1. According to the Poiseuille Equation the rate of flow is ……………….……………related to the pressure difference between the ends of the pipe.
2. ………………………………….……generally omitted because it is negligible compared to the osmotic potential and the hydrostatic pressure.
3. Fick's law Equation for diffusion is ……………………………………….…………… .
4. The pathway along apoplast involves the movement of water through the ……………………………….……………… .
5. Movement of solutes against a chemical potential gradient is known as ……………………………………………………... and requires …………………………………… .
6. A cell in a …………………………………solution will tend to lose water.
7. **Draw and explain a figure for Water Potential.**
8. **count only five (5) Physical and chemical properties of water.**
9. Growth is measured by a variety of parameters some of which are …………………………………..…………, ….……………………………………. and ….……………………………………………..
10. Plant growth is concentrated in localized regions of cell division called ……….…………….……………..
11. Factors affecting differentiation include ………………….…, ….………………. and ….……………. .
12. Secondary growth involves two lateral meristems ….…….…………. and ….………………..
13. Three major tissue systems are found in all plant organs ……………………….…, ….…………………. and ….………………………. .
14. ….……………occurs in the thylakoid membrane. Uses Photosystem I only. P700 reaction center- chlorophyll a.
15. What is Cell Cycle Regulation? Explain phases of the cell cycle with a diagram.
16. Describe CAM Photosynthesis in detail.
17. Define only five (5) of the following terms: [15 Marks]
18. Development 2. Transpiration pull 3. Guttation
19. 4. Porters 5. Hormone 6. photorespiration

 1. Water resists evaporation. This property is responsible for water's use in………. systems.

2. ……………………… is a term that includes all changes that an organism goes through its life cycle from germination of the seed to senescence.

3. …………………………………… is the van’t Hoff equation.

4. Transport of solutes down a chemical gradient (e.g., by diffusion) is known as ………….… .

5. Growth is measured by a variety of parameters some of which are …………… and ………… .

6. …………..……….. is the main type of respiration that occurs in most plants and animals.

**Q3- Write only (3) physiological effects of gibberellins.** **[12 Marks]**

1. **Q4- During the light reaction, there are two possible routes for electron flow, explain them.**

 **Define** **only five (5) of the following terms: [15 Marks]**

1. Zeatin **2.** Transpiration pull  **3.** Light Reactions

**4.** Bundle Sheath **5.** Pressure Potential  **6.** Diffusion

**Q2- Fill only five (5) of the blanks with proper words:** **[10 Marks]**

1. ……………………… are adenine derivatives characterized by an ability to induce cell division in tissue culture.

2. Natural …………………… named indole acetic acid.

3. …………………………………… is the van’t Hoff equation.

4. the most important gibberellins in plants is GA1, which is the GA primarily responsible for ……………………. .

5. Growth is measured by a variety of parameters some of which are …………… and …………………… .

6. …………..……….. is the main type of respiration that occurs in most plants and animals.

**Q3- answer the followings:** **[25Marks]**

1. **Water is good for hydraulic systems, why? [3 Marks]**
2. **Matric potential (Ψm) is negative or positive, why? [4 Marks]**
3. **Write only (4) roles of water in plant life. [8 Marks]**
4. **Only count the factors influencing the rate of diffusion.**