

**M.Sc. Part-II Examination, 2012**

**BOTANY**

**PAPER – VIII**

*Full Marks : 60*

*Time : 3 hours*

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

**Answer Q.No. 1 and any three from the rest**

**1. Answer any six of the following : 2 × 6**

(a) Name the basic constituents of the subunit of ribosome.

(b) Give the full form of VNTR. Mention its significance.

(c) What is synaptonemal complex?

( Turn Over )

- (d) Mention the ideal features of a vector for genetic engineering.
- (e) Why EDTA is used in plant tissue culture medium? Give its full form.
- (f) What is C-value? How is a paradox related to it?
- (g) What is dosage compensation? Give example.
- (h) What is used as osmoticum in protoplast culture? Why is it needed?
- (i) Why is chloroplast a semi autonomous cell organelle? Give an example.
- (j) What is a sex influenced trait? Cite an example.
- (k) What is the utility of chromosome banding?
- (l) What is T-DNA? Name the Vir genes.
2. (a) Distinguish between somatic embryo and zygotic embryo. Mention the factors influencing somatic embryogenesis in *invitro*. 2 + 4

- (b) Outline the procedure of plantlet regeneration through somatic embryogenesis. State the advantages of this method. 7 + 3
3. (a) Mention the characteristic features of constitutive heterochromatin. Briefly illustrate the construction of eukaryotic chromosome at different levels of its condensation in the cell cycle. 2 + 8
- (b) Describe the molecular structure of a centromere emphasizing the significance of its different sites. 6
4. Write short notes on any two of the following: 8 × 2
- (i) RFLP
- (ii) Narrow sense heritability
- (iii) Particle gun in genetic engineering
- (iv) Blotting techniques and their uses.

5. Describe the mechanism of sex determination in plants with suitable examples. What is sex reversal? State the basis of gene balanced theory of sex determination in *Drosophila*. Define the criss-cross inheritance.  $10 + 2 + 2 + 2$
6. How homozygosity can be developed in the conventional breeding method? State its genetic basis. Why this method is not equally good for all pollination types of plants? Illustrate the steps of this breeding method. State the drawbacks of the method.  $2 + 2 + 2 + 8 + 2$