

M.Sc. 2nd Semester Examination, 2011

BOTANY

PAPER—BOT-204

Full Marks : 40

Time : 2 hours

Answer all questions

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 *ten* of the following : 1 x 10

(a) What is a metric character ?

(b) Mutation in which region of CDE sequences causes complete inactivation of centromere ?

(Turn Over)

- (c) What enzyme does help in replicating DNA in the telomeric part of chromosome ?
- (d) How many Barr bodies will you find in an individual with XXY syndrome ?
- (e) What is the basic difference between multiple alleles and polygenes ?
- (f) What is polyadenylation ?
- (g) Define C value.
- (h) Name the most actively transcribing heterochromatin part of eukaryotic chromosome.
- (i) Differentiate heterosis from hybrid.
- (j) Define inbreeding depression.
- (k) What is a vector in genetic engineering ?
- (l) What are restriction sites ?
- (m) Mention the utility of somatic hybridization.

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

(i) Material inheritance

(ii) Criteria of an ideal vector in genetic engineering

(iii) Sex-linked inheritance

(iv) Back cross and its use in plant breeding.

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

(a) What is MPF? State the different stages of cell cycle mentioning their significance. Mention different cyclins and Cdks involved in cell cycle and state their roles. 1 + 4 + 5

(b) Discuss, in brief, the different types of sex determination with their respective examples. Explain dosage compensation and its different forms in different types of sex determination. Distinguish between sex influenced and sex limited characters. 5 + 3 + 2

(c) What are retrotransposome? How do they differ from other types of transposomes? Explain the mode of transposition of IS elements. 1 + 2 + 7

(d) What is the objective of “pureline selection” breeding? Explain the genetic basis of purity developed in this. Give an outline of this method. What harm can this method do, if practiced for cross pollinating species and why? 1 + 2 + 4 + 3
