

PRIST UNIVERSITY

School of Agriculture

BSc. (Agri.)-II Semester

Course code and Title: 16CRP 101 Fundamentals of Plant Physiology (2+ 1)

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QUESTION BANK

I. Choose the best

- The main function of Mitochondria is
a) **Cellular respiration** b) Photosynthesis c) Cell lysis d) Protein synthesis
- Which of the following is example of stomatal closing type antitranspirants?
a) **ABA** b) GA₃ c) Wax d) Kaoline
- The apoplastic movement of water in plants occurs completely through
a) **Cell wall** b) Plasmodesmata c) Vacuole d) All of them
- The symplastic movement of water in plants occurs from one cell other cell through
a) Cell wall **b) Plasmodesmata** c) Vacuole d) All of them
- This element is a constituent of chlorophylls
a) **Magnesium** b) Manganese c) Molybdenum d) Boron
- Whiptail disease in cauliflower is caused by deficiency of
a) Magnesium b) Manganese **c) Molybdenum** d) Boron
- “Khaira disease” in rice due to deficiency of
a) **Zinc** b) Manganese c) Molybdenum d) Boron
- Blossom end rot in tomato is due to deficiency of
a) **Calcium** b) Potassium c) Nitrogen d) Zinc
- End product of Glycolysis is
a) Oxaloacetic acid **b) Pyruvic acid** c) Malic acid d) Fatty acid
- Kranz type anatomy found in
a) C₃ plant **b) C₄ plant** c) CAM plant d) None of them
- Glycolysis takes place
a) **Cytocol** b) Mitochondria c) Mesosomes d) All the three

12. Stomata open at night in
 a) C₃ plant b) C₄ plant c) **CAM plant** d) None of them
13. End product of Krebs's cycle is
 a) **Oxaloacetic acid** b) Pyruvic acid c) Malic acid d) Fatty acid
14. Fruit ripening hormone is
 a) Auxin b) **Ethylene** c) Gibberellin d) Cytokinin
15. The synthetic auxin used as weedicide or herbicide is
 a) **2, 4 - D** b) IAA c) NAA d) PAA
16. Which of the following is growth retardant?
 a) Cycocel b) Morphactins c) Maleic hydrazide d) **All of them**
17. Which amino acids accumulates under water stress condition in plant
 a) **Proline** b) Methionine c) Threonine d) Alanine
18. Which among the hormone is called as stress hormone
 a) **ABA** b) Cytokinin c) GA₃ d) Ethylene
19. The gene responsible for submergence tolerance in rice is
 a) *DREB1* b) *Saltol* c) ***Sub1*** d) None of them
20. In tropical plants, chilling injury occurs when the temperature is
 a) **Close to 0°C** b) 0°C c) below 0°C d) Both a & b

II. Fill in the Blanks

- The unit of water potential is Mega Pascal or Bars
- The light reaction of photosynthesis takes place in Grana of the chloroplast.
- The Loss of water in the form of vapor is called as transpiration
- Dicotyledons plants have Kidney-shaped guard cells
- Monocotyledon plants have dumb-bell-shaped guard cells
- Potassium element regulates stomatal movement in plants
- The first product of C₄ cycle is Oxaloacetate
- Malic acid first product of CAM cycle
- First and end product of Krebs cycle is Oxaloacetic acid
- Seed dormancy induced by ABA
- Photoperiodism was first discovered by Garner and Allard (1920).
- Senescence promoting hormones are Abscisic acid and Ethylene.
- Whole plant senescence is also called as Overall senescence
- Deficiency of water severe enough to check the plant growth is called as Drought
- Flowering hormone is Florigen

III. Match the following

- | | | | |
|-------------------|---|-------------------------|-------------------------|
| 1. Brasinosteroid | - | Macro nutrient | |
| 2. Magnesium | - | Apical dominance | |
| 3. ABA | - | Seed dormancy | |
| 4. Auxin | - | Chlorophyll | |
| 5. Nitrogen | - | Novel growth regulator | |
| | | | |
| 1. Halophytes | - | Drought escaping | Salt tolerance |
| 2. Ephemerals | - | Salt tolerance | Drought escaping |
| 3. ABA | - | Flooding resistance | Stress hormone |
| 4. FR 13 A | - | Stress hormone | Flooding resistance |
| 5. 15-30 kDa | - | Salt susceptible | Low molecular mass HSPs |
| 6. Glycophytes | - | Low molecular mass HSPs | Salt susceptible |
| | | | |
| 1. Hydroponics | - | Khira disease in rice | |
| 2. Calcium | - | Apical dominance | |
| 3. Ethylene | - | Fruit ripening hormone | |
| 4. Auxin | - | Blossom end rot | |
| 5. Zinc | - | Soil less culture | |

IV. State True or False

1. Cotton and sunflower are examples of short day plants
2. The loss of water in the form of vapor is called as Guttation
3. Ethylene is the only gaseous hormone present in plants
4. IAA is naturally occurring Auxin in plants
5. Molybdenum deficiency causes whiptail disease in cauliflower
6. Plants transpire more rapidly at higher temperatures
7. Magnesium is an essential constituent of chlorophylls
8. Fertigation is the application fertilizers through irrigation water to the plants
9. Foliar spray of antitranspirants is used to overcome drought in plants.
10. IAA is naturally occurring cytokinin in plants
11. Halophytes are salt tolerant plants
12. Salt stress declines the photosynthesis process
13. Fruit ripening hormones is Auxin
14. PS I participate both cyclic and non-cyclic photophosphorylation
15. Glycolysis is also called as Mitochondrial respiration
16. Osmosis takes place through a selectively permeable membrane

1 mark

1. What is Ascent of Sap?

2. Define Osmosis
3. Define Vernalisation
4. Write about Beneficial elements with examples
5. What is Red Drop?
6. Define Photosynthesis
7. Define Respiration
8. Define Water potential
9. Write about Hidden hunger
10. Define Hydroponics
11. Write any two physiological effects of abscisic acid
12. Define Photoperiodism
13. Define Vernalisation
14. Define drought resistance
15. Define Water logging
16. What is Carbon sequestration?
17. What is a growth inhibitor? Give an example
18. What is photolysis of water?

2 marks

1. Enumerate the Role of water in plants
2. Write short notes on Antitranspirants
3. Water Movement Mechanism in plants
4. Hydroponics and its advantages
5. Foliar nutrition and its advantages
6. Physiological role and deficiency symptoms of Potassium
7. Differentiate between C_3 and C_4 pathway?
8. Explain the mechanism of source –sink relationship by Munch's hypothesis
9. Factors affecting respiration
10. Write short notes on non-cyclic photophosphorylation (Z scheme)
11. Bring out the physiological effects of auxin
12. Write the physiological effects of gibberellin
13. Write short notes on physiological effects of cytokinin
14. Write short notes on physiological effects of novel growth regulators
15. Define abscission and explain its importance in plants
16. Write an account Effect of salt stress on plant growth and yield
17. Write short notes on Heat shock proteins
18. Explain the physiological changes occur due to low moisture (drought) stress

5 marks

1. Define drought. Explain the physiological changes occur during drought and write how to overcome drought.
2. Write an account on cytokinin, ethylene and abscisic acid with their physiological effects.
3. Define plant growth regulator (PGRs). Write about commercial applications of PGRs in agriculture.
4. Define senescence and elucidate the Physiological changes during Senescence.

5. Explain cyclic and non-cyclic photophosphorylation
6. Write an essay on C₃ pathway
7. Write an account on Glycolysis
8. Describe the sequences of reactions of Krebs cycle.
9. Define Photosynthesis. Elucidate the factors affecting photosynthesis
10. Physiological roles and deficiency symptoms of Macro nutrients
11. Physiological roles and deficiency symptoms of Micro nutrients
12. Define Crop Physiology and its importance in Agriculture
13. Define Transpiration and Factors affecting rate of transpiration in plants

Water relations –Question Bank-

Choose the following

1. The principle used in pickling is
 a) Imbibition b) Imbibition **c) Plasmolysis** d) None of the above
2. Movement of particles or molecules from a region of higher concentration to a region of lower concentration is called as
 a) Imbibition b) Osmosis **c) Diffusion** d) Plasmolysis
3. The main function of Mitochondria is
a) Cellular respiration b) Photosynthesis c) Cell lysis d) Protein synthesis
4. Spherosomes are also called as
 a) Oleosomes b) Oil bodies c) Chromosomes **d) Both a & b**
5. The loss of water in the form of liquid is called
 a) Transpiration **b) Guttation** c) Ascent of sap d) None of them
6. The water movement from roots to aerial parts of the plant is called
 a) Transpiration b) Guttation **c) Ascent of sap** d) None of them
7. Which of the following is example of stomatal closing type antitranspirants?
a) ABA b) GA₃ c) Wax d) Kaoline
8. Which of the following is example of Thin film forming type antitranspirants?
 a) ABA b) Rice gruel c) Wax **d) Both b & c**
9. Which of the following is reflective type antitranspirants?
 a) Kaolin b) Wax c) Lime water spray **d) Both a & c**
10. In plants, about 10% of the total transpiration takes place through
 a) Stomata **b) Cuticle** c) Lenticel d) None of them
11. The apoplastic movement of water in plants occurs completely through

- a) **Cell wall** b) Plasmodesmata c) Vacuole d) All of them
12. The symplastic movement of water in plants occurs from one cell other cell through
 a) Cell wall **b) Plasmodesmata** c) Vacuole d) All of them
13. The stage where protoplasm begins to contract from the cell wall is called
 a) Plasmolysis b) Deplasmolysis **c) Incipient plasmolysis** d) All of them
14. Which of the following enzyme associated with glyoxylate cycle
 a) **Glyoxisome** b) Peroxisome c) **Amylase** d) None of them
15. Which of the following enzyme used to breakdown food, organelle and old or damaged cells
 a) **Lysosome** b) Peroxisome c) Amylase d) None of them

Fill in the Blanks

16. The unit of water potential is Mega Pascal or Bars
17. The light reaction of photosynthesis takes place in Grana of the chloroplast.
18. The dark reaction of photosynthesis takes place in Stroma of the chloroplast
19. Mitochondria is also called as Power house of the cell
20. The symbol of water potential is Ψ (psi – pounds per square inch).
21. The unit of water potential is Mega Pascal or Bars
22. The main function of Ribosome is to carry out the proteins synthesis
23. Free energy of water molecules to move is called as water potential
24. Spherosomes are also called as oleosomes or oil bodies
25. The main function of Mitochondria is Cellular respiration.
26. The Loss of water in the form of liquid is called as guttation
27. The Loss of water in the form of vapor is called as transpiration
28. Dicotyledons plants have Kidney-shaped guard cells
29. Monocotyledon plants have dumb-bell-shaped guard cells
30. Lenticular transpiration is found only in woody stems & some fruits
31. A substance sprayed on plant leaves to reduce the rate of transpiration and conserve moisture is called as Antitranspirants
32. About 90 % of the total transpiration takes place through the stomata on leaves.
33. In plants, about 10% of the total transpiration takes place through the epidermal cells of the leaves
34. The amount of water retained by the soil is called as field capacity or water holding capacity of the soil

True or False

1. Osmosis takes place through a selectively permeable membrane [T]
2. Monocotyledon plants have dumb-bell-shaped guard cells [T]
3. The light reaction of photosynthesis takes place in Stroma of the chloroplast [F]
4. Dark reaction of photosynthesis takes place in Grana of the chloroplast [F]
5. Plants transpire more rapidly at higher temperatures [T]

6. In trans membrane pathway water enters through plasma membrane or cell membrane and may cross the tonoplast of vacuole [T]
7. The Loss of water in the form of vapor is called as guttation [F]
8. The Loss of water in the form of liquid is called as transpiration [F]
9. The movement of particles or molecules from a region of higher concentration to a region of lower concentration is called as Osmosis [F]

1 mark

1. Differentiate diffusion and Osmosis
2. What you mean by transpiration as necessary evil
3. Define Transpiration
4. Define Water potential
5. What is Ascent of Sap?
6. Structure of stomata
7. What is Aquaporins?

2 Marks

1. Structure and function of Mitochondria
2. Write short notes on Plastids
3. Role of water in plants
4. Differentiate transpiration and Guttation
5. Write short notes on Antitranspirants
6. Water potential and its components
7. Write about types of Transpiration
8. Water Movement Mechanism in plants

5 Marks

1. Define Crop Physiology and its importance in Agriculture
2. Write Osmosis and its significance in plants
3. External factors affecting absorption of water in plants in plants
4. Define Transpiration and Factors affecting rate of transpiration in plants
5. Write about plasmolysis and its advantages

Unit-II-Mineral Nutrition- Question Banks

1. This element is a constituent of chlorophylls

a) Magnesium	b) Manganese	c) Molybdenum	d) Boron
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2. Whiptail disease in cauliflower is caused by deficiency of

a) Magnesium	b) Manganese	c) Molybdenum	d) Boron
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3. “Khaira disease” in rice due to deficiency of

a) Zinc	b) Manganese	c) Molybdenum	d) Boron
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4. Blossom end rot in tomato is due to deficiency of

a) Calcium	b) Potassium	c) Nitrogen	d) Zinc
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5. Which of the following element regulates stomatal movement in plants
 a) Calcium **b) Potassium** c) Nitrogen d) Zinc
6. Sulphur containing amino acids are, cysteine and methionine
 a) Cystine b) Cysteine c) Methionine **d) All of them**
7. Reddening in cotton is due to deficiency of
a) Magnesium b) Manganese c) Molybdenum d) Nitrogen
8. Plants are growing in a supporting material such as sand called as
 a) Hydroponics b) Fertigation c) Aeroponics **d) Sand culture**
9. Soil less culture are also called as
a) Hydroponics b) Fertigation c) Aeroponics d) Sand culture
10. Application of fertilizers through irrigation water is called
a) Fertigation b) Foliar nutrition c) Root feeding d) None of them

Fill in the blanks

1. An application water soluble fertilizer through irrigation water to the plants is called as Fertigation.
2. Whiptail disease in cauliflower is due to deficiency of Molybdenum
3. Brown heart of cabbage is due to deficiency of Boron
4. Molybdenum plays an important role in nitrogen metabolism
5. “Khaira disease” in rice due to deficiency of Zinc
6. Little leaf disease is due to deficiency of Zinc
7. Reddening in cotton disease is due to deficiency of Magnesium
8. Magnesium is an essential constituent of chlorophylls
9. Die-back of citrus is due to deficiency of Copper
10. White tip disease of cereals and leguminous plants is due to deficiency of Copper.
11. Iron is important constituent of Ferredoxin
12. Yellowing older leaves is due to deficiency of Nitrogen
13. Blossom end rot in tomato is due to deficiency of Calcium
14. Interveinal chlorosis of young leaves is caused by Iron deficiency
15. Lodging in cereals and increase in pest and diseases in plants is due to deficiency of Potassium
16. Potassium element regulates stomatal movement in plants
17. Fertilizing certain crop plants through aerial spraying is called as Foliar Nutrition
18. Application of water soluble fertilizers through irrigation water to the plants is called as Fertigation
19. Application of nutrients in the form of liquid directly to root of the plant is called as Root feeding
20. Plants are growing in a supporting material such as sand called as sand culture

21. Plants are grown with their roots supplied with moisture air while being sprayed continuously with a nutrient solution is called as Aerophonics
22. The practice of growing plants in nutrient enriched water without soil is called as Hydroponics

III. Match the following

- | | | | |
|---------------------|---|-----------------------|-----------------------|
| 1. Sulphur | - | Khira disease in rice | Methionine, Cysteine |
| 2. Potassium | - | Whiptail disease | Stomatal movements |
| 3. Magnesium | - | Chlorophyll | Chlorophyll |
| 4. Calcium | - | Blossom end rot | Blossom end rot |
| 5. Molybdenum | - | Stomatal movements | Whiptail disease |
| 6. Zinc | - | Methionine, Cysteine | Khira disease in rice |
| 7. Hydro
phonics | - | Soil less culture | Soil less culture |

IV. State true or false

1. Sulphur containing amino acids are cystine, cysteine and methionine [T]
2. “Khaira disease” in rice due to deficiency of Zinc [T]
3. Die-back of citrus is due to deficiency of Nitrogen [F]
4. Fertigation is the application fertilizers through irrigation water to the plants [T]
5. Magnesium is an essential constituent of chlorophylls [T]
6. Soil less culture also called as sand culture [F]
7. Application of nutrients in the form of liquid directly in root is known as root feeding [T]
8. Blossom end rot in tomato is due to deficiency of Boron [F]

1 mark

1. Classification mineral elements based on mobility inside the plant system
2. Write on Arnon’s Essentiality criteria of elements
3. Write about Beneficial elements with examples
4. What is Aerophonics?
5. Write about Hidden hunger.
6. Define Hydroponics
7. What is Sand culture

2 marks

1. Classification of mineral elements based on amount required
2. Hydroponics and its advantages
3. Foliar nutrition and its advantages
4. Physiological role and deficiency symptoms of Potassium
5. Physiological role and deficiency symptoms of Boron

5 Marks

1. Classification of essential elements
2. Physiological roles and deficiency symptoms of Macro nutrients

3. Physiological roles and deficiency symptoms of Micro nutrients

Unit-III – PHOTOSYNTHESIS AND RESPIRATION-QUESTION BANK

Choose the following

1. Photosynthesis takes place in
a) Mitochondria b) Peroxisome **c) Chloroplast** d) None of them
2. Which one of the following is a C₄ plant
a) Rice b) Wheat c) Soybean **d) Maize**
3. Which one of the following is a C₃ plant
a) Rice b) Wheat c) Soybean **d) All the three**
4. The pigment which is highly efficient in absorbing solar energy is
a) Phycobilins b) Carotenoids **c) Chlorophyll** d) Xanthophyll
5. C₄ pathway is otherwise known as
a) EMP pathway **b) Hatch-Slack pathway** c) Calvin cycle d) Photorespiration
6. Calvin cycle is otherwise called as
a) C₃ cycle b) C₄ cycle c) CAM cycle d) None of them
7. First product of C₃ cycle is
a) 3-Phosphoglyceric acid (3-PGA) b) Oxaloacetate c) Malic acid d) All the three
8. Kranz type anatomy found in
a) C₃ plant **b) C₄ plant** c) CAM plant d) None of them
9. Pigment system I and II are present in
a) **C₃ plant** b) C₄ plant c) CAM plant d) None of them
10. Phosphoenol pyruvate (PEP) is primary CO₂ acceptor in
a) C₃ plant **b) C₄ plant** c) CAM plant d) None of them
11. Stomata open at night in
a) C₃ plant b) C₄ plant **c) CAM plant** d) None of them
12. Photosynthetically active radiation wavelength ranges are
a) 400-700nm b) 500-700nm c) 200-400nm d) None of them
13. Glycolysis is also called as

- a) **EMP Pathway** b) TCA cycle c) Calvin cycle d) All of them
14. In eukaryotes, Kreb's cycle occur in
 a) **Mitochondria** b) Mesosome c) Nucleoplasm d) Cytoplasm
15. End product of Glycolysis is
 a) Oxaloacetic acid **b) Pyruvic acid** c) Malic acid d) Fatty acid
16. Kreb's cycle also called as
 a) Organic acid cycle b) Citric acid cycle c) TCA cycle **d) All of them**
17. End product of Kreb's cycle is
 a) **Oxaloacetic acid** b) Pyruvic acid c) Malic acid d) Fatty acid
18. In C₃ cycle, how many ATP molecules required for synthesis of one molecule glucose?
 a) **18 ATP** b) 30 ATP c) 2 ATP d) 18 ATP
19. In C₄ cycle, how many ATP molecules required for synthesis of one molecule glucose?
 a) 18 ATP **b) 30 ATP** c) 2 ATP d) 18 ATP
20. End product of anaerobic respiration is
 a) CO₂ b) Ethyl alcohol c) Water **d) Both a & b**
21. Glycolysis takes place
 a) **Cytocol** b) Mitochondria c) Mesosomes d) All the three

Fill in the Blanks

- The first product of C₄ cycle is Oxaloacetate
- Malic acid first product of CAM cycle
- Glycolysis, anaerobic respiration, fermentation process occur in Cytoplasm
- End product of glycolysis is Pyruvic acid
- First and end product of Kreb cycle is Oxaloacetic acid
- Pineapple is an example of CAM plants
- Photolysis of water occur in Non-cyclic photophosphorylation
- Glycolysis takes place in Cytocol

True or False

- Pineapple is an example of CAM plants [T]
- Millets crops are examples of C₄ plants [T]

4. In sigmoid curve the rapid growth phase is designated as
 - a) Lag phase
 - b) Log phase**
 - c) Dormant phase
 - d) Steady state phase
5. Bakanae disease in paddy is caused by
 - a) ABA
 - b) PAA
 - c) NAA
 - d) Gibberellins**
6. Auxin prevents
 - a) Apical dominance
 - b) Parthenocarpy
 - c) Abscission**
 - d) None of them
7. Closure of stomata is caused by
 - a) **ABA**
 - b) PAA
 - c) NAA
 - d) Gibberellins
8. The synthetic auxin used as weedicide or herbicide is
 - a) 2, 4 - D**
 - b) IAA
 - c) NAA
 - d) PAA
9. Which of the following is a gaseous hormone?
 - a) Auxin
 - b) Ethylene**
 - c) Gibberellin
 - d) Cytokinin
10. Which of the following is natural auxin found in higher plants?
 - a) **IAA**
 - b) 2,4-D
 - c) Gibberellin
 - d) Zeatin
11. Which of the following is natural cytokinin found in Maize crop?
 - a) IAA
 - b) 2,4-D
 - c) Gibberellin
 - d) Zeatin**
12. The response of a plant to the relative lengths of light and dark periods is known as
 - a) Vernalization
 - b) Photorespiration
 - c) Photosynthesis
 - d) Photoperiodism**
13. Which of the following is growth retardant?
 - a) Cycocel
 - b) Morphactins
 - c) Maleic hydrazide
 - d) All of them**
14. Which of the following is a short day plant?
 - a) Rice
 - b) Tobacco
 - c) Wheat
 - d) Both a & b**
15. Which of the following is a long day plant?
 - a) Rice
 - b) Tobacco
 - c) Wheat**
 - d) Sunflower
16. Which of the following is a day neutral plant?
 - a) Rice
 - b) Sunflower
 - c) Cotton
 - d) Both b & c**
17. Example of long short day plants is
 - a) Bryophyllum**
 - b) Sunflower
 - c) Cotton
 - d) Rice
18. Which of the following hormone is senescence retardant

- a) Auxin b) Gibberellin c) Cytokinin d) **All of them**
19. Which of the following hormone is senescence promoting
a) Auxin b) ABA c) Ethylene d) **Both b & c**
20. Whole plant senescence occur in
a) Paddy b) Wheat c) **Both a & b** d) Leaf fall in coconut

II. Fill in the Blanks

1. Abscission is prevented by Auxin
2. Flowering hormone is Florigen
3. Shedding of leaves, flowers and fruits is called Abscission
4. Some organic substances produced in the plant inhibit the plant growth is called as growth inhibitors.
5. The response of the plants to the photoperiod, expressed in the form of flowering is called as photoperiodism
6. The cold treatment given to plant buds, seeds or seedlings for promoting early flowering is known as Vernalisation.
7. Inactive form of phytochrome is Pr form.
8. Pfr form is active form in phytochrome
9. Seed dormancy induced by ABA
10. Reversal of the effect of vernalisation is called Devernalisation
11. Photoperiodism was first discovered by Garner and Allard (1920).
12. Senescence promoting hormones are Abscisic acid and Ethylene.
13. Seeds fail to germinate if placed under the condition favourable for germination is called as Seed dormancy.
14. Whole plant senescence is also called as Overall senescence
15. The gradual death of old leave from base to top of the plants is called as Progressive or sequential senescence

III. Match the following

- | | | | |
|-------------------|---|------------------------|------------------------|
| 1. Gibberellin | - | Fruit ripening | Internode elongation |
| 2. Growth curve | - | Apical dominance | S shape |
| 3. ABA | - | Seed dormancy | Seed dormancy |
| 4. Auxin | - | S shape | Apical dominance |
| 5. Ethylene | - | Internode elongation | Fruit ripening |
| 6. Brasinosteroid | - | Novel growth regulator | Novel growth regulator |

IV. State True or False

1. Fruit ripening hormone is Cytokinin [F]
2. IAA is naturally occurring Auxin in plants [T]
3. Zeatin is naturally occurring cytokinin in plants [T]
4. Example of day neutral plant is Rice [F]

5. The growth hormone cytokinin level increasing during senescence [F]
6. The hormone ABA and Ethylene level decreasing during senescence [F]
7. Short day plant examples is Tobacco [T]
8. Cotton, sunflower, and tomato are examples of day neutral plants [T]
9. Brassinosteroid, salicylic acid and jasmonate is novel growth regulators [T]
10. Active form of phytochrome is Pr form [F]
11. Inactive form of phytochrome is Pfr form [F]
12. Fruit ripening hormones is Auxin [F]
13. Senescence reduces the rate of transpiration in plants and it helps to survive under adverse conditions [T]

V. 1Mark questions

1. What is a growth inhibitor? Give an example.
2. Write any two physiological effects of abscisic acid.
3. What is Richmond Lang effect?
4. Define Bolting.
5. Define growth regulator.
6. Define Photoperiodism
7. Define Vernalisation
8. What is day neutral plant? Give an example.
9. Define Senescence
10. Define Abscission

VI. 2 Mark questions

1. Explain the different phases of growth with sigmoid curve.
2. Bring out the physiological effects of auxin.
3. Write the physiological effects of gibberellin.
4. Write short notes on physiological effects of cytokinin.
5. What are the physiological effects of ethylene?
6. Write short notes on physiological effects of novel growth regulators
7. Differentiate Pr and Pfr forms of phytochrome
8. Differentiate short day and long day plants.
9. Write short notes on phytochromes and flowering.
10. Write short notes on vernalisation.
11. Define abscission and its importance in plants

VII. 5 Mark questions

1. Write an essay on auxins and gibberellins with their physiological effects.
2. Write an account on cytokinin, ethylene and abscisic acid with their physiological effects.
3. Define plant growth regulator (PGRs). Write about commercial applications of PGRs in agriculture.
4. Define growth. Explain the different factors influencing growth in plants.
5. Write an account on photoperiodism in plants.
6. Define senescence and elucidate the Physiological changes during Senescence.

UNIT V: Stress Physiology- Question Bank

I. Choose the best

- Which amino acids accumulates under water stress condition in plant
a) **Proline** b) Methionine c) Threonine d) Alanine
- Any environmental factor potentially unfavorable to plant is called as
a) Strain **b) Stress** c) Race d) Fruit ripening
- Which among the hormone is called as stress hormone
a) **ABA** b) Cytokinin c) GA₃ d) Ethylene
- The gene responsible for submergence tolerance in rice is
a) *DREB1* b) *Saltol* **c) *Sub1*** d) None of them
- The plants that grow under high salt concentrations is called as
a) Ephemerals **b) Halophytes** c) Glycophytes d) None of them
- Which of the following is salt tolerant crops
a) Cotton b) Sugarcane c) Barley **d) All of them**
- Which of the following is salt sensitive crop
a) Cotton **b) Groundnut** c) Barley d) All of them
- Which of the following crop is moderately salt tolerant
a) Rice b) Maize c) Wheat **d) All of them**
- Global warming leads to
a) Raise in temperature b) Raise in sea level c) Increase the CO₂ **d) All of them**
- Climate change leads to
a) Drought b) Heat waves c) Heavy rain fall **d) All of them**
- Green house gases are
a) CO₂ b) CH₄ c) O₂ **d) Both a & b**
- In tropical plants, chilling injury occurs when the temperature is
a) Close to 0°C b) 0°C c) below 0°C d) Both a & b
- In plants, freezing injury occurs when the temperature is
a) Close to 0°C b) 0°C c) below 0°C **d) Both b & c**

II. Fill in the Blanks

1. Deficiency of water severe enough to check the plant growth is called as Drought
2. A condition when water is present in excess amount than its optimum requirement is called as water logging
3. Heat shock proteins (HSPs) 60, 70 & 90 are act as molecular chaperons

III. Match the following

- | | | | |
|----------------|---|-------------------------|-------------------------|
| 1. Halophytes | - | Drought escaping | Salt tolerance |
| 2. Ephemerals | - | Salt tolerance | Drought escaping |
| 3. ABA | - | Flooding resistance | Stress hormone |
| 4. FR 13 A | - | Stress hormone | Flooding resistance |
| 5. 15-30 kDa | - | Salt susceptible | Low molecular mass HSPs |
| 6. Glycophytes | - | Low molecular mass HSPs | Salt susceptible |

IV. State True or False

1. Salt stress occur due to excess salt accumulation in the soil [T]
2. Halophytes are salt tolerant plants [T]
3. Salt stress declines the photosynthesis process [T]

1 Mark

1. Define drought resistance
2. Define Water logging
3. What is Carbon sequestration?
4. What are effects occurs due to global warming and climate change?

2 Marks

1. Write an account Effect of salt stress on plant growth and yield
2. Write short notes on Heat shock proteins
3. Explain the physiological changes occur due to salt stress
4. Explain the physiological changes occur due to low moisture (drought) stress
5. Write about how to overcome the high moisture (water logging) stress
6. Write about how to overcome the drought stress

5 Marks

1. Define drought. Explain the physiological changes occur during drought and write how to overcome drought
2. Elucidate the physiological changes during salt stress and how to overcome salt stress
3. Define water logging. Elucidate the physiological changes occur due to high moisture (flooding) stress and how to overcome the high moisture stress