PUNJAB PUBLIC SERVICE COMMISSION

COMBINED COMPETITIVE EXAMINATION FOR RECRUITMENT TO THE POSTS OF PROVINCIAL MANAGEMENT SERVICE, ETC -2021 CASE NO. 3C2022

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.

Attempt FIVE Questions in All. Attempt in Urdu or English.

Q. No. 1: a) Explain Thallus organization and reproduction in Chlorophyta.

b) Give phylogeny /origin and classification of Ascomycetes.

(10+10=20 Marks)

Q. No. 2: a) Write note on Loose Smut of wheat and its control measures.

b) Give Auxospore formation and economic importance of Diatoms.

(10+10=20 Marks)

Q. No. 3: a) Mention general characteristics of Ginkgophyta.

b) Discuss comparison of structure of plant body of Lycophyta with that of Psilophyta.

(10+10=20 Marks)

Q. No. 4: a) Write note on phylogeny of Cycads.

b) Explain Heterospory. Highlight its importance as a step towards seed habit.

(10+10=20 Marks)

Q. No. 5: a) Discuss Natural system of classification regarding its outline, merits and demerits.

b) Explain anatomy of bifacial and isobilateral leave, with reference to their dermal, ground and vascular systems. **(10+10=20 Marks)**

Q. No. 6: a) Explain endosperm with reference to its types and nature.

b) Give structure, chemical composition and ultra-structure of plant cell wall.

(10+10=20 Marks)

Q. No. 7: a) Write detailed note on structure and function of sclerenchyma.

b) Differentiate between primary and secondary growth. Elaborate secondary growth in dicot stem with the help of suitable diagrams.

(10+10=20 Marks)

Q. No. 8: Write short notes on the following: **(4x5=20 Marks)**

i. Monocot stem and Dicot stem
ii. Monocot Root and Dicot Root
iii. Apomixies
iv. Polyembryony

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COMBINED COMPETITIVE EXAMINATION FOR RECRUITMENT TO THE POSTS OF PROVINCIAL MANAGEMENT SERVICE, ETC -2021 CASE NO. 3C2022

SUBJECT: BOTANY (PAPER-II)

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. Minimum ONE Question from each Section. Attempt in Urdu or English.

SECTION-I

Q. No. 1: a) How do the roots of vascular plants absorb water from the soil?

b) Discuss energy balance of respiration (ATP yield per molecule of glucose).

c)What are the physiological effects of ethylene on different plant species and plant organs.

d) Write a note on nature of enzymes. **(5X4=20 Marks)**

Q. No. 2: a) Define Vernalization. Discuss the mechanism and factors necessary for vernalizations.

b) What is seed dormancy? How can seed dormancy be broken? Describe the practical significance of seed dormancy. **(10+10=20 Marks)**

SECTION-II

Q. No. 3: a) Discuss various types of erosion of soil by water. Describe the ways and means adopted by farmers to check water erosion.

b) Define water logging. How does it affect the plant growth? Discuss its causes and suggest also the measures for reclamation of water logged soils.

(10+10=20 Marks)

Q. No. 4: a) Give detailed account of grassland ecosystem and it's productivity.

b) Write note on any two of the following.

A) Acid rain B) Global Warming

C) Photochemical smog D) Eutrophication of aquatic eco-system.

(10+(5X2)=20 Marks)

SECTION-III

Q. No. 5: a) How does mitosis occur in plant cells. Explore the process in detail with diagrams.

b) Differentiate between the followings:

i) mitosis and meiosis ii) Cytokinesis and karyokinesis

(10+(5X2)=20 Marks)

Q. No. 6: a) Describe the structure of plasma membrane in detail with diagrams.

b) Differentiate between followings

i) hypertonic and hypotonic solution ii) Pinocytosis and phagocytosis

iii) exocytosis and endocytosis iv) active transport and simple diffusion

v) primary and secondary lysosomes. **(10+(5X 2)=20 Marks)**

SECTION-IV

Q. No. 7: a) What are different types of RNA's? Discuss their structure and role in the process of translation.

b) Define mutation. Write a detailed note on the kinds of point mutation and also discuss causes of mutation. **(10+10=20 Marks)**

Q. No. 8: a) What is meant by sex-linkage? Discuss the pattern of inheritance of X linked traits with some suitable examples.

b) Write short notes on the following:

i) Barr bodies

ii) Post transcriptional changes in MRNA of eukaryotes:

(10+10=20 Marks)

SECTION-V

Q. No. 9: a) What is Organic Evolution? How did the following contribute to Charles Darwin's formulation of the theory of natural selection? i) Uniformitarianism ii) Malthus essay on "Principles of population"

b) Write note on the followings:

i) Neo-Darwinism

ii) Adaptive radiation

(10+(5x2)=20 Marks)

Q. No. 10: a) What is the theory of inheritance of acquired characteristics and how did Lamarck use it to explain the phenomenon of evolution?

b) What are the four assumptions of Hardy- weinberg law? How do the allelic frequency of population is changed? Explain with some suitable examples.

(10+10=20 Marks)