



UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part – I Annual Exam – 2019

Subject: Botany-I

Paper: A (Diversity of Plants)

Time: 30 Min. Marks: 14

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

SECTION-I (OBJECTIVE)

Q.1(a) Fill in the blanks with appropriate word(s)

(½ x 16=8)

- i) Biosynthetic machinery in virus is _____.
- ii) In bacteria chlorophyll are present in _____ of the cell.
- iii) *Vaucheria* belongs to phylum _____ of algae.
- iv) In phylum chlorophyta of algae chlorophylls a and chlorophyll _____ are present.
- v) An alternate host of wheat rust is _____.
- vi) The cell wall of *Pythium* is chemically composed of _____.
- vii) Morphologically, the simplest of lichen are of _____ type.
- viii) In mosses, water and minerals are absorbed by multicellular structures called _____.
- ix) Simplest living *Tracheophyte* is _____.
- x) *Selaginella* is a club _____.
- xi) The type of small, single veined leaves in *Equisetum* are of _____ type.
- xii) The megaphylls of adiantum are called _____, because it is fern.
- xiii) In *Marsilia*, amphipholic _____ stele is present.
- xiv) Young leaves of *cycas* have _____ vernation.
- xv) In *pinus*, dwarf shoot having two or three foliage leaves are called _____.
- xvi) The plant habit in *Ephedra* is _____.

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Q.1. Fill in the blanks with appropriate word(s) (8 Marks)

- I. In _____ life cycle of virus, the host cells burst.
- II. _____ are invaginations of cell membrane in bacteria.
- III. The division of vascular plants is _____.
- IV. The female organ of chara is called _____.
- V. Diatoms belong to phylum _____.
- VI. Basidiospores are generally four in number and are produced on _____.
- VII. Asexual reproduction in physcia is by _____.
- VIII. The only unicellular true fungus is _____.
- IX. In porolla _____ generation is chlorophyllous.
- X. Spores of mosses germinate to produce an alga like structure called _____.
- XI. Group of sporangia in ferns is called _____.
- XII. _____ is heterosporous club moss.
- XIII. The arrangement of leaves in Equisetum is of _____ type.
- XIV. In Cycas ovules are attached to _____.
- XV. Vessels containing member in gymnosperm is _____.
- XVI. In Pinus, seed develops from _____.

Q.2. Please select True or False statement by encircling "T" or "F". (3 Marks)

- | | | |
|--|---|---|
| I. Bacteria are not multicellular. | T | F |
| II. Chara is very advance alga. | T | F |
| III. Penicillium reproduces sexually by conidiophore and conidiospore. | T | F |
| IV. Polytrichum is liverwort. | T | F |
| V. Psilotum is extant genus. | T | F |
| VI. Cycas is very primitive because it reproduces asexually only. | T | F |

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UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part – I Annual Exam – 2019

Roll No.

Subject: Botany-I

Paper: B (Plant Systematic Anatomy and Development)

Time: 2 Hrs. 30 Min. Marks: 21

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Note: Attempt any THREE questions. All questions carry equal marks. Draw neat and labeled diagrams along with captions where necessary. (3x7=21)

- Q. 4: (a) Describe Engler and Prantle system of classification. (4)
(b) Write a note on types of Placentation. (3)
- Q. 5: (a) Define the following terms (4)
i. Actinomorphic ii. Annual iii. Syncarpous iv. Calyx (4)
(b) Describe different types of capsular fruits. (3)
- Q. 6: (a) Describe structure and functions of Parenchyma and Collenchyma tissues. (4)
(b) Write a note on structure of monocot root. (3)
- Q. 7: (a) Describe different types of racemose inflorescence. (4)
(b) Write a note on bulb. (3)
- Q. 8: (a) Describe the general characters and economic importance of family Solanaceae (4)
(b) Write 3 botanical names of family Solanaceae (3)



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SECTION-I (OBJECTIVE)

Q.1(a) Fill in the blanks with appropriate word(s) (½ x 16=8)

- i. The system of classification proposed by Carolus Linnaeus is called _____.
- ii. The root which directly arise from seed is called _____.
- iii. The Succulent stem is found in _____.
- iv. Parallel leaf venation is characteristic of _____.
- v. Stamens are collectively known as _____.
- vi. The type of corolla in pea is called _____.
- vii. The type of Placentation in *Helianthus* is called _____.
- viii. The type of fruit in *Acacia arabica* is called _____.
- ix. The Cyathium inflorescence is found in family _____.
- x. The Secondary wall increases by _____.
- xi. The process of deposit of suberin is called _____.
- xii. The simple tissues with cells having thin elastic walls are called _____.
- xiii. The Meristems present at tips of root, shoot are called _____.
- xiv. The fruit of Lamiaceae is called _____.
- xv. The condition in which sepals are fused is called _____.
- xvi. Ocimum is a member of family _____.

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Note: Attempt any three questions. All questions carry equal marks. Draw neat and labeled diagrams along with captions where necessary. (3x7=21)

- Q. 4: (a) Describe the rules of international code of botanical nomenclature. (4)
(b) Describe different types of tap roots. (3)
- Q. 5: (a) Write a note on Capsular fruits. (4)
(b) Describe different types of leaf modifications. (3)
- Q. 6: (a) Differentiate between Xylum and Phloem tissues. (4)
(b) Define the following terms (3)
i. Annual ii. Syncarpous iii. Polypetalous
- Q. 7: (a) Describe different types of Racemose inflorescence. (4)
(b) Write a note on Rhizome and bulb. (3)
- Q. 8: (a) Describe the general characters and economic importance of family Euphorbiaceae. (4)
(b) Write 3 botanical names of family Euphorbiaceae. (3)



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Q. 1 Fill in the blanks (8 marks)

($\frac{1}{2} \times 16=8$)

- i. The inflorescence in cauliflower is called _____.
- ii. The Pectic substances are polymers of _____.
- iii. The family Rutaceae is commonly known as _____.
- iv. The fruit of pea is called _____.
- v. The type of roots in sweet potato is called _____.
- vi. The type of stem in mint is called _____.
- vii. In Pistillate flowers only _____ are present.
- viii. In pear the type of fruit is known as _____.
- ix. The family compositae is also known as _____.
- x. The Xylum tissue is known as _____.
- xi. The Potato belongs to family _____.
- xii. The type of roots in bamboo is called _____.
- xiii. The Scaly/Imbricate bulbs are found in _____.
- xiv. In Epigynous flower ovary is _____.
- xv. In Gamosepalous all the sepals are _____.
- xvi. In Albizzia the inflorescence is called _____.

Q. 2 True or False statements (3 marks)

($\frac{1}{2} \times 6=3$)

Please select True or False statement by encircling "T" or "F" as appropriate.

- | | | |
|--|---|---|
| i. Ginger is an example of rhizome | T | F |
| ii. Lamiaceae is commonly called mint family | T | F |
| iii. Marginal placentation is found in Euphorbia | T | F |
| iv. Moraceae is a monocot family | T | F |
| v. Cambium is absent in monocot stem | T | F |
| vi. Compound spadix is found in Corriander | T | F |

P.T.O.

Clausius-Clapeyron equation. (04)

(b) Discuss the variation of chemical potential with temperature and pressure. (02)

(c) What is physical significance of Entropy with special reference to Entropy of melting and Entropy of vapourisation? (02)

Q.4. (a) Discuss the rate equation for the third order reaction when the initial concentration of all reactants is same. (04)

(b) Prove nuclear decay as a first order reaction (02)

(c) What percentage of the initial concentration of reactants reacts in 2.0 hours for a reaction whose rate constant is $4.25 \times 10^{-3} \text{ sec}^{-1}$? (02)

Q.5. (a) Give the concept of law of rational indices and Miller indices. (4)

(b) Describe Laue's method for x-ray analysis of crystals. (2)

(c) A crystal has interplanar distance of 2.04 Å and wavelength of x-ray used is $1.54 \times 10^{-10} \text{ m}$. Calculate the angle of reflection. (02)

Section-II

Q.6. (a) Perform the mathematical procedure for separation of three variables ϵ , θ and ϕ from Schrödinger wave equation in polar co-ordinates. (04)

(b) How do you compare the graphical representation of Ψ and Ψ^2 in one dimensional box? (02)

(c) A linear molecule of length 10Å is at our disposal. Calculate wavelength of photon absorbed when electron travelling in the whole of molecule jumps from $n=1$ to $n=2$. (02)

Q.7 (a) Describe methods for the measurement of vapour pressure. Explain Walker and Ostwald method in detail. (04)

(b) Describe Cottrell's method in detail. (02)

(c) Sodium chloride is dissolved in water contain 5.85 g dm^{-3} . The osmotic pressure is $4.74 \times 10^5 \text{ Nm}^{-2}$ at 300K. Calculate its Van't Hoff factor and degree of dissociation of NaCl. (02)

Q.8. (a) What is Nernst distribution law? Give its limitations. (04)

(b) Apply Nernst equation to Daniel Cell (02)

(c) What is electrolyte concentration cell with Transference? (02)

Q.9 (a) What is Freundlich adsorption isotherm? Give the mathematical and graphical explanation. (04)

(b) Explain kinetics of autocatalysis reaction. (02)

(c) How do you compare physical and chemical adsorption? (02)