CHAPTER 15: PLANT GROWTH AND DEVELOPMENT

ONE MARK QUESTIONS:

- 1. Which is the most fundamental and conspicuous characteristic of a living being? (K)
- 2. Define growth. (K)
- 3. "Plants retain the capacity for unlimited growth throughout their life". Why? (U)
- 4. What is open form of growth? (K)
- 5. "The growth in plants is called open form of growth". Give reason. (A)
- 6. Define primary growth in plants. (K)
- 7. Define secondary growth in plants. (K)
- 8. Define growth rate. (K)
- 9. Write the mathematical expression of an arithmetic growth? (K)
- 10. Write the mathematical expression of geometric growth. (K)
- 11. Name the curve obtained in arithmetic growth. (K)
- 12. Name the curve obtained in geometric growth. (K)
- 13. "A sigmoid curve is the characteristic of living organisms growing in a natural environment". Give reason. (A)
- 14. What is efficiency index? (K)
- 15. "Plant growth and development is intimately linked with water status of the plant". Give reason. (A)
- 16. Define differentiation. (K)
- 17. Define dedifferentiation. (K)
- 18. Define redifferentiation. (K)
- 19. What is development? (K)
- 20. Define plasticity? (K)
- 21. Define determinate growth. (K)
- 22. Define meristem (K)
- 23. Define indeterminate growth. (K)
- 24. Define absolute growth rate. (K)
- 25. Define relative growth rate. (K)
- 26. Define phytohormones. (K)
- 27. What are plant growth promoters? (K)
- 28. What are plant growth inhibitors? (K)
- 29. Who discovered Auxins? (K)
- 30. Who discovered the Gibberellins? (K)
- 31. Name the disease of rice seedling caused by Gibberella fujikuroi. (K)
- 32. Name the pathogen responsible for 'bakane" (foolish seedling) disease. (K)
- 33. What is callus? (K)
- 34. Expand the abbreviation ABA. (K)
- 35. Who discovered kinetin (cytokinins)? (K)
- 36. Name the gaseous growth regulator of plants. (K)
- 37. Who discovered Ethylene? (K)
- 38. Expand the abbreviation IAA. (K)
- 39. Expand the abbreviation IBA. (K)
- 40. Name any one synthetic Auxin. (K)
- 41. Define apical dominance. (K)
- 42. Expand NAA. (K)
- 43. Expand 2,4-D. (K)

- 44. Name the synthetic auxin which is widely used as a herbicide (K)
- 45. What is bolting? (K)
- 46. Name the hormone responsible for bolting in plants. (K)
- 47. Name the hormone which helps to overcome apical dominance. (K)
- 48. Name the gaseous PGR synthesised in large amount by tissues undergoing senescence and ripening of fruits. (K)
- 49. Name the mostly widely used PGR in agriculture. (K)
- 50. Name the most widely used compound as a source of Ethylene (K)
- 51. Why ABA is called stress hormone? (K)
- 52. What are long day plants? (K)
- 53. What are short day plants? (K)
- 54. What are day neutral plants? (K)
- 55. What is photoperiodism?
- 56. Define vernalization.
- 57. Defoliated plant would not respond to photoperiodic cycle. Why? (U)
- 58. What induced parthenocarpy in grapes? (K)
- 59. Name the hormone responsible for seed dormancy. (K)
- 60. What happens if a rotting orange is kept with unripen bananas. (U)
- 61. Name the natural cytokinin present in coconut milk and corn kernels. (K)
- 62. Name the PGR used to initiate rooting in stem cuttings. (K)
- 63. What would be expected to happen if GA3 is applied to rice seedlings? (U)
- 64. Which plant growth regulator would you use if you are asked to quickly ripen the fruits? (K)
- 65. With reference to geometrical growth $W_1 = W_0 e^{rt}$, what does 'r' signify?(U)
- 66. Give an example of plant growth regulator which is the derivative of adenine.(K)
- 67. Give an example of plant growth regulator which is the derivative of carotenoids.(K)
- 68. Name the plant from which auxin was isolated.(K)
- 69. Which hormone is called stress hormone?(K)
- 70. Which hormone is called ripening hormone?(K)
- 71. Application of 2,4-D on crops like paddy is not affected, though a weedicide. Why?(A)
- 72. 2,4-D is used in gardens to maintain weed free lawns. Justify (A)
- 73. Name the hormone which helps in producing more yield of sugar.(A)
- 74. What is naturally occurring cytokinin called?(K)
- 75. How does cytokinin help in delaying senescence? (U)
- 76. Which plant hormone exists in gaseous form?(K)
- 77. What is ethephon?(K)

TWO MARKS QUESTIONS:

- 1. Name two auxins obtained from plants.(K)
- 2. Name any two synthetic auxins.(K)
- 3. Differentiate between determinate and indeterminate growth. (U)
- 4. Name the meristematic tissue responsible for primary growth and secondary growth. (K)
- 5. Mention the parameters used to measure the growth in plants. Give an example. (K)
- 6. Write the characteristics of cells in the meristematic phase of growth. (K)
- 7. List the characteristics of cells of elongation phase of growth in plants. (U)
- 8. Draw the graphical representation of arithmetic growth in plants. (S)
- 9. Draw the graphical representation of geometrical growth in plants. (S)

- 10. Explain the terms:
- a) Absolute growth rate
- b) Relative growth rate (K)
- 11. Write a note on conditions required for growth. (U)
- 12. Distinguish between differentiation and dedifferentiation. (U)
- 13. Differentiate differentiation from redifferentiation. (U)
- 14. Differentiate dedifferentiation from redifferentiation. (U)
- 15. Define plasticity. Give two examples. (K)
- 16. Which are the two types of plant growth regulators? (K)
- 17. What are plant growth promoters? Give an example. (K)
- 18. What are plant growth inhibitors? Give an example. (K)
- 19. Mention any two groups of plant growth regulators with growth promoting properties. (K)
- 20. Name two plant growth regulators with growth inhibiting property. (K)
- 21. Differentiate absolute growth rate from relative growth rate. (U)
- 22. Name two synthetic auxins used in agricultural and horticultural practice. (K)
- 23. Name two natural auxins isolated from plants. (K)
- 24. List any four horticultural applications of auxins. (U)
- 25. What is apical dominance? Mention the hormone responsible for it. (K)
- 26. What is bolting? Mention the hormone which induces bolting. (K)
- 27. Mention any four physiological effects of gibbereliins. (K)
- 28. List any four physiological effects of cytokinins. (U)
- 29. Name two hormones which promote abscission. (K)
- 30. What is respiratory climactic? Name the hormone responsible for this phenomenon. (K)
- 31. Define seed dormancy. Name the plant growth regulator which causes seed dormancy. (K)
- 32. Write any four applications of Ethylene. (K)
- 33. Mention the extrinsic factors which control plant growth and development. (K)
- 34. "Both growth and differentiation in higher plants are open" Comment. (U)
- 35. What do you understand by photoperiodism and vernalization? (K)
- 36. List any two physiological effects of abscisic acid. (U)
- 37. Differentiate long day plants from short day plants. (U)
- 38. Differentiate long day plants from day neutral plants. (U)
- 39. Differentiate between short day plants from day neutral plants. (U)
- 40. Write a note one discovery of auxins. (U)
- 41. Write a note on discovery of gibberellins. (U)
- 42. Write a note on discovery of cytokinins. (U)
- 43. Explain inhibitory effects of auxins with help of an example. (U)
- 44. What will you do to prevent leaf fall and fruit drop in plants? Support you answer with reason.(U)
- 45. How does ABA acts as an antagonist to Gibberellic acid? (U)
- 46. What is senescence? What are its causes? (K)
- 47. In most plants the terminal bud suppresses the development of lateral buds. What is this phenomenon called? Name the plant growth regulator that can promote this phenomenon. (K)
- 48. What are biennials? Give two examples.(K)
- 49. Abscisic acid is a stress hormone. Substantiate giving two reasons.(A)
- 50. What is naturally occurring cytokinin called? Name the substance from which it is obtained.(K)
- 51. Which are the two processes of development?(K)
- 52. Differentiation in plants is open. Justify (A)
- 53. Explain plasticity in Larkspur and Buttercup plants. (U)
- 54. Name two subtypes of factors which constitute intrinsic factors that help in development.(K)

THREE MARKS QUESTIONS:

- 1. Describe the different phases of growth in plants. (U)
- 2. Briefly discuss the arithmetic growth along with its mathematical expression. (U)
- 3. Briefly describe the geometrical growth. (U)
- 4. Write a note on different conditions required for growth in plants.
- 5. Define the following terms:
- a) Differentiation
- b) Dedifferentiation
- c) Redifferentiation
- 6. Write the schematic representation showing sequence of developmental process in a plant cell. (S)
- 7. Explain plasticity with two examples. (U)
- 8. List the characteristics of plant growth regulators. (U)
- 9. Classify the plants on the basis of requirement of light for flowering (photoperiodism). (U)
- 10. Write a note on vernalization. (U)
- 11. Which are of the plant growth regulators will you be using, if you are asked to
 - a) Quickly ripen a fruit
 - b) Induce rooting in a twig
 - c) Delay leaf senescence (U)
- 12. Both short day plant and long day plant can produce flower simultaneously in given place. Explain. (U)
- 13. Write a note on abscisic acid. (U)
- 14. Mention any two causes of seed dormancy. Mention its significance. (K)
- 15. List any six physiological functions of auxins. (U)
- 16. List any six physiological functions of gibberellins. (U)
- 17. List any six physiological functions of cytokinins. (U)
- 18. List any six physiological functions of Ethylene. (U)
- 19. What would be expected to happen if
- a) Gibberellic acid is applied to rice seedling
- b) Dividing cells stop differentiating
- c) You forget to add cytokinin to culture medium. (A)
- 20. Shoot apices which modify into flowers by themselves cannot perceive photoperiods. Then how does photoperiodism affects flowering?(U)
- 21. Winter crop plants should be planted in autumn. Why ?(A)

FIVE MARKS QUESTIONS:

- 1. Explain the arithmetic growth along with its graphical representation. (U)
- 2. Draw the sigmoid (S) curve showing geometric growth. Explain the different phases of geometric growth. (U)
- 3. List five main groups of natural plant growth regulators.
- 4. Write a note on discovery, physiological functions & agricultural/horticultural applications of auxins. (U)
- 5. Write a note on discovery, physiological functions and agricultural/horticultural applications of gibberellins. (U)
- 6. Write a note on discovery, physiological functions and agricultural/horticultural applications of cytokinins. (U)
- 7. Write a note on discovery, physiological functions and agricultural/horticultural applications of ethylene.(U)

- 8. Write a note on discovery, physiological functions and agricultural/horticultural applications of abscisic acid. (U)
- 9. What is photoperiodism ? What is its significance? (U)
- 10. What is vernalization? What is its significance? (U)
- 11. Discuss the practical applications of growth regulators. (U)
- 12. Write a note on long day, short day and day neutral plants. (U)
- 13. List the physiological functions of Ethylene. (U)
- 14. List the physiological functions of cytokinins. (U)
- 15. Discuss briefly the role of light and temperature on initiation of flowering. (U)
- 16. Match the fallowing hormones with their discoverers.(K)
- 1. Auxins a. E. Kurosava
- 2. Cytokinins b. F. Skoog
- 3. Gibberellins c. F.T.Addicott
- 4. Ethylene d. F.W.Went
- 5. Abscisic acid e. Cousins