

**SET- A**  
**Plant Physiology and Metabolism/III Sem**  
**(BHGE5)**  
**Generic Elective Unique Paper Code: 32165301\_OC**

**Time: 3 + 1 hrs**

**Max. Marks: 75**

*(Write Your University Roll No, Paper Title and Paper Code on top of the Answer Sheets)*

**Attempt FOUR questions in all.**

**All questions carry equal marks (18.75)**

1. Explain the most accepted theory for the ascent of sap in plants. Differentiate between transpiration and guttation. Discuss various factors that affect the rate of transpiration.
2. Describe the pressure flow hypothesis for the transport of sugars with a well labelled diagram. Write details of the girdling experiment and its significance. Explain the role of channels and carrier proteins in transport of ion across the membrane.
3. Write a brief note on the discovery of Auxin. Describe the physiological role of Auxin and Abscisic Acid. Discuss the photo-reversible nature of phytochrome.
4. Discuss symbiotic nitrogen fixation with reference to nodulation and the role of Dinitrogenase and leghaemoglobin. Explain transamination with one example. Differentiate between competitive and non-competitive enzyme inhibition.
5. Discuss three phases of the Calvin cycle. Write the reactions where ATP and NADPH are utilized in dark reactions. Differentiate between C<sub>4</sub> and CAM pathway. Briefly discuss photorespiration and its significance.
6. Give a detailed account of Glycolysis with a flow chart. Discuss the fate of the end product under anaerobic conditions. Briefly discuss oxidative pentose phosphate pathway and its significance.