5 Morphology of Flowering Plants

Conceptual MCQs

1. Prickles of rose are:
(a) Modified leaves (b) Modified stipules
(c) Exogenous in origin (d) Endogenous in origin

2. Which of the following is not a stem modification?
(a) Rhizome of ginger (b) Corm of *Colocasia*
(c) Pitcher of *Nepenthes* (d) Tuber of potato

3. By which of the following a leaf can be identified?
(a) Flat green lamina.
(b) Presence of leaf blade and petiole.
(c) Presence of axillary bud.
(d) Occurrence of chlorophyll.

4. A simple leaf can be differentiated from the pinnae of a compound leaf on the basis of presence or absence of
(a) number of pinnae. (b) shape of lamina.
(c) axillary bud. (d) lateral buds.

5. The perianth is the term used when
(a) androecium and gynoecium are similar.
(b) androecium and calyx are similar.
(c) corolla and gynoecium are similar.
(d) calyx and corolla are similar.

6. In floral formula, (K) denotes:
(a) Polysepalous (b) Gamosepalous
(c) Polypetalous (d) Gamopetalous

7. Synandrous condition is fusion of:
(a) Filaments only (b) Both filaments and anthers
(c) Anthers only (d) Petals.

8. Name the family having (9) + 1 arrangement of stamens.
(a) Solanaceae (b) Asteraceae
(c) Liliaceae (d) Fabaceae

9. Pentamerous, actinomorphic flowers, bicarpellate ovary with oblique septa and fruit a capsule of berry, are characteristic features of:
(a) Brassicaceae (b) Solanaceae
(c) Liliaceae (d) Asteraceae

10. Zygomorphic condition can be represented as:
(a) ⊕ (b) % (c) P (d) G

11. Which of the following options is not applicable to solanaceae?
(a) Adnation (epipetalous)
(b) Swollen axile placenta
(c) Bicarpellary superior ovary
(d) Monocarpellary superior ovary

12. The correct floral formula of Liliaceae is:
(a) $\oplus \, ♂♀ \, P_{3+3} A_6 \underline{G}_{(3)}$ (b) $Br \oplus ♂♀ \, P_{3+3} A_{3+3} \underline{G}_{(3)}$
(c) $\oplus \, ♂♀ \, P_{3+3} A_{3+3} \underline{G}_{(3)}$ (d) $\oplus \, ♂♀ \, P_{3+3} A_{3+3} \underline{G}_{(6)}$

13. In _____ aestivation, sepals or petals in a whorl just touch one another at the margins, without overlapping, as is found in _____.
(a) valvate, *Calotropis* (b) valvate, *Hibiscus*
(c) twisted, *Calotropis* (d) twisted, *Hibiscus*

14. Match column-I with column-II and choose the correct option using the codes given below.

	Column-I		Column-II
A.	Hypogynous flower	I.	Margin of thalamus grows enclosing ovary completely and getting fused with it, the other parts of flower arises above the ovary.
B.	Perigynous flower	II.	Gynoecium is situated in the centre and other parts of flowers are located on the rim of thalamus almost at the same level.
C.	Epigynous flower	III.	Gynoecium occupies the highest position while other parts are below it.

(a) A – I, B – II, C – III (b) A – III, B – II, C – I
(c) A – III, B – I, C – II (d) A – I, B – III, C – II

15. X is a scar on the seed coat through which the developing seeds were attached to the fruit; above the X is a small pore called Y. Identify X and Y and select the correct option.

	X	Y
(a)	Micropyle	Hilum
(b)	Hilum	Micropyle
(c)	Testa	Tegmen
(d)	Chalaza	Micropyle

16. Add the missing floral organs in the given floral formula of family Fabaceae.

$$\% \, ♂♀ \, K_{(5)} — A_{(9)+1} \underline{G}_1$$

(a) C_{1+2+2} (b) $C_{1+2+(2)}$ (c) C_{1+2+3} (d) C_5

17. The expression "gynoecium is apocarpous" implies that the
(a) gynoecium comprises only one pistil which is fused with the stamen.
(b) gynoecium comprises more than one carpel, all of which are free.
(c) gynoecium comprises only one carpel which is free.
(d) gynoecium comprises more than one carpel which are fused.

18. Which one is the correct option for cohesion of stamens in the given diagram?

(a) Monoadelphous
(b) Diadelphous
(c) Polyadelphous
(d) Synandrous

19. In ___ (i) ___ type of inflorescence, main axis terminates in a flower, hence is limited in growth and flowers are borne in ____ (ii) ____ succession.

	(i)	(ii)
(a)	racemose	acropetal
(b)	racemose	basipetal
(c)	cymose	acropetal
(d)	cymose	basipetal

20. Which of the following is correct?
(a) The leaf is a lateral, and generally flattened structure on stem.
(b) A typical leaf consists of three main parts (leafbase, petiole and lamina).
(c) Stipule is the lateral appendage of leaf base.
(d) All of the above

21. Epiphyllous condition is indicated by
(a) $\overset{\frown}{C\ A}$ (b) $\overset{\frown}{A\ G}$ (c) $\overset{\frown}{K\ C}$ (d) $\overset{\frown}{P\ A}$

22. Axile placentation is found in syncarpous ovaries. In this placentation, the ovules are arranged along the
(a) base of the ovary
(b) margin of the ovary
(c) axis in the centre of the ovary
(d) none of the above

23. Which of the following is characteristic feature of Fabaceae?
(a) Descending imbricate, ten stamens, diadelphous, and inferior ovary.
(b) Sepals five, gamosepalous, imbricate aestivation, and axile placentation.
(c) Monocarpellary, ovary inferior, style long and slightly bent at the apex.
(d) Zygomorphic flowers, vexillary aestivation in corolla, monocarpellary, ovary superior, diadelphous, ten stamens, many ovules, and marginal placentation.

24. $\underline{G}$ and $\overline{G}$ indicates
(a) epigynous and hypogynous flowers
(b) superior ovary and inferior ovary
(c) presence and absence of gynoecium
(d) fused and free gynoecium

25. The character of flower which is represented by floral diagram but not by floral formula is
(a) aestivation and placentation
(b) position of gynoecium and adhesion of stamen
(c) fused sepals
(d) fused petals

26. **A:** Root cap protects the root meristem from the friction of the soil and its outer cells are continuously replaced by newer ones.
B: The effect of the soil-friction damages the outer cells of root cap which are peeled off and replaced by new cells produced by root meristem.
(a) Both (A) and (B) are true. (b) (A) is true but (B) is false
(c) Both (A) and (B) are false. (d) (A) is false but (B) is true.

27. Match column-I with column-II and select the correct option from the codes given below.

	Column-I		Column-II
A.	Pedicel	(i)	Reduced leaf
B.	Peduncle	(ii)	Stalk of the flower
C.	Bract	(iii)	Stalk of the leaf
D.	Petiole	(iv)	Inflorescence axis

(a) A – (ii), B – (iv), C – (i), D – (iii)
(b) A – (iii), B – (iv), C – (i), D – (ii)
(c) A – (iii), B – (ii), C – (i), D – (iv)
(d) A – (ii), B – (iii), C – (i), D – (iv)

Application Based MCQs

28. Which of the following is correct?
(a) In *Asparagus*, root is modified for food storage.
(b) Prop root is for mechanical support.
(c) Underground stems of potato, ginger, turmeric, *Zaminkand and Colocasia* are modified to store food in them.
(d) All of the above

29. Read the given statements and select the **correct** ones.
(i) Root caps are present in prop roots.
(ii) Pneumatophores help to get oxygen for respiration.
(iii) Edible part of ginger is underground stem.
(iv) Hydrophytes usually possess a well developed root system.
(a) (i) and (ii) (b) (ii) and (iii)
(c) (i), (ii) and (iii) (d) (i), (ii), (iii) and (iv)

30. The structure which contain vascular bundle and is modification of stem is:
(a) Bristles (b) Thorn (c) Prickle (d) Spine

31. Identify the order where plants show alternate, opposite and whorled phyllotaxy respectively.
(a) China rose, *Calotropis* and *Alstonia*
(b) China rose, *Alstonia* and *Calotropis*
(c) *Alstonia*, *Calotropis* and China rose
(d) *Calotropis*, China rose and *Alstonia*

32. Find out the **incorrect** match.
(a) Sterile stamen – Staminode
(b) Stamens attached to petals – Epipetalous
(c) Stamens attached to perianth – Episepalous
(d) Free stamens – Polyandrous

33. Read the given statements.
(i) Gynoecium occupies the highest position while the other floral parts are situated below it.
(ii) Ovary is superior.
(iii) Examples are *Brassica*, *Hibiscus*, brinjal, etc.
Which condition of flowers is being described by the above statements?
(a) Hypogyny (b) Perigyny
(c) Epigyny (d) None of these

34. The floral formula is that of:

$\oplus\ \varphi\ K_{(5)}\ \overset{\frown}{C_{(5)}\ A_5}\ \underline{G_{(2)}}$

(a) Soyabean (b) Sunhemp (c) Tobacco (d) Tulip

35. Which one of the following statements is correct?
(a) In tomato, fruit is a capsule.
(b) Seeds of orchids have oil-rich endosperm.
(c) Placentation in primose is basal.
(d) Flower of tulip is a modified shoot.

36. Select the group of plants that possess stilt roots.
(a) *Zea mays, Rhizophora mangle*
(b) *Pandanus odoratissimus, Ficus benghalensis*
(c) *Rhizophora mangel, Hedera helix*
(d) *Ficus benghalensis, Pisum sativum*

37. Match column-I with column-II and select the correct option from the codes given below.

	Column-I		Column-II
A.	Vegetative buds	I.	Buds develop in axil of leaves.
B.	Floral buds	II.	Buds produce leafy shoots.
C.	Axillary buds	III.	Reproductive buds that produce flowers.
D.	Accessory buds	IV.	Additional buds borne at leaf bases.

(a) A – II, B – III, C – I, D – IV
(b) A – III, B – II, C – I, D – IV
(c) A – IV, B – III, C – II, D – I
(d) A – I, B – II, C – IV, D – III

38. Which of the following combinations is false?
(a) Apocarpous – Carpels free – Lotus, Rose
(b) Syncarpous – Carpels fused – Mustard, tomato
(c) Placenta – arrangement of ovules within ovary
(d) Arrangement of ovules within ovary–ovulation

39. How many plants in the list given below have composite fruits that develop from an inflorescence walnut, poppy, radish, fig, pineapple, apple tomato, mulberry?
(a) Four (b) Five (c) Two (d) Three

40. Select the mismatched pair.
(a) Tap root system – Dicots
(b) Fibrous root system – Monocots
(c) Fasciculated roots – *Curcuma*
(d) Stilt roots – Sugarcane

41. Given are some differences between an underground stem and a root. Select the option that identifies the incorrect pair of differences.

	Underground stem	Root
(i)	It is differentiated into nodes and internodes.	It is not differentiated into nodes and internodes.
(ii)	Scale leaves are present at the nodes.	Scale leaves are absent in roots.
(iii)	Axillary buds are present in the axil of scale leaves.	Axillary buds are present at root tips.
(iv)	Branches arise exogenously.	Branches arise endogenously
(v)	Root hair and root caps are absent.	Root hair and root caps are present.
(vi)	Flowers and fruits are usually present.	Flowers and fruits are absent.
(vii)	These usually perform the function of food storage.	These always perform the function of food storage.

(a) (vi) and (vii) (b) (ii), (iii) and (vii)
(c) (iii), (vi) and (vii) (d) (ii), (iii), (vi) and (vii)

42. Following table summarises the differences between phylloclades and cladodes (cladophylls).

	Phylloclade	Cladode
(i)	Both main stem and branches are modified to function like leaves.	Only the branches are modified to take over the function of leaves.
(ii)	Phylloclade has unlimited or indefinite growth.	Cladode also has unlimited or indefinite growth.
(iii)	It consists of several nodes and internodes.	It is usually one internode long.
(iv)	True leaves are commonly caducous,	True leaves are either reduced to scales or modified to spines.
(v)	Examples: *Ruscus aculeatus, Asparagus, etc.*	Examples: *Opuntia, Euphorbia royleana, etc.*

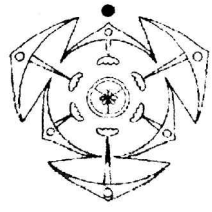
Pick up the wrong differences and select the correct option.
(a) (i) and (ii) (b) (ii) and (v)
(c) (iii) and (v) (d) (ii) and (iv)

43. Match column-I with column-II and select the correct option from the codes given below.

	Column-I		Column-II
A.	Marginal	(i)	Sunflower, marigold
B.	Parietal	(ii)	Pea
C.	Axile	(iii)	Mustard, *Argemone*
D.	Free central	(iv)	*Hibiscus*, tomato, lemon
E.	Basal	(v)	*Dianthus*, *Primrose*

(a) A – (ii), B – (iii), C – (iv), D – (v), E – (i)
(b) A – (i), B – (iii), C – (ii), D – (v), E – (iv)
(c) A – (i), B – (ii), C – (iii), D – (iv), E – (v)
(d) A – (iii), B – (ii), C – (iv), D – (v), E – (i)

44. Study carefully the given floral diagram and select the option which correctly represents the related floral formula (F.F).



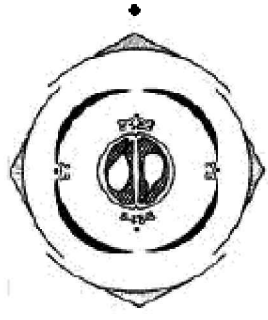
(a) $\oplus \varnothing \overset{\frown}{P_{(3+3)}} A_{3+3}\ \underline{G}_{(3)}$ (b) $\oplus \varnothing P_6A_6\ \underline{G}_{(3)}$
(c) $\oplus \varnothing P_{5+5}A_{(5)}\ \underline{G}_{(2)}$ (d) $\oplus \varnothing K_{(5)}\overset{\frown}{C_{(5)}}\ A_{(5)}\ \underline{G}_{(2)}$

45. Identify the correct feature of the family to which given floral formula belongs.

$$\% \varnothing K_{(5)}C_{1+2+(2)}A_{(9)+1}\underline{G}_1$$

(a) Presence of actinomorphic flowers and cruciform corolla
(b) Androecium is commonly diadelphous or monadelphous
(c) Presence of cymose inflorescence
(d) Fruit is a berry of capsule

46. Which of the following features characterise the family represented by the given floral diagram?



(a) Cruciform corolla with quincuncial aestivation
(b) Stamens with didynamous condition
(c) Bicarpellary, syncarpous ovary with parietal placentation
(d) Inflorescence usually cymose

Skill Based MCQs

47. The leaves are modified into tendrils, hooks, pitcher and bladder in the following plants respectively.
(a) Sweet pea, Cat's nail, *Nepenthes*, *Utricularia*
(b) Sweet pea, Cat's nail, *Utricularia*, *Nepenthes*
(c) *Nepenthes*, Sweet pea, Cat's nail, *Utricularia*
(d) *Utricularia*, *Nepenthes*, Cat's nail, Sweet pea

48. Among flowers of tulip, *Sesbania*, *Asparagus*, *Colchicine*, Sweet pea, *Petunia*, *Indigofera*, Mustard, Soyabean, Tobacco and groundnut, how many plants have corolla with valvate aestivation?
(a) Five (b) Seven (c) Six (d) Eight

49. How many plants among China rose, *Ocimum*, sunflower, mustard, *Alstonia*, guava, *Calotropis* and *Nerium oleander* have opposite phyllotaxy?
(a) Two (b) Three (c) Four (d) Five

50. Match column-I with column-II and select the correct answer using the codes given below.

	Column-I		Column-II
A.	Leguminosae	I.	Axile placentation
B.	Papilionatae	II.	Tetradynamous
C.	Solanaceae	III.	Marginal placentation
D.	Cruciferae	IV.	Diadelphous stamens
E.	Malvaceae	V.	Epipetalous stamens.

(a) A – III, B – IV, C – V, D – II, E – I
(b) A – IV, B – III, C – V, D – II, E – I
(c) A – III, B – IV, C – V, D – I, E – II
(d) A – III, B – V, C – IV, D – II, E – I

51. Match column-I with column-II and choose the correct option using the codes given below.

	Column-I		Column-II
A.	Bud in the axil of leaf	I.	Pitcher plant and Venus Fly trap
B.	Each leaflet does not have axil, though bud is present in the axil of leaf	II.	Cacti of leaflets
C.	Spines (modified leaves)	III.	Compound leaf
D.	Leaves modified to catch insects	IV.	Simple leaf
E.	Fleshy leaves with stored food	V.	Garlic and onion

(a) A – I, B – II, C – III, D – IV, E – V
(b) A – V, B – IV, C – III, D – II, E – I
(c) A – IV, B – III, C – II, D – I, E – V
(d) A – IV, B – II, C – III, D – I, E – V

52. Consider the following statements.
(i) In *Gynandropis*, *Passiflora*, etc., thalamus is elongated and shows well developed nodes and internodes.
(ii) The floral buds in *Agave*, *Allium*, etc., may sometimes get modified into vegetative buds or bulbils.
(iii) Sepals are concerned with protection of flowers in bud condition and petals help to attract insects for pollination.
(iv) Stamens and carpels serve as the male and female reproductive organs respectively.
Which of the following combinations of above statements provide an evidence that flower is a modified shoot?
(a) (i) and (ii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (i) and (iv)

ANSWER KEY

Conceptual MCQs																			
1	(c)	**4**	(c)	**7**	(b)	**10**	(b)	**13**	(a)	**16**	(b)	**19**	(d)	**22**	(c)	**25**	(a)		
2	(c)	**5**	(d)	**8**	(d)	**11**	(d)	**14**	(b)	**17**	(b)	**20**	(d)	**23**	(d)	**26**	(a)		
3	(c)	**6**	(b)	**9**	(b)	**12**	(b)	**15**	(b)	**18**	(b)	**21**	(d)	**24**	(b)	**27**	(a)		
Application Based MCQs																			
28	(d)	**30**	(b)	**32**	(c)	**34**	(c)	**36**	(a)	**38**	(d)	**40**	(c)	**42**	(b)	**44**	(a)	**46**	(c)
29	(c)	**31**	(a)	**33**	(a)	**35**	(d)	**37**	(a)	**39**	(d)	**41**	(c)	**43**	(a)	**45**	(b)		
Skill Based MCQs																			
47	(a)	**48**	(c)	**49**	(b)	**50**	(a)	**51**	(c)	**52**	(a)								