[This question paper contains 4 printed pages.]

1305 *Your Roll No.* .....

B.Sc. (Hons.)/III **A**

BOTANY – Paper X

(Developmental and Experimental Embryology of Angiosperms)

(Admissions of 2004 & onwards)

Time : 3 Hours *Maximum Marks : 38*

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt **all** *questions.*

All *parts of a question must be attempted together.*

Draw labelled diagrams wherever necessary.

1. Answer briefly (one or two sentences only) any **five** of the following :

   (i) Why are pollen grains of Cyperaceae called pseudomonads ?

   (ii) What is a pseudo embryo sac ?

   (iii) Why do most angiosperms exhibit maternal inheritance of plastids ?

   (iv) Why is FDA test considered a more reliable test of pollen viability than TTC test ?

P.T.O.

(v) In vitro, why do pollen grains germinate better when present in groups ?

(vi) Why do embryos or orchidaceae have well-developed suspensor haustoria ?

(vii) Why are embryos arising from adventive polyembryony true to type (genetically similar to mother plant) ?

(viii) Why are gynogenic haploids considered better than androgenic haploids ? (1×5=5)

2. Draw well-labeled outline diagram of

T.S. of tetrasporangiate anther with mature bicelled pollen grains. (2)

OR

L.S. of anatropous, bitegmic and crassinucellate ovule with *Oenothera* type of embryo sac.

3. Write short notes on any **four** of the following :

(a) Amoeboid tapetum

(b) Endothelium

(c) Nuclear endosperm

(d) Nurse culture technique

(e) Suspensor

(f) Male germ unit

(g) Artificial seeds (2×4=8)

4. Differentiate between the following (attempt any **four**) :

(a) Synergid and egg cell

(b) Male gamete and female gamete

(c) Bisporic and tetrasporic type of embyro sac development

(d) Embryo and endosperm

(e) Exine and intine

(f) Freeze drying and cryogenic method of pollen storage

(g) Apospory and diplospory. (2½×4=10)

5. Justify the following statements (attempt any **two**) :

(a) Loranthaceae is an embryologically distinct family.

(b) A non-functional tapetum results in male sterility.

(c) Anther and pollen culture have contributed significantly to crop improvement.

(d) Gametic cells can be used to transform plants.

(3×2=6)

P.T.O.

6. Answer briefly any two of the following :

(i) What is the significance of sexual incompatibility ? What is the difference between sporophytic and gametophytic self incompatibility ? Discuss any two methods to overcome sporophytic self incompatibility.

(ii) Discuss the practical applications of embyro, endosperm and nucellus culture.

(iii) What is the significance of autogamy and allogamy ? Describe the floral characteristics of anemophilous and entomophilous plants.

(3.5×2=7)