ANSWER SHEET

ENROLLMENT NO :	031BPBI9GT062		
NAME OF SUBJECT :	Botany		
SEMESTER :	3rd	SUBECT CODE :	BSB 301T
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Part-A

Q1. Multiple Choice Questions

(i) Root tip cells are divided according to the Korper-Kappe model -
(c) In three parts

(ii) Bicollateral vascular bundle is found in -
(b) Cucurbita

(iii) Heterophylly is found in -
(b) Ranunculus

(iv) Microspores are mostly -
(a) Haploid

(v) Fetal growth occurs in -
(b) Two types

Part-B

Q.1 Write a note on the maturation of fruit.

The maturation of fruit involves several physiological and biochemical changes. As fruits mature, they undergo processes such as the conversion of starches to sugars, the breakdown of chlorophyll, changes in color, texture, and aroma, and the production of ethylene, which acts as a

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ripening hormone. The cell walls soften, making the fruit more palatable, and the seeds inside mature, preparing for potential germination.

Q.2 Draw a nominal image of a cross-section of a seed leaf column.

A nominal image of a cross-section of a seed leaf (cotyledon) column typically shows the following features:
- Epidermis: The outermost layer.
- Mesophyll: Composed of parenchyma cells.
- Vascular bundles: Scattered throughout the mesophyll.

Q.3 Describe the common functions of the root.

The root performs several essential functions, including:
- Anchorage: Securing the plant firmly in the soil.
- Absorption: Taking up water and nutrients from the soil.
- Storage: Storing food and nutrients, such as carbohydrates.
- Conduction: Transporting water and nutrients from the root to other parts of the plant.
- Hormone production: Synthesizing hormones that regulate plant growth and development.

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Q.4 Write a short note on microsporogenesis.

Microsporogenesis is the process by which microspores, or pollen grains, are formed in the anthers of flowering plants. It begins with the division of diploid microsporocytes (pollen mother cells) through meiosis, resulting in four haploid microspores. These microspores then undergo mitotic divisions and differentiation to become mature pollen grains, each capable of fertilizing an ovule.

Q.5 Write a short note on heterophylly.

Heterophylly refers to the occurrence of different types of leaves on the same plant. This can be influenced by various factors such as environmental conditions, developmental stages, or plant parts. For example, in Ranunculus (buttercup), submerged leaves are finely dissected to minimize resistance to water, whereas aerial leaves are broader and undivided. Heterophylly allows the plant to adapt to different environments and optimize its physiological functions.

Part-C

Q.1 Describe the types of leaf tendril.

Leaf tendrils are specialized structures that help plants

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climb and support themselves. There are several types:
1. Whole Leaf Tendrils: The entire leaf transforms into a tendril, as seen in Lathyrus (sweet pea).
2. Leaflet Tendrils: Only the leaflets transform into tendrils, as in Pisum (pea).
3. Stipular Tendrils: The stipules develop into tendrils, as in Smilax.
4. Terminal Leaflet Tendrils: The terminal leaflet of a compound leaf transforms into a tendril, as in Clematis.

These modifications help plants secure themselves to various surfaces, allowing them to reach sunlight more effectively.

Q.2 Differentiate the primary and internal structure of a dicot root.

Primary Structure of a Dicot Root:
- Epidermis: The outermost layer that provides protection.
- Cortex: Consists of parenchyma cells that store food.
- Endodermis: A single layer of cells with Casparian strips that regulate water flow.
- Pericycle: A layer of cells just inside the endodermis, where lateral roots originate.
- Vascular Bundles: Arranged in a central cylinder, with xylem and phloem in an alternating radial pattern.

Internal Structure of a Dicot Root (Secondary Growth):

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- Periderm: Replaces the epidermis in older roots, consisting of cork, cork cambium, and phelloderm.
- Secondary Xylem and Phloem: Formed by the vascular cambium, increasing the root's girth.
- Vascular Cambium: A lateral meristem that produces secondary xylem (wood) inward and secondary phloem outward.

Q.3 Describe the different types of fruits.

Fruits can be categorized into several types based on their development and structure:

1. Simple Fruits: Develop from a single ovary of a single flower. Examples include:
- Fleshy Fruits: Such as berries (grapes, tomatoes), drupes (peaches, cherries), and pomes (apples, pears).
- Dry Fruits: Such as capsules (cotton, poppy), legumes (beans, peas), and nuts (acorns, chestnuts).

2. Aggregate Fruits: Form from multiple ovaries of a single flower. Examples include strawberries, raspberries, and blackberries.

3. Multiple Fruits: Develop from the ovaries of multiple flowers growing in a cluster. Examples include pineapples, figs, and mulberries.