CSS Botany Past Paper 2025

FE[illegible]E PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION-2025 FOR RECRUITMENT
TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT

BOTANY

Roll Number

TIME ALLOWED: THREE HOURS	(PART-I MCQs)	MAXIMUM MARKS: 20
PART-I (MCQs) : MAXIMUM 30 MINUTES	(PART-II)	MAXIMUM MARKS: 80

NOTE: (i) First attempt PART-I (MCQs) on separate OMR Answer Sheet which shall be taken back after 30 minutes.
(ii) Overwriting/cutting of the options/answers will not be given credit.
(iii) There is no negative marking. All MCQs must be attempted.

PART-I (MCQs)(COMPULSORY)

Q.1. (i) Select the best option/answer and fill in the appropriate Box ■ on the OMR Answer Sheet.(20x1=20)
(ii) Answers given anywhere else, other than OMR Answer Sheet, will not be considered.

1. **The cell wall of fungi is primarily composed of:**
(A) Cellulose (B) Chitin (C) Pectin (D) Lignin
2. **Which element is an essential micronutrient for nitrogen fixation in legumes?**
(A) Calcium (B) Manganese (C) Molybdenum (D) Magnesium
3. **Which of the following is the dominant generation in the life cycle of Pteridophytes?**
(A) Sporophyte (B) Gametophyte (C) Seedling (D) Embryo
4. **Which organelle is involved in modifying, sorting, and packaging proteins for secretion?**
(A) Endoplasmic reticulum (B) Golgi apparatus (C) Lysosome (D) Peroxisome
5. **In dicot plants, the first leaf-like structure that emerges from the seed is called:**
(A) Hypocotyl (B) Cotyledon (C) Epicotyl (D) Radicle
6. **Plants that grow under direct sunlight are known as:**
(A) Heliophytes (B) Sciophytes (C) Psammophytes (D) Dicots
7. **What is the ploidy level of the endosperm in angiosperms?**
(A) Haploid (n) (B) Diploid (2n) (C) Triploid (3n) (D) Tetraploid (4n)
8. **The phase of mitosis in which chromosomes align at the cell's equator is called:**
(A) Anaphase (B) Telophase (C) Metaphase (D) Prophase
9. **Which of the following is NOT a characteristic of algae?**
(A) Autotrophic (B) Multicellular
(C) Lack true roots, stems, and leaves (D) All algae are microscopic
10. **In angiosperms, how many nuclei are present in a mature embryo sac?**
(A) 6 (B) 7 (C) 8 (D) 9
11. **Which group of organisms is known for having chloroplasts in every cell?**
(A) Fungi (B) Algae (C) Bryophytes (D) Lichens
12. **A cross between an individual with an unknown genotype and a homozygous recessive individual is called a:** (A) Back cross (B) Test cross (C) Monohybrid cross (D) Dihybrid cross
13. **The tallest living plant species belongs to the group of:**
(A) Pteridophytes (B) Angiosperms (C) Gymnosperms (D) Bryophytes
14. **What is the characteristic feature of the Fabaceae family?**
(A) Composite flowers (B) Opposite leaves (C) Papilionaceous corolla (D) Parallel venation
15. **The process of transcription involves the synthesis of:**
(A) RNA from DNA (B) Protein from RNA (C) DNA from RNA (D) RNA from protein
16. **The study of heritable changes in gene expression without alteration in the underlying DNA sequence is called:**
(A) Epigenetics (B) Genetics (C) Genomics (D) Evolutionary biology
17. **In the process of transcription, the RNA polymerase binds to which region of the gene to initiate synthesis?** (A) Promoter (B) Exon (C) Intron (D) Terminator
18. **Which scientist is known for developing the concept of genetic drift?**
(A) Gregor Mendel (B) Sewall Wright (C) Charles Darwin (D) Alfred Russel Wallace
19. **In which part of the plant does the Calvin cycle occur?**
(A) Stroma of chloroplasts (B) Thylakoid membrane (C) Cytoplasm (D) Nucleus
20. **Which type of pollination involves the transfer of pollen by wind?**
(A) Hydrophily (B) Anemophily (C) Entomophily (D) Zoophily

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PART-II

NOTE: (i) **Part-II** is to be attempted on the separate **Answer Book.**
(ii) Attempt **ONLY FOUR** questions from **PART-II**. **ALL** questions carry **EQUAL** marks.
(iii) All the parts (if any) of each Question must be attempted at one place instead of at different places.
(iv) Write Q. No. in the Answer Book in accordance with Q. No. in the Q.Paper.
(v) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
(vi) Extra attempt of any question or any part of the question will not be considered.

Q. No. 2. How does the chemiosmotic theory explain ATP synthesis during oxidative phosphorylation? What is the significance of the proton gradient across the inner mitochondrial membrane? **(20)**

Q. No. 3. Describe the interaction between cytokinins and auxins in regulating plant growth and development, with specific examples of their synergistic and antagonistic effects. **(20)**

Q. No. 4. What are the primary causes of soil salinity and waterlogging in Pakistan? How do these issues impact agricultural productivity? Discuss with reference to specific regions and irrigation practices. Evaluate the effectiveness of government policies and initiatives in addressing waterlogging and salinity in Pakistan. **(20)**

Q. No. 5. Explain the role of molecular techniques in the diagnosis, identification, and management of plant pathogens. Provide specific examples of their application in Pakistan. **(20)**

Q. No. 6. **(a)** What are chromosomes? Explain their structure and role in inheritance. **(10)**

(b) Discuss the various mechanisms of genetic variability in fungi and their significance in fungal evolution. **(10)**

Q. No. 7. How do convergent and divergent evolutions differ? Provide examples from nature. Also, describe the processes of genetic drift, gene flow, and mutation, and their contributions to evolution. **(20)**

Q. No. 8. **(a)** Discuss the stages of embryonic development in angiosperms, highlighting key events in the formation of the embryo sac and zygote. **(10)**

(b) What is double fertilization in angiosperms? Discuss its significance and the development of the endosperm. **(10)**

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