritschella

Correct Match is

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

2. A plant which lives on rocks under water with photosynthetic roots is :

- (1) Tinospora            (2) Podostemom            (3) Taeniophyllum            (4) Vanda

3. Study the following statements :

- I. Food is stored in the leaf bases
- II. Buds develop from leaf apices
- III. Presence of tunicated bulb

Identify the correct combination with reference to Scilla

- (1) I, II and III are correct            (2) Only I and II are correct  
(3) Only I and III are correct            (4) Only II and III are correct

4. Which one of the following statements is correct with reference to amentum?

- (1) The peduncle is fleshy and bears unisexual flowers and the flowers open in basipetal manner  
(2) The peduncle is condensed and bear bisexual flowers and the flowers open in a centripetal manner  
(3) The peduncle is condensed and bears bisexual flowers and the flowers open in an acropetal manner  
(4) The peduncle grows indefinitely and bears bisexual flowers' and flowers open in basipetal manner

5. What is the fruit that develops from a tricarpellary, syncarpous, inferior ovary with parietal placentation?

- (1) Pepo            (2) Pome            (3) Cypsela            (4) Capsule

6. Which of the following mechanisms is associated with the release of pollen grains in Pilea and Urtica ?

- (1) Safety mechanism            (2) Piston mechanism  
(3) Gun powder mechanism            (4) Censer mechanism

7. Study the following table :

### List –I

*(Structure Before Seed Formation)*

- A. Funiculus
- B. Scar of Ovule
- C. Zygote
- D. Inner integument

### List –II

*(Structure After Seed Formation)*

- I. Hilum
- II. Tegmen
- III. Testa
- IV. Stalk of seed
- V. Embryo

Identify the correct match:

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

8. The plants which grow in extreme dry conditions generally show the following adaptation
- (1) Sunken stomata (2) Thin cuticle  
(3) Aerenchyma (4) Poorly developed xylem
9. Each carpel of *Gloriosa* encloses 60 ovules, out of which 27% became abortive and another 13% could not be fertilized due to various reasons. How many seeds occur in the capsule if all the remaining ovules are fertilized in the lone flower of the plant?
- (1) 36 (2) 76 (3) 108 (4) 180
10. *Pterocarpus* and *Pterolobium* belong to two different families. In which character they resemble one another?
- (1) Type of fruit (2) Aestivation of Corolla  
(3) Cohesion of Stamens (4) Habit of the plant
11. Arrange the following genera in the increasing order of number of carpels in each flower :
- I. *Abutilon* II. *Bauhinia* III. *Allium* IV. *Nicotiana*
- (1) II, IV, III, I (2) II, III, IV, I (3) IV, II, III, I (4) I, III, IV, II
12. These cells provide flexibility and elasticity besides helping the tender plant parts in facing stress and strain:
- (1) Bast cells (2) Collocytes (3) Transfer cells (4) Stone cells
13. Arrange the following oligosaccharides in the decreasing order based on the number of sugar units they possess :
- I. Raffinose . II. Stachyose III. Verbascose IV. Maltose
- The correct sequence is :
- (1) III, I, II, IV (2) II, III, IV, I (3) III, II, I, IV (4) I, II, IV, III
14. Which of the following statements about phelloderm are true ?
- I. It is a living tissue  
II. It is concerned with the conduction of water and salts  
III. It is a photosynthetic tissue
- The correct combination is
- (1) I, II and III, are correct (2) Only I and II are correct  
(3) Only II and III are correct (4) Only I and III are correct
15. Study the following table :
- | <b>List- I</b> | <b>List- II</b>           |
|----------------|---------------------------|
| A. Water drops | I. Laticifers             |
| B. Alkaloids   | II. Schizogenous cavities |
| C. Oils        | III. Epithem              |
| D. Resins      | IV. Osmophors             |
|                | V. Lysigenous cavities    |

The correct match is :

	A	B	C	D
(1)	III	I	V	II

- (2) IV II I III  
 (3) I IV II V  
 (4) II IV III I

16. Which of the following characters are related to *Spirogyra jogensis* ?

- I. Dioecious conjugation II. Attached species  
 III. Morphological anisogamy

The correct combination is

- (1) I, II and III are correct (2) Only I and II are correct  
 (3) Only I and III are correct (4) Only II and III are correct

17. In *Rhizopus*, dome shaped sterile portions are found on erect structure that arise from stolons. These structures are referred to as :

- (1) Gemetangia (2) Progametangia (3) Zygosporangia (4) Sporangioophores

18. What is the ratio of androcyte mother cells to androcytes and antherozoids formed in *Funaria*?

- (1) 1 : 1 : 1 (2) 1 : 2 : 2 (3) 1 : 2 : 4 (4) 1 : 4 : 8

19. Haploid brown, hairlike, delicate unicellular outgrowths are:

- (1) Root hairs of Gymnosperms (2) Paraphyses of mosses  
 (3) Root modules of Pulses (4) Rhizoids of fern plants

20. What is the ratio of equational divisions that take place in cycas and angiosperms respectively leading to the formation of male gametes from pollen grains?

- (1) 3 : 2 (2) 3 : 1 (3) 2 : 1 (4) 2 : 3

21. Assertion (A) : Fertilization in cycas is called zoodiogy.

Reason (R) : Fertilization in cycas takes place by the formation of pollen tube.

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

22. An organism exclusively with 70 S type of ribosomes contains one of the following

- (1) DNA enclosed within a nuclear membrane  
 (2) Circular naked DNA  
 (3) Double stranded DNA with protein coat  
 (4) Single stranded DNA with protein coat

23. Study the following table :

**List –I**

- A. Devoid of flagella  
 B. Rod shaped  
 C. Bacteria in pairs  
 D. Coma shaped

**List –II**

- I. Single spherical bacterium  
 II. Pneumonia causing bacteria  
 III. Anthrax causing bacteria  
 IV. Cholera causing bacteria  
 V. Pleiomorphic bacteria

The correct match is :

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

- (3) I III II IV  
 (4) V I II IV

24. *Assertion (A)* : Viruses cause diseases and replicate when they are in the host.  
*Reason (R)* : Viruses do not replicate the host remain alive.

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

25. Which of the following statements is correct with respect to *Colletotrichum falcatum*?

- (1) The conidia and conidiophores are aseptate; mycelium and setae are septate  
 (2) The conidia, conidiophores, mycelium and setae are septate  
 (3) The conidia are aseptate; conidiophores, mycelium and setae are septate  
 (4) The mycelium aseptate; conidia, conidiophores and setae are aseptate

26. The aleurone layer of rice grain is rich in :

- (1) Vitamin A (2) Vitamin B (3) Vitamin C (4) Vitamin E

27. A few steps involved in polypeptide synthesis are given below. In which of them, the *t*-RNA participates?

- I. Activation of amino acids II. Elongation of polypeptide chain  
 III. Translocation IV. Transcription

Identify the correct combination:

- (1) Only I, III and IV (2) Only II, III and IV  
 (3) Only I, II and IV (4) Only I, II and III

28. Which method of plant breeding in the production of 'Hessian Fly resistant' wheat variety ?

- (1) Intrageneric hybridization (2) Back cross  
 (3) Bulk method (4) Intraspecific hybridisation

29. Study the following table:

**List – I**

- A. Development of haploid plants  
 B. Induction of polyembryony  
 C. Production of Parthenocarpic fruits  
 D. Method of breaking prolonged dormancy of seeds

**List – II**

- I. Embryo culture  
 II. Anther culture  
 III. Ovary culture  
 IV. Ovule culture  
 V. Endosperm culture

The correct match is :

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

30. Study the following table:

Component	Character	Used in
I. Plasmid	Small circular DNA	Gene cloning

II. Cosmid	Restriction enzyme	Identification of gene
III. Vector	Restriction enzyme	Isolation of genes
IV. Vector	Gene carrier	Gene transfer

Two components in above table show correct combination of their character and use :

Identify the correct pair :

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

31. Which of the following statements is correct with respect to *Agaricus bisporus*?

- (1) It contains toxins hence not suitable for consumption  
 (2) It does not contain essential amino acids  
 (3) It is a good source of B-vitamin  
 (4) Its cultivation on agro wastes is impossible

32. Study the following table to match the enzymes of List I with the reactions given in

List II :

**List – I**

- A.. Oxidoreductases  
 B. Isomerases  
 C. Lyases  
 D. Hydrolases

**List –II**

- I. Glutamic acid → Glutamine  
 II. Arginosuccinic acid → Arginine  
 III. Glycolic acid → Glyoxylic acid  
 IV. Ribulose-5- Phosphate → Ribulose-5- Phosphate  
 V. Fructose-1, 6-bisphosphate → Fructose 6-phosphate

The correct match is :

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

33. Assertion (A) : Lettuce seeds are positively photoblastic.

Reason (R) : Gibberellin application effectively works as a substitute in darkness, for germination.

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 A  
 (3) A is true but R is false  
 (4) A is false but R is true

34. Which of the following reactions of Calvin cycle are directly dependent on the availability of one or both- the components of assimilatory power?

- I. Formation of glyceraldehyde-3- phosphate  
 II. Formation of Fructose-6- phosphate  
 III. Regeneration of RUBP reaction

Identify the correct combination :

- (1) Only I and II are correct                      (2) Only I and III are correct  
 (3) Only II and III are correct                      (4) Only I, II and III are correct

35. Study the following table:
- | <b>Substrate</b>          | <b>End product</b>     |
|---------------------------|------------------------|
| I. Phosphoenol pyruvate   | → Oxaloacetic acid     |
| II. Malic acid            | → Pyruvic acid         |
| III. Ribulose biphosphate | → Phosphoglyceric acid |
| IV. Oxaloacetic acid      | → Malic acid           |
- In which of the above reactions, the end products are formed as a result of carboxylation reaction. Identify the correct combination.
- (1) I and IV only      (2) I and III only      (3) II and III only      (4) II and IV only
36. The phytohormone which increases the concentration of potassium in guard cells is also responsible for the induction of :
- (1) Apical dominance      (2) Triple response growth  
(3) Cell division      (4) Abscission
37. The phyto hormone that induces cell elongation is known to be produced by a fungus. The asexual stage of this fungus is called :
- (1) Rhizopus sexualis      (2) Fusarium moniliformae  
(3) Gibberella fujikuroi      (4) Fusarium oxysporum
38. Which one of the following expressions is associated with a "mangrove plant" ?
- (1) Capable of absorbing water rapidly and retaining it.  
(2) Capable of minimizing water loss and facilitating aeration to underground parts  
(3) Capable of reducing transpiration and able to store absorbed water  
(4) Presence of 'well organized leaves that are adapted to absorb nitrogenous matter
39. *Assertion (A)* : Epidermis in the dicot root is composed of cutinized cells.  
*Reason (B)* : The exodermis in the root offers protection to the inner parts in the absence of epidermis.  
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
40. According to Bentham and Hooker, which pair of the following angiospermous taxa were not divided into cohorts
- (1) Monochlamydeae and Monocotyledoneae  
(2) Infeae and Heteromerae  
(3) Bicarpellatae and Disciflorae  
(4) Thalamiflorae and Calyciflorae

## ANSWERS

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