UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Fourth Semester – Spring 2022

Roll No. .....

Paper: Botany-IV (Plant Physiology and Ecology) Course Code: BOT-203 **Time: 3 Hrs. Marks: 60**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions. (15x2=30)

1. Imagine two adjoining cells, the left one with a water potential of -0.5 MPa and the right one with a water potential of -0.2 MPa. Will the water move from Left to Right, or Right to Left?
2. A farmer is trying to grow corn but has difficulty getting access to water for irrigation. Her region gets a lot of rain in the spring, so when she plants the seeds the soil is nice and moist, but no rain falls during the summer when the plants are growing. For the past few years, she has managed to grow tall, healthy looking plants, but although they flower, they set few seeds. What advice can you give this farmer to help her get a good grain harvest next year?
3. Differentiate between Facultative and Obligate CAM plants.
4. What is the evidence that phytochrome is the primary photoreceptor in photoperiodism
5. Distinguish between acclimation and adaptation to abiotic stress.
6. Define soil profile.
7. What are windbreaks?
8. What are sunscalds?
9. Leaves of aquatic plants living under water are devoid of stomata. Leaves that float in water have stomata in the upper surface growing in contact with air, but lack them in the surfaces that are in contact with water. Aerial leaves have stomata in both surfaces. Explain.
10. Differentiate between community and biome.
11. Differentiate between Vacuolar H^+-ATPases and Vacuolar –H^+-PPase
12. What is the value of osmotic potential of pure water?
13. Differentiate between channel and carrier protein.
14. Define water holding capacity of soil.
15. Define ecological niche.

Q.2. Answer the following questions (3x10=30)

1. Compare and contrast the cellular functions and deficiency symptoms of nitrogen (N), Magnesium (Mg), Iron (Fe) and Copper (Cu). **(10)**

2.

A. Is the main function of aerobic respiration the production of ATP? Explain your answer. What are the respective contributions of glycolysis and oxidative phosphorylation to the cellular ATP pool **(5)**

B. Give a detailed account of quadrat and line intercept methods of sampling vegetation **(5)**

3. What is succession? Give a detailed account of its Different types. **(10)**