

PUNJAB PUBLIC SERVICE COMMISSION

COMBINED COMPETITIVE EXAMINATION FOR RECRUITMENT TO THE POSTS OF PROVINCIAL MANAGEMENT SERVICE, ETC. – 2015

SUBJECT: BOTANY (PAPER-I)

TIME ALLOWED: THREE HOURS
MAXIMUM MARKS: 100

Note: Attempt any FIVE questions. All questions carry equal marks.

Q.1. (a) Discuss ecological and economic importance of algae.
(b). Give an account of general characteristics of Bacillariophyta with special reference to reproduction.

Q.2. (a) Briefly explain the economic impact on the important fungal diseases in agricultural crop.
(b). Explain the life cycle of Selaginella.

Q.3. (a) Explain the Phylogenetic relationship of bryophytes with different groups of plant kingdom.
(b) Describe sporophyte in Anthoceros.

Q.4. (a) Write down the means of reproduction in Basidiomycetes and Ascomycete.
(b). Discuss the process of evolution of seed habit in land plants.

Q.5.(a). Justify the statement " Cycas is a living Fossil".
(b). Describe male and female cone of Pinus.

Q.6. (a) Write a detailed note on Anomalous secondary growth.
(b). Explain the modification in different ecological groups of plants.

Q.7. (a) Give merits and demerits of Bentham and Hooker's system of classification.
(b). What are the rules on International Codes of Botanical Nomenclature (ICBN).

Q.8. Write short note on the followings:

- (A). Anatomy of leaf
- (B). Periderm
- (C). Structure of seed
- (D). Pollination

Q.9. Differentiate

- a). Chemotaxonomy and Numerical taxonomy
- b). Collenchyma and Sclerenchyma
- c). Botanic garden and Arboretum

PUNJAB PUBLIC SERVICE COMMISSION

COMBINED COMPETITIVE EXAMINATION FOR RECRUITMENT TO THE POSTS OF PROVINCIAL MANAGEMENT SERVICE, ETC. – 2015

SUBJECT: BOTANY (PAPER-II)

TIME ALLOWED: THREE HOURS
MAXIMUM MARKS: 100

Note: All questions carry equal marks. Be precise and to the point . Attempt ONE question from section 1,2,3, and TWO questions from section 4.

SECTION 1

Q.1. a). Differentiate between solutions, colloidal and suspensions.
b). Trace the path of water through the stem, draw the diagram to support it.
c). Describe the "Induce Fit Model" for enzyme action.
d). What is phosphorylation, differentiate between Oxidative phosphorylation and Photophosphorylation.

Q.2. (a) Discuss photosystem II in detail, why it is known as photosystem II.
b). Differentiate between Action spectrum and Absorption spectrum.
c). Draw to explain Electron Transport Chain.
d). Write a note on Dormancy in Plants.

SECTION 2

Q. 3 (a). What is the scope of Ecology
b). Punjab plains are made of Alluvial soil, comment.
c). Trace the plant succession from rock to climax formation.
d) What is Population ecology, discuss the role of seed bank in population ecology.

Q.4. a). Give a brief account of climatic zones of Pakistan.
b). define salinity. Describe briefly salinity problem in Punjab.
c). Differentiate in Alpine and Boreal forest. Write a short note on Alpine forest of Punjab.
d) Give the parameters for the study of Ecology.

SECTION 3

Q.5. a) write note on Ribosomes.
b). Define chromosomal Aberration. Write a note on Polyploidy in its light.
c). Differentiate in mitosis and meiosis. Explain the process of Mitosis in Onion root tip.
d). Draw and explain the tertiary Structure of Eukaryotic DNA.

Q.6. a). Compare "Unit Membrane Structure" with "Fluid Mosaic Model". Why unit membrane structure was replaced.
b). Discuss the chloroplast as a unit which converts light energy to bond energy
c). Give the Ultra -structure of Golgi bodies.
d). Draw complete structure of B-DNA model showing all the links of nucleotides.

SECTION 4

Q.7. a). Narrate Hardy Weinberg law. What is its significance.
b). Mendel's "Approach" paved the way to his success. Elaborate the statement .
c). Mutation is a tool in evolution , comment.
d). briefly narrate the process of Replication.

Q.8. a). write a note on sex linked inheritance. How T.H Morgan used it.
b). differentiate between Test cross, Reciprocal cross and Back cross.
c). Lamarck and Darwin both believe on Evolution. Lamarck was wrong whereas Darwin was right, how ?
d). A farmer has a flock of white sheep. He sales his white sheep wool for his living . Sometime a black sheep also appears in the flock. Suggest the solution in the light of Mendelian genetics(white is dominant to black fur color.)

Q.9. a). Describe any one mechanism for the exchange of genetic material in bacteria .
b). Mother's blood never mingle with baby's blood during pregnancy. Discuss negative effects of RH factor in the light of this statement.
c). Describe plant succession from rock surface to climax.
Draw the structure and explain role of tRNA.

Q.10. a). What is adaptive mutation? give your comments.
b). Briefly narrate the statement " Genetics and crop improvement."
c). What are the Linkage maps, what is their role in understanding crossing over.
d). Mr. Jack self -fertilized six corn plants of a special stock and raised approximate 25 seeds from each of them. Some seeds produce green plants and some produced albino white plants , in the following proportions:

| Parent | Progency | |
|--------|-----------|------------|
| | White | Green |
| A | 5 | 19 |
| B | 9 | 13 |
| C | 4 | 21 |
| D | 4 | 15 |
| E | 8 | 15 |
| F | 4 | 25 |
| | 34 | 108 |

Explain the inheritance of the white character.