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SEAT No. \_\_\_\_\_

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SARDAR PATEL UNIVERSITY  
M. Sc. Botany (III Semester- CBCS) Examination  
PS03CBOT21: Plant Development and Reproduction  
Monday, October 22, 2018; 2. 00 p.m. to 5. 00 p.m.

Max. Marks: 70

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

Q1. Select the appropriate answer for the following multiple choice questions: (8X1=8)

- (i) Which meristem helps in increasing girth?  
(a) lateral meristem (b) intercalary meristem  
(c) primary meristem (d) apical meristem.
- (ii) Organization of stem apex into corpus and tunica is determined mainly by  
(a) planes of cell division (b) regions of meristematic activity  
(c) rate of cell growth (d) rate of shoot tip growth.
- (iii) In a longitudinal section of a root, starting from the tip upward, the four zones occur in the following order:  
(a) root cap, cell division, cell enlargement, cell maturation  
(b) root cap, cell division, cell maturation, cell enlargement  
(c) cell division, cell enlargement, cell maturation, root cap  
(d) cell division, cell maturation, cell enlargement, root cap.
- (iv) Cavities formed by the breakdown of secretory cells are called  
(a) Schizogenous cavities (b) Resin ducts  
(c) Mucilage cavities (d) Lysigenous cavities
- (v) Dormant cambial cells are characterized by:  
(a) Thin tangential and radial walls (b) Beaded radial walls  
(c) Thick radial and thin tangential walls (d) Thin radial and thick tangential walls
- (vi) Growth rings are more distinct in trees growing under:  
(a) Tropical climate (b) sub-tropical climate  
(c) Temperate climate (d) Desert climate
- (vii) The zygote divide transversely and form basal cell and terminal cell. The terminal cell of the two celled proembryo divide by a transverse wall. In which type of embryo development both basal and terminal cells contribute:  
(a) Crucifer type (b) Solanad type  
(c) Chenopodiad type (d) Asterad type
- (viii) In which type of female gametophyte development two megaspores participate  
(a) Monosporic (b) Bisporic  
(c) Tetrasporic (d) All of these

(1)

(P.T.O.)

**Q2. Answer any SEVEN of the following short answer questions: (7x2=14)**

- (i) Define the terms: (a) Plastochron and (ii) Organogenesis
- (ii) How structurally and functionally absorbing tissue system differs from storage tissue system?
- (iii) Differentiate between idioblast and tonoplast
- (iv) What are the structural and functional differences between Fusiform and ray initials?
- (v) What are the structural similarities between vessel element and a sieve tube member?
- (vi) What is p-protein?
- (vii) Explain stomatal types based on distribution
- (viii) Explain helobial endosperm
- (ix) Explain male gametophyte development

**Answer the following questions in detail:**

- Q3 (a)** Write a concise note on the characteristic features of meristematic cells and present an illustrative account of structure and organization of vegetative shoot apex in different categories of plant kingdom. (6)
- (b)** Write a concise assay on the root apex under the following headings: (6)
- (i) Types of structures with reference to apical initials
  - (ii) Quiescent centre – Its characteristics and probable functions

**OR**

- (b)** Compare and contrast the general characters of secretory tissue systems with that of transfer cells. (6)

- Q4 (a)** Give an illustrative account of organogenesis of leaf (6)
- (b)** Discuss the classification of fruits and briefly describe the histological structure of a fleshy fruit. (6)

**OR**

- (b)** Write a note on the structural specialization of protoxylem elements in a growing shoot. (6)

- Q5. (a)** Briefly explain the sequential developmental events that occur during formation of vascular cambium from Procambium. (6)
- (b)** Write a detailed account on the structure, cell division and seasonal activity of vascular cambium. (6)

**OR**

- (b)** Describe the structural and functional similarities and dissimilarities between an angiosperm vessel element and gymnosperm tracheid. (6)

- Q6. (a)** Explain various types of tetrasporic embryosac development (6)
- (b)** Discuss various types of endosperm development and its importance (6)

**OR**

- (b)** Explain the development of basic dicot embryo development. (6)