SECTION -A

Q.1. Select and write the correct answer : (4)
(i) How many molecules of ATP are required to fix one molecule of nitrogen?
   a) 12  b) 20  c) 6  d) 16
(ii) The process in which anaerobic bacteria can convert soil nitrates back into nitrogen gas.
   a) ammonification  b) nitrification  c) denitrification  d) nitrogen fixation
(iii) _____________ is the loss or non-development of chlorophyll resulting in the yellowing of leaves
   a) Stunting  b) Chlorosis  c) Mottling  d) Necrosis
(iv) Which of the following is long day plant?
   a) spinach, wheat  b) Dahlia, Aster  c) maize, balsam  d) tomato, cotton

Q.2. Write the answer in one sentence : (3)
(i) Give the full form of IAA?
(ii) What are phytochromes?
(iii) Rohidas saw symptoms like yellow edges to leaves, premature death of plants in his farm. Deficiency of which element causes following symptoms

SECTION -B

Attempt any four : (08)

Q.3. A farmer grows some leguminous crop after the main crop, even though he is not interested to get the seeds of legume. Then why is he doing so?

Q.4. Explain following term with one example
   1. Differentiation
   2. Dedifferentiation

Q.5. Differentiate between Arithmetic and Geometric growth.

Q.6. What is day neutral plant? Give any two examples.

Q.7. Write a note on process in which acceleration of the ability to flower by chilling treatment
Q.8. Write the name of soil bacteria which helps in following nitrification process

1. \(2\text{NH}_3 + 3\text{O}_2 \rightarrow 2\text{HNO}_3 + 2\text{H}_2\text{O}\)

2. \(2\text{HNO}_2 + \text{O}_2 \rightarrow 2\text{HNO}_3\)

SECTION –C

Attempt any two:

Q.09. With the help of graphic representation of the total growth against time explain any 2 types of curve

Q.10. Complete following table correlate with Roles of Mineral Elements in Plants

<table>
<thead>
<tr>
<th>Element</th>
<th>Region of plant in which required</th>
<th>Functions</th>
<th>Deficiency symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Ca(^{2+})</td>
<td>A</td>
<td>Constituent of cell membrane, certain proteins, all nucleic acids and nucleotides required for all phosphorylation reactions</td>
<td>D stunted growth</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Younger tissues, obtains from older, metabolically less active cells</td>
<td></td>
</tr>
<tr>
<td>Manganese (trace) Mn(^{2+})</td>
<td>E</td>
<td>Activates certain enzymes (carboxylases)</td>
<td>F</td>
</tr>
</tbody>
</table>

Q.11. Which of the following statements are true? If false, correct them
1. Ethylene is the only gaseous growth regulator
2. Absolute growth is the increased growth per unit time.
3. Cytokinin is a natural growth inhibiting hormone.

SECTION –D

Attempt any One:

Q.12. Name at least four different deficiency symptoms in plants. Describe them and correlate them with the concerned mineral deficiency.

Q.13. Describe the process in which conversion of free nitrogen of the atmosphere into nitrogenous salts to make it available for the plants which is carried out by prokaryotes called as Nitrogen fixer or diazotrophs