

BOTANY 2005

1. Study the following list :

List – I

- A. Hatch and Slack
- B. Theophrastus
- C. Knoll and Ruska
- D. Robert Hooke

List – II

- I. Electron microscope
- II. Citric acid cycle
- III. Micrographia
- IV. C₄ Pathway
- V. Historia plantarum

The correct match is :

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

2. Identify the correct of the following four zones in the root from apex to base (Deleted)

- I. Mineral absorption zone
- II. Meristematic zone
- III. Maturation zone
- IV. Water absorption zone

The correct order is

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

3. The underground stem that has contractile roots is :

- (1) Rhizome (2) Corm (3) Stem tuber (4) Bulb

4. A compound leaf which appears as simple leaf due to the suppression of one or two leaflets is found in one of the following plants :

- 1) Hardwickia 2) Parkinsonia (3) Coriandrum (4) Citrus

5. Study the following lists :

List -I

- A. Gall flowers
- B. Involucre
- C. Spathe
- D. Lemma

List – II

- I. Spikelet
- II. Hypanthodium
- III. Cyathium
- IV. Spadix

The correct match is :

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

6. Identify the wrong expression from the following statements :

- (1) A plant that bears male, female and bisexual flowers is polygamous
- (2) An actinomorphic flower can be dissected into equal halves from any plane
- (3) Superior ovary is found in hypogynous flowers
- (4) That side of the flower towards the bract is called the posterior side

Study the following Lists :

List – I

- A. Tridax
- B. Dolichos
- C. Ceiba
- D. Cucurbita

List – II

- I. Synadrow'
- II. Monadeiphous
- III. Syngenesious
- IV. Polyadelphous
- V. Diadelphous

The correct match is :

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

8. Which one of the following is not a correct explanation of cross pollination?

- (1) The pollen grains are transferred from one flower to another flower situated on the same plant
- (2) The pollen grains are transferred from one flower to another flower, of another plant of the same species
- (3) The pollen grains of male flowers are transferred to the stigma of the female flowers
- (4) The pollen grains of the flower are transferred to the stigma of the same flower

9. Fibrous thickenings of hygroscopic nature are found in this part of the anther wall :

- (1) Epidermis
- (2) Endothecium
- (3) Middle layers
- (4) Tapetum

10. In which of the following types of fruits, dorsiventral dehiscence takes place?

- I. Legume
- II. Follicle
- III. Siliqua
- IV. Capsule

The correct combination is :

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

11. Assertion (A) The scientific name *Malus malus* is illegitimate.

Reason (R) : It is a tautonym

The correct answer is :

- (1) Both A and R are true 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

12. In a flower there are five unequal petals. The posterior petal is the largest. The two anterior petals are partially fused to form a boat shaped structure. The two lateral petals are smaller than the posterior petal. Which one of the following characters is not associated with such a flower.

- (1) The aestivation of the petals is descendingly imbricate
- (2) The odd sepal is anterior
- (3) The pollination is by piston mechanism
- (4) The number of carpels is many

13. Study the following Lists :

List– I

- A. Solanaceae
- B. Malvaceae

List – II

- I. Launea
- II. Pongamia

- C. Fabaceae
- D. Asteraceae

- III. Petunia
- IV. Withania
- V. Thespesia

The correct match is :

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

14. Which one of the following is used for external application in the cure of leprosy?

- (1) Rice bran oil
- (2) Neem seed oil
- (3) Cotton seed oil
- (4) Groundnut seed oil

15. Study the following lists:

List – I

(*Taxon*)

- A. Pisum sativum
- B. Oryza sativa
- C. Nicotiana tobacum
- D. Allium cepa

List – II

(*Number of chromosomes in the endosperm cells*)

- I. 72
- II. 24
- III. 60
- IV. 36
- V. 21

The correct match is :

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

16. Arrange the following events of meiosis in the correct sequence :

- I. Terminalization
- II. Crossing over
- III. Synapsis
- IV. Disjunction of genomes

The correct sequences :

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

17. Study the following tables

Tissue	Structural feature	Function
I. Collenchyma	Cell walls with high water content	Photosynthesis in young stems
II. Parenchyma	Suberised cell walls	Storage of food
III. Sclerenchyma	Lignified cells walls	Mechanical strength
IV. Digestive glands	Dense cytoplasm	Breaking the substrate without water

The correct combination is :

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

18. *Assertion (A)* : All the endodermal cells of the root do not contain casparian thickenings on their radial and transverse walls.

Reason (R) : Passage cells are found in the root endodermis.

- (1) Both A and R are true 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

19. Identify the correct order of the components with reference to their arrangement from outside to inside in a woody dicot stem

- I. Secondary cortex
- II. Autumn wood
- III. Secondary phloem
- IV. Phellem

The correct order is :

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

20. Which pair of the following plants represent, the condition of modification of stipules into spines?

- (1) Euphorbia and Ziziphus
- (2) Citrus and Euphorbia
- (3) Ziziphus and Bougainvillea
- (4) Bougainvillea and Citrus

21. *Assertion (A)* : In spirogyra some cells in one of the two filament become empty after conjugation.

Reason (R) : The aplanogametes from the cells of one filament pass through the conjugation tubes into the cells of the other filament.

- (1) Both A and R are true 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. What are the successive structures formed in course of sexual reproduction of Rhizopus ?

- (1) Zygosporangium, progametangium, gametangium, Zygosporangium
- (2) Progametangium, Zygosporangium, Gametangium, Zygosporangium.
- (3) Progametangium, Gametangium, Zygosporangium, Zygosporangium
- (4) Zygosporangium, Progametangium, Gametangium, Zygosporangium

23. Choose the correct statement :

- (1) Apophysis is the basal fertile part of the capsule in *Funaria*
- (2) Apophysis is the apical sterile part of the *microsporophyll* in *Cycas*
- (3) Apospory is the development of sporophyte from vegetative cells of the gametophyte
- (4) Apogamy is the development of gametophyte from the vegetative cells of the sporophyte

24. Study the following lists :

List – I

- A. Pteris-Spermatozoids
- B. Cycas-male gametes
- C. Funaria-Antherozoids
- D. Spirogyra-Aplanogametes

List – II

- I. Zooidogamy
- II. Malle acid
- III. Oogamy
- IV. Sucrose
- V. Physiological anisogamy

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

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

25. Study the following lists :

List – I

(Plant part)

- A. Sarcotesta of Cycas
 B. Aposporous gametophores of Funaria
 C. Azyospore of Rhizopus
 D. Hypostomium of pteris

List – II

(Number of sets of chromosomes)

- I. Haploid
 II. Diploid
 III. Diploid
 IV. Haploid
 V. Diploid

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

26. Which of the following protects the bacteria from the enzymes present in the external medium?

- (1) Slime layer (2) S-layer (3) Flagella (4) Cell wall

27. Identify the correct pair that shows the double stranded RNA among the following:

- (1) Cauliflower mosaic virus, Dahlia mosaic virus
 (2) Poliovirus and wound tumour virus
 (3) Wound tumour virus and Reovirus
 (4) Tobacco mosaic virus and Reovirus

28. The asexual spores formed by colletotrichum falcatum, Spacelotheca sorghi and Rhizopus stolonifera are:

- (1) Many celled (2) One celled
 (3) Pyriform in shape (4) Rod shaped

29. The sexual stage of pathogens of Blast of Rice and Red rot of sugarcane are named respectively as :

- (1) Magnaporthe grisea and colletotrichum falcatum
 (2) Colletotrichum falcatum and Pyricularia oryzae
 (3) Glomerella tucumanensis and Magnaporthe grisea
 (4) Magnaporthe grisea and Glomerella tucumanensis

30. Study the following lists :

List – I

- A. Mutation breeding
 B. Selection
 C. Hybridization
 D. Introduction

List – II

- I. Laborious and expensive process to obtain gene variation
 II. Hybrid vigour can be maintained for several generations
 III. Simplest and easiest method of plant improvement
 IV. Oldest breeding method
 V. Quick method to obtain gene variation

The correct match is :

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

31. How many genomes are present in 'Sugandha' variety of vetivar grass?
 (1) 2 (2) 3 (3) 4 (4) 6
32. The fruiting body formed from a filamentous heterotrophic organism which is known for its nutritive value for the humanity:
 (1) Cremocarp (2) Acervulus (3) Basidiocarp (4) Akinite
33. The fragments of DNA formed after treatment with endonucleases are separated by this technique :
 (1) Polymerase chain reaction (2) Southern blotting
 (3) Electrophoresis (4) Colony hybridization
34. Which one of the following forms of soil water can be readily absorbed by the roots?
 (1) Capillary water (2) Hygroscopic water
 (3) Run away water (4) Gravitational water
35. Identify the correct statements from the following :
 I) Accumulation of K^+ ions in the guard cells does not require energy
 II. A high pH favours stomatal opening
 III. Movement of chloride ions into the guard cells is in response to the electrical differential created by K^+ ions
 IV. With the entry of several K^+ ions and chloride ions, the water potential of guard cells increases
 The correct combination is :
 (1) I and III (2) I and II (3) II and III (4) III and IV
36. The values osmotic potential (n) and pressure potential 'p' of cells A,B, C and D are given below :
- | | π | ρ |
|--------|-------|--------|
| Cell A | -1.0 | 0.5 |
| Cell B | - 0.6 | 0.3 |
| Cell C | -1.2 | 0.6 |
| Cell D | - 0.8 | 0.4 |
- Identify the correct sequence that shows the path of movement of water from among the following:
 (1) D→C→A→B (2) B→D→A→C (3) B→C→D→A (4) C→B→A→D
37. Identify the correct sequence of enzymes given below with participate in the regeneration phase of Calvin cycle:
 I. Ribulose-5-phosphate epimerase
 II. Ribulose-5-phosphate kinase
 III. Transketolase
 IV. Triose phosphate isomerase
 The correct sequence is
 (1) IV, I, III, II (2) III, II, IV, I (3) IV, III, I, II (4) II, I, IV, III
38. In which one of the following reactions, substrate level phosphorylation does not occur?
 (1) 1, 3 biophosphoglyceric acid → 3 phosphoglyceric acid
 (2) Glucose-6-phosphate → Fructose-6- phosphate
 (3) Succinyl CoA → Succinic acid
 (4) Phosphoenol pyruvic acid → Pyruvic acid
39. Nostoc fixes dinitrogen in symbiotic association with the following :
 I. Alnus II. Gunnera III. Anthoceros IV. Casuarina

The correct combination is :

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

40. In tissue culture, which one of the following pairs of substances are used to induce shoot formation and root formation respectively during organogenesis :

- (1) Hydrogen peroxide and chlorine (2) Auxins and cytokinins
(3) Cytokinins and Auxins (4) Ethylene and Abscisic acid

ANSWERS

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