



ROLL NO

**PUNJAB PUBLIC SERVICE COMMISSION**  
**COMBINED COMPETITIVE EXAMINATION**  
**FOR RECRUITMENT TO THE POSTS OF**  
**PROVINCIAL MANAGEMENT SERVICE, ETC -2023**  
**CASE NO. 1C2024**

**SUBJECT: BOTANY (PAPER-I)**

**TIME ALLOWED: THREE HOURS**

**MAXIMUM MARKS: 100**

**NOTE:**

- i. All the parts (if any) of each Question must be attempted at one place instead of at different places.
- ii. Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper.
- iii. No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
- iv. Extra attempt of any question or any part of the question will not be considered.

**NOTE: Attempt FIVE Questions in All. Attempt in Urdu or English.**

- Q. No.1** (a) Mention general characteristics and economic importance of Bacillariophyta.  
(b) Give outline of life cycle of a typical Diatom. **(10+10=20 Marks)**
- Q. No.2** (a) Describe various modes of reproduction in *Pythium*.  
(b) Write note on early blight of potato disease. **(10+10=20 Marks)**
- Q. No.3** (a) Explain gametophyte structure of *Funaria*.  
(b) How sporophyte of *Anthoceros* is considered advanced? Give point wise detail. **(10+10=20 Marks)**
- Q. No.4** What are fossils? How fossils are formed? Discuss various modes of preservation with respect to organic origin? **(20 Marks)**
- Q. No.5** Describe the salient features of gymnosperms. Explain in detail how gymnosperms are beneficial for mankind? **(20 Marks)**
- Q. No.6** Describe in detail the stomata with respect to their origin, structure types and functions? **(20 Marks)**
- Q. No.7** (a) What is biosystematics? How Operational Taxonomic Units (OTUs) are significant for arranging the plants into groups?  
(b) What is sporogenesis? Discuss the various ways of micro- and megasporogenesis in plants? **(10+10=20 Marks)**
- Q. No.8** Explain structure and morphological nature of sporocarp of *Marsilia*. **(20 Marks)**



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**SUBJECT: BOTANY (PAPER-II)**

**TIME ALLOWED: THREE HOURS**

**MAXIMUM MARKS: 100**

**NOTE:**

- All the parts (if any) of each Question must be attempted at one place instead of at different places.
- Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper.
- No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
- Extra attempt of any question or any part of the question will not be considered.

**NOTE: Attempt FIVE Questions. Attempt in Urdu or English.**

- Q. No.1** a) What is meant by seed dormancy? Enlist and explain different causes of seed dormancy.  
b) What role do auxins perform in various developmental phenomena in plants?  
**(10+10=20 Marks)**
- Q. No.2** Write short notes on the following:  
(i) Day neutral plants  
(ii) Photoperiodic induction  
(iii) Long day plants  
(iv) Short day plants  
**(5x4=20 Marks)**
- Q. No.3** What is meant by salinity? Give causes and effects of salinity and suggest some measures for reclamation of saline soil.  
**(20 Marks)**
- Q. No.4** a) Compare the process of mitosis and meiosis in detail.  
b) Explain the significance of the process of meiosis for plants.  
c) Write a note on ribosomes.  
**(10+5+5=20 Marks)**
- Q. No.5** a) Suppose that a normal woman marries a man with hemophilia. What is the probability of the couple having a hemophilic son, and hemophilic daughter?  
b) In cross between a pure bred, red eyed female fruit fly and a white eyed male, which parent of the male offspring will have white eyes?  
**(10+10=20 Marks)**
- Q. No.6** a) What are the properties of genetic code?  
b) Write down a note on genomic library.  
**(10+10=20 Marks)**
- Q. No.7** a) Briefly give the salient points of Darwin's theory of natural selection.  
b) How can you explain modern synthetic theory of evolution?  
**(10+10=20 Marks)**
- Q. No.8** Differentiate between the followings:  
(i) Lamarckism vs Darwinism  
(ii) Darwinism vs Neo-Darwinism  
(iii) Natural Selection Theory vs Artificial Selection theory  
(iv) Adaptive mutation vs Normal mutation  
**(5x4=20 Marks)**