This question paper contains 4+2 printed pages]

Your Roll No. .....

940

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

BOTANY—Paper X

(Developmental and Experimental Embryology of Angiosperms)

(Admissions of 2004 and onwards)

Time : 3 *Hours* *Maximum Marks* : 38

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

Attempt *Five* questions in all including question No. **1** which is compulsory.

All parts of a question must be attempted together.

Draw labelled diagrams wherever necessary.

P.T.O.

1. (*a*) Fill in the blanks : 3

(*i*) Members of the family Cactaceae are characterised by the presence of ..... Ovules.

(*ii*) Periplasmodium is associated with ..... type of tapetum.

(*iii*) Embryo sacs elongate into the stylar canal to receive the pollen tubes in the members of the family ..... .

(*iv*) An additional covering arising at the micropylar end of an ovule and wholly or partially surrounding the ovule is known as an ..... .

(*v*) ..... is an example of a genus possessing well developed synergid haustoria.

(*vi*) The term nexine includes ..... and foot layer.

(*b*) Rewrite the following statements in their correct form (if correction is required) : 3

(*i*) The term herkogamy refers to the maturation of male and female sex organs at different times.

(*ii*) During *in vitro* pollen germination, population effect is caused by the leaching out of potassium ions.

(*iii*) Rejection reaction in the sporophytic self-incompatible systems generally occurs in the style.

(*iv*) Double fertilization in the members of the family Podostemaceae results in the formation of a triploid endosperm.

(*v*) Canal cells present in a solid style help in guiding the pollen tubes towards the embryo sac.

(*vi*) Only one x-body is observed in the synergid cells of *Plumbago* after the discharge of pollen tube contents.

2. Differentiate between (any *four*) : 8

(*i*) Zygotic and somatic embryos

(*ii*) Polyspory and polyspermy

(*iii*) Endothecium and endothelium

(*iv*) Homomorphic and heteromorphic self incompatibility

(*v*) Intraovarian and test-tube pollination.

3. (*a*) Briefly explain (any *six*) : 6

(*i*) Ruminate endosperm

(*ii*) Mentor pollen

(*iii*) Gametic transformation

(*iv*) Hypostase

(*v*) Aleurone grains

(*vi*) Coenomegaspore

(*vii*) Cleavage polyembryony.

(*b*) Draw a neat labelled diagram of L.S. anatropous, unitegmic, crassinucellate ovule with a four nucleate embryo sac. 2

4. (*a*) Explain the various methods of obtaining haploids. Add a note on the practical importance of haploids. 4

(*b*) Write a note on different methods of pollen storage. Mention the various ways by which pollen viability can be tested. 4

5. (*a*) Explain the various ways of pollen tube entry into the ovule. 2

(*b*) Write a brief essay on pollen wall development. 4

(*c*) Justify the statement : Apomixis is now being regarded as a potential powerful genetic factor for use in crop improvement. 2

P.T.O.

6. (*a*) Give brief answers : 6

(*i*) What is hydrophily ?

(*ii*) What is the role of synergids ?

(*iii*) What is helobial endosperm ?

(*iv*) What is a pseudomonad ?

(*v*) From which stage of embryogeny do dicot and monocot embryos become distinguishable ?

(*vi*) What is Nemec phenomenon ?

(*b*) Loranthaceae is an embryological family. Explain. 2