

PE-268
(542) M.Sc. BOTANY (SECOND SEMESTER)
Examination JUNE 2022
Compulsory/Optional
Group-
Paper-IV

Name/Title of Paper- PLANT PHYSIOLOGY

Time: Three Hours

Maximum Marks-080

Minimum Passing Marks-029

नोट: दोनों खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित हैं।

Note: Answer From Both the Section as Directed. The Figures in the right-hand margin indicate marks.

Section-A

1- Answer the following questions:-

1x10=10

- a. A plant tissue with spiral thickening in cell wall capable of absorbing water is known as
- b. Which is the plant stress hormone?
- c. The fundamental feature of cranz anatomy of C₄ plants is _____
- d. Write empirical formula of chlorophyll-a
- e. What is the function of leghaemoglobin in root nodule.
- f. The only living element of the xylem tissue is _____
- g. How many ATP molecules are required to fix one molecule of Nitrogen.
- h. Conversion of ammonia to nitrite and then to nitrates is called
i) Ammonification ii) Denitrification iii) Assimilation iv) Nitrification
- i. Who articulated the law of limiting factor in photosynthesis
- j. Rubisco content in chloroplast is-
i) 16% ii) 2% iii) 25% iv) 11%

Section-B

2- Answer the following questions in short

2x5=10

- a- Sulphur metabolism
- b- Root nodule formation
- c- Photosynthetic apparatus
- d- Oxidative stress
- e- Structure of phloem

Section-C

Answer all questions in detail

15x4=60

3- Why xylem transport is unidirectional and phloem transport is bidirectional? Explain.

Or

Describe active and passive solute transport in plants.

4- Describe role of G-protein coupled receptors and calcium calmodulin cascade in cell signaling pathways.

Or

Short notes on any two

- a) Nod mechanism of nitrate uptake. b) Sulphate uptake transport and assimilation
- c) How does the two-component regulatory system work in plant?

5- Describe photosynthetic pigment and light harvesting complex.

Or

Short notes on any two

- a) Photolysis of water b) CAM pathway c) Photophosphorylation

6- What do you understand by biotic stress? Discuss these critically with special reference to hypersensitive response (HR) and Secondary acquired resistance (SAR) in plants.

Or

Short notes on any two

- a) Salt stress b) Water stress c) Heavy metal stress