2008

M.Sc. Part–II Examination

BOTANY

PAPER—VIII

Full Marks : 60

Time : 3 Hours

The figures in the margin indicate full 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) What are the basic differences between synthetic variety and composite variety ?

(b) What is cris-cross inheritance ?

(c) What is synaptonemal complex ?

(d) Mention the features ideally present in a genetic vector.

(e) How does selfing reduce the frequency of heterozygosity ?

(f) Distinguish between insertion and replacement vectors.

(g) Comment on the significance of reporter gene.

(h) What is 'vent' ?

(i) What are the essential factors for successful transposition of a nucleotide sequence ?

(j) Give four points for which shoot apex is preferred in *in vitro* culture to raise virus free plants.

(k) What is a binary vector ?

(l) Write the equation of 'broad sense heritability'. Why is it named so ?

2. Define pBR322 mentioning the significance of its name. Draw the map of it pointing out the important restriction sites and the basis of screening of recombinant plasmid. What are the limitations of plasmid vectors ? What is shuttle vector ? 2+10+2+2

3. What is axenic culture ? Why EDTA is required for preparing plant cell culture medium ? What do you mean by embryoid ? Outline the protocol of raising it. Mention the advantages and limitation of developing this structure. 1+2+2+8+3

4. Write short notes on any *two* of the following : 8×2

(a) DNA fingerprinting : procedure and uses.

(b) Vir genes.

(c) Maxam and Gilbert's method for DNA sequencing.

(d) Genetic drift.

5. What is male sterility ? Hoe does it differ from self-incompatibility ? Classify male sterility with suitable examples. State the significance of male sterility in plant breeding. How can self-incompatibility be overcome ? 3+5+4+4

6. Mention four points to determine the extra nuclear nature of inheritance of a character. Why does organellar inheritance appear to be maternal inheritance ? How does the former inheritance differ from the latter one ? Illustrate the organellar inheritance with any suitable example from plants.

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