2013

M.Sc.

2nd Semester Examination

BOTANY

PAPER—BOT-204

Full Marks : 40

Time : 2 Hours

The figures in the right-hand 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 *all* questions.

1. Answer any *ten* of the following : 1×10

(a) What is meristemoid ?

(b) What is the uniqueness of NOR ?

(c) How many histone proteins are present in a nucleosome ? Give names of them.

(d) What is meant by dedifferentiation in in-vitro plant tissue culture ?

(e) Why is iron used in plant tissue culture medium as Fe_2EDTA ?

(f) What is population bottleneck ?

(g) Distinguish between polygene and oligogene.

(h) What is protoplast ? Name a protoplast fusion chemical.

(i) Why does inheritance of organellar genome show maternal effect ?

(j) What is cybrid ? What is heterokaryon ?

(k) Why RFLP is named so ?

(l) What is plasmid ? Give an example.

(m) State an utility of cell suspension culture.

(n) Name a restriction endonuclease causing staggered cut.

(o) Which enzyme acts as molecular adhesive to join cut ends of DNA ?

(p) What is the basic objective of performing back cross ?

2. Write notes on any *two* of the following : 5×2

(a) Inbreeding depression — causes of its occurrence and implications.

(b) Comparative account of different types of restriction enzymes.

(c) DNA fingerprinting — basic principle, schematic procedures and utilities.

(d) Ultrastructure of eukaryotic chromosome.

3. Answer any *two* of the following : 10×2

(a) What is axenic culture ? Define micropropagation and give a schematic account of the technique. What are the advantage of micropropagation ? 1+(2+4)+3

(b) How does population genetics differ from Mendelian genetics ? State the hypothesis used to explain the allelic frequencies in population genetics. Briefly illustrate different factors affecting the hypothesis. What should be the frequency of allele 'A' when the number of 'AA' genotype is 85, 'Aa' is 104 and 'aa' is 41 in a population ? 2+2+4+2

(c) Explain metric characters with examples. State the measures by which a character can be identified as a metric character. Mention all possible relationships that may exist between polygenes during inheritance. 2+4+4

(d) How can a character be identified as of extranuclear nature? Illustrate the maternal inheritance having permanent effect on offspring. Define other types of extranuclear inheritance. 3+5+2

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