

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2004 – 05 & thereafter)

SUBJECT CODE: BT/MC/EP44

B.Sc. DEGREE EXAMINATION, APRIL 2009
BRANCH V(a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
FOURTH SEMESTER

COURSE : MAJOR - CORE

PAPER : EMBRYOLOGY AND PLANT BREEDING

TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS:

I. CHOOSE THE CORRECT ANSWER: (10 MARKS)

1. Anther dehiscence occurs along –
a) Connective b) Stomium c) Endothecium d) Endothelium
2. The pollen tube enters into the ovule through the micropyle in
a) Chalazogamy b) Mesogamy c) Pseudogamy d) Porogamy
3. Filiform apparatus is seen associated with
a) Egg cell b) Synergids c) Antipodals d) Polar nuclei
4. During double fertilization, the two male gametes fuse with
a) The egg and polar nuclei b) Egg and antipodals c) Egg and synergids
d) Synergids and polar nuclei
5. The study of external morphological features of mature pollen grains is called
a) Palynogram b) Paleobotany c) Palynology d) Polyspermy
6. The embryo receives nutrition from
a) Nucellus b) Endosperm c) Cotyledons d) Haustorium
7. The embryosac is more heterogeneous in
a) *Peperomia* b) *Polygonum* c) *Allium* d) *Oenothera*
8. Embryo development without fertilization is called
a) Parthenocarpy b) Apogamy c) Apospory d) Apomixis
9. International Rice Research Institute is located at -
a) Philipines b) Cuttack c) New Delhi d) Indonesia
10. Which one of the following is a blast resistant rice variety-
a) IR-20 b) Co-20 c) TKM-6 d) ADT-10

II STATE WHETHER TRUE OR FALSE (4 MARKS)

11. *Triticale* is an amphidiploid.
12. In tenuinucellate ovules, the archesporial cell divides to form the parietal cell and the megaspore mother cell.
13. Coconut milk is liquid endosperm.
14. Colchicine is a mutagen.

III MATCH THE FOLLOWING (4 MARKS)

- | | | |
|----------------------------|---|--------------------|
| 15. Entomophily | - | Grass embryo |
| 16. Scutellum | - | Ubisch bodies |
| 17. Secretory tapetum | - | Allopolyploid |
| 18. <i>Raphanobrassica</i> | - | Insect pollination |
| | - | Dicot embryo |

IV ANSWER ANY SIX OF THE FOLLOWING. EACH ANSWER NOT TO EXCEED 50 WORDS (6 x 3 = 18)

19. Amoeboid tapetum
20. Perisperm
21. Pollenkitt
22. Aleurone
23. IRRI
24. CMS
25. Pureline selection
26. Chemical mutagen
27. Recurrent selection

SECTION – B

ANSWER ANY FOUR OF THE FOLLOWING. EACH ANSWER NOT TO EXCEED 200 WORDS (4 x 6 = 24)

28. Describe the structure of the microsporangium.
29. Describe the wall layers of pollen.
30. Write notes on double fertilization.
31. Explain heterosis.
32. Highlight the role of polyploidy in plant breeding.
33. What are the objectives of mutation breeding and how is it done?

SECTION – C

ANSWER ANY TWO OF THE FOLLOWING. EACH ANSWER NOT TO EXCEED 1000 WORDS (2 x 20 = 40)

34. With labeled diagrams trace the development of the female gametophyte in *Polygonum* and describe the structure of the mature embryo sac.
35. Describe the development of different types of endosperm giving examples for each. Add a note on the functions of endosperm.
36. Explain the procedure for hybridization in plant breeding.
37. With appropriate examples, describe the development of disease resistant crop varieties.
