

2007

BOTANY

PAPER-VIII

*Full Marks : 60*

*Time : 3 hours*

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

*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*

**1. Answer any six of the following :**

**2x6**

- (a) **What are the basic constituents of the subunits of ribosome?**
- (b) **What are syntenic genes ?**
- (c) **What is NOR? What is its significance in ribosome biogenesis?**
- (d) **What is Klenow fragment? What is its role in replication ?**
- (e) **What are the disadvantages of microprojectile bombardment technique of gene transfer?**

- (f) What is the basis of considering a nutrient element as 'macro' in plant tissue culture? Name one.
- (g) Give the full form of VNTR. Mention its significance.
- (h) Why EDTA is needed in preparing plant tissue culture medium? Name its full form.
- (i) Distinguish between multiple allelism and multigenic control of traits.
- (j) Which in vitro method is adopted to make virus-free plants? Give reasons.
- (k) Define cosmid and binary vectors.
- (l) What do you mean by disarmed Ti plasmid? Name two marker genes commonly used in transformation technology.
2. (a) Mention the different levels of organisation of chromosome. What is the nature of chromatin fibre that is involved with highly packed metaphase chromosome? Explain the basis of organization with suitable illustrations.
- (b) Characterize the telomeric end of eukaryotic chromosome in terms of its molecular nature and **function**. (6+3+2)+5
3. Write short notes on any *two* of the following: 8x2
- (a) Electroporation

- (b) **YAC-( definition, cloning method, screening, use and limitation)**
- (c) Narrow sense heritability
- (d) Blotting techniques and their uses.
4. (a) Characterize the structural features of a typical prokaryotic promoter sequence. What significant molecular changes occur during initiation of transcription ?
- (b) **What are the different modes of termination that RNA polymerase has got with?**
- (c) **What are the post transcriptional events of a maturing eukaryotic mRNA? What are their biological significances ?** (3+3)+4+(4+2)
5. **Enumerate the requisite features of an ideal vector for genetic engineering. Give a brief account of the structure of Ti plasmid. How does it help in transferring a character to a plant?** 4+6+6
6. **Mention the objectives of protoplast isolation and culture in plant tissue culture. Outline the procedure mentioning the requisites for isolating, maintaining and culturing protoplasts. How can you ascertain the protoplast to be live or dead ?** 2+12+2