

PUNJAB PUBLIC SERVICE COMMISSION

COMBINED COMPETITIVE EXAMINATION FOR RECRUITMENT TO THE POSTS OF PROVINCIAL MANAGEMENT SERVICE, ETC - 2014

SUBJECT: BOTANY-I

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE: (i) Attempt in English only.

(ii) Attempt any FIVE questions. All questions carry equal marks.

- Q.1. (i) Discuss the economic importance of algae.
(ii). Give an account of general characteristics of Chlorophyta with special reference to reproduction.
- Q.2. (i). Write down the means of reproduction in major groups of fungi.
(ii). Discuss fungal disease of economically important plants.
- Q.3. (i). Discuss the evolutionary trends in the sporophyte of Bryophytes.
(ii). Explain the life cycle of Adiantum.
- Q.4. (i). Describe the general characteristics of Gymnosperms with special reference to living fossils.
(ii). Discuss the evolutionary tendencies in land plants with lead to the formation of seed.
- Q.5. (i). Describe Bentham and Hooker's system of classification of plants. What are its merits and demerits?
(ii). What are the main provisions of International Code of Botanical Nomenclature?
- Q.6. (i). Write a comprehensive note on Meristem
(ii). Describe Secondary growth in plants.
- Q.7. (i). What is Alternation of Generations? Describe it with the help of an example of flowering plant.
(ii). What do you know about Sclerenchyma tissue?
- Q.8. Write notes on the following:
- Epidermal Tissues
 - Ecological Anatomy
 - Botanic Garden
 - Sporocarp of Marsilea

Q.9. Differentiate between the following:

- Ascus and Basidium
- Vessel and Tracheid
- Seed and Fruit
- Parenchyma and Collenchyma

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SUBJECT: BOTANY-II

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

SECTION-I (Plant Physiology)

Note: Attempt any one(1) question.

- Q.1. (a). Describe role of stomata in regulating transpiration in plants?
(b). What is meant by the term active transport? How does it differ from Passive transport?
(c). Describe different types of plant growth hormones in plants?
(d). Differentiate between photorespiration and dark respiration.
- Q.2. (a). Differentiate between cellular respiration and oxidative phosphorylation. (b). What is structure and function of Chloroplast? Explain
(c). What is photosynthesis? Describe the ways in which external factors may affect the rate of photosynthesis.
(d). Write a short note on bud dormancy.

SECTION-II (Ecology)

Note: Attempt any one(1) question.

- Q.3. (a). what is plant Ecology? Differentiate between "Auto ecology" and "Synecology".
(b). How wind causes soil erosion? How it could be prevented?
(c). How energy flow in an ecosystem?
(d). How does climax community differ from early successional stages?
- Q.4. (a). What do you mean by pollution? How industrial revolution has led to the problem of water pollution?
(b). What is water logging? Describe briefly Water logging problem in Pakistan.
(c). Write a short note on vegetation of Pakistan.

SECTION-III (Cytology)

- Q.5. (a). Briefly describe the different steps involved in Glycolysis.
(b). Describe the different steps involved in prophase of 1st Meiotic division.
(c). What is the cell cycle? How oncogenes effect the cell cycle?
(d). What is the importance of pores in nuclear membrane? Differentiate between Chromatin, Chromosomes and Chromatids.
- Q.6. a). Describe the " Fluid mosaic model" of cell membrane.
(b). Discuss Mitochondria as power house of the cell.
(c). Write a note on "Polytene Chromosomes".
(d). What are the "Genetic codes" ? Describe its properties.

SECTION-IV (Genetics and Evolution)

- Q.7. (a). What are mutations? What is their significance?
(b). How would you proceed to propagate a hybrid plant?
(c). Describe different types of polyploidy. Why polyploidy is more common in plants than in animals.
(d). What is the frequency of heterozygous "Aa" in a randomly mating population in which the frequency "aa" is 0.7?
- Q.8. (a). Why are the plants not like their parents?
(b). Differentiate between Incomplete dominance, Co-dominance and Over dominance.
(c). Describe the main elements of the theory of evolution by natural selection.
(d). Goff and Odland found a variety of cucumber whose flower fail to open when mature. These flower nevertheless be pollinated them artificialy. The results of experiment were:
- | Parents | Phenotype of the offspring | |
|------------------|----------------------------|----------------|
| | Opened Flowers | Closed Flowers |
| Closed X Open | all | none |
| F1(of above)x F1 | 145 | 59 |
| Closed x F1 | 81 | 77 |
- Define symbols of the gene involved. Indicate the genotype of the closed parents, the open parents and F1.
- Q.9. (a). Write briefly on Allelism, Crossing over, Linkage, Sex Linked inheritance and Lethal factors.
(b). What is transduction? How does it differ from transformation?
(c). Differentiate between Terrestrial and Aquatic ecosystem.
(d). What are multiple alleles? Discuss Rh and ABO incompatibilities.
- Q.10. (a). What are the factors that affect recombination frequencies?
(b). What is the role of Hfr factor recombination of bacteria?
(c). Describe about Translocation, Inversion, deletion and duplication in relation to chromosome rearrangement.
(d). Two phenotypically wild type of Drosophila females(a) and(b) were mated to the same wild type male and produced the following offspring. Explain the results.

	Female Offspring		Male Offspring	
	White eye	Wild type	White Eye	Wild Type
Female (a)	0	73	32	37
Female (b)	0	68	33	0

To succeed look at things not as they are but as they can be.