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Sardar Patel University  
M. Sc. Botany (III Semester) Examination  
Thursday, 29<sup>th</sup> November 2012  
2. 30 p.m. to 5. 30 p.m.

Paper PS03C BOT01: Plant Development and Reproduction

Max. Marks: 70 (Seventy only)

N.B.: Answers of all the questions (including multiple choice questions) should be written in the provided answer book only.

Q 1. Select the appropriate answer for the following multiple choice questions: (8 X 1 = 8)

1. Root cap is derived from:  
a) Calyptragen    b) Histogen    c) Protoderm    d) Dermatogen
2. From where do branch roots originate?  
a) pericycle    b) apical meristem    c) vascular cambium    d) xylem
3. Which one of the following statements about angiosperms is *false*?  
a) Seeds develop within fruits.    b) Fruits develop at the base of flowers.  
c) Fruits protect and help disperse seeds.    d) Fertilization in angiosperms usually occurs about 3-4 months after pollination.
4. In plants the first elements to deposit secondary walls and lignifications are found in:  
a) secondary xylem    b) secondary phloem    c) meta xylem    d) proto xylem
5. Cambial cells are responsible for giving rise to:  
a) fusiform and ray initials    b) cortical fibers and rays    c) sieve elements and vessels  
d) axial parenchyma and pith parenchyma
6. In phloem callose deposition occurs:  
a) outside sieve pore    b) inside sieve pore    c) below sieve pore    d) between sieve pores
7. In angiosperms the endosperm develops:  
a) before fertilization    b) after fertilization    c) before pollination    d) none of these
8. In recurrent apomixis the embryosac arise from:  
a) archisporial cell    b) nucellus cell    c) integumentary cell    d) all of these

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**Q II. Answer any SEVEN of the following questions briefly:**

**(7 X 2 = 14)**

1. Comment upon "The primary body of a plant consists of four basic kinds of tissues"
2. Differentiate between Primordium and Promeristem
3. "A simple tissue is homogenous and consists of only one type of cells". Justify
4. Briefly explain on "The secondary growth does not fundamentally change the structure of the primary plant body".
5. Why do the proto xylem and phloem elements are ephemeral?
6. What is the significance of anticlinal divisions in cambial cells?
7. How does a sieve area differ from a sieve plate?
8. Explain pollen development in Cyperaceae
9. Draw a labeled diagram of megasporangium

**Q III. Answer the following questions in detail:**

**(4 X 12 = 48)**

- 1 a) Giving a brief account of characteristic features of meristematic tissues, present the classification of meristems and explain the tunica and corpus theory. **(6)**
- b) (i) Write an explanatory note on secretory tissue systems. **(4)**  
(ii) Explain the terms: (i) idioblast and (ii) plastochron **(2)**

**OR**

b) Differentiate the following:

**(4 X 1½ = 6)**

- (i) Morphogenesis and Histogenesis
- (ii) Dedifferentiation and Redifferentiation
- (iii) Ontogeny and Phylogeny
- (iv) Primary meristem and Secondary meristem

2. a) Giving the classification of fruits, discuss the histology of the pericarp of fleshy fruits (6)
- b) (i) With suitable illustrations discuss the seed morphogenesis (4)  
(ii) Briefly explain the structural and functional relationship of transfer cells (2)

**OR**

- b) Compare and contrast the ontogeny, structure and functions of conducting elements in secondary xylem and phloem (6)
3. a) What are the characteristic features of active and dormant cambial cells when observed under light microscope and transmission electron microscope? (6)
- b) What is seasonal cambial activity? Why and how does it differ between temperate and tropical tree species? (6)

**OR**

- b) Citing the similarities and dissimilarities between cork cambium and vascular cambium explain the structure and functions of Periderm. (6)
4. a) Describe the development of angiosperm embryo with labeled diagrams. (6)
- b) Write a note on floral evocation in angiosperms. (6)

**OR**

- b) (i) Write a note on 'biological significance of self-incompatibility' (3)
- (ii) Explain the formation of coeomegaspsore during embryosac development. (3)

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