

2017

BOTANY

[**Honours**]

PAPER – VI

Full Marks : 90

Time : 4 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

[**OLD SYLLABUS**]

GROUP – A

1. Answer any *ten* from the following : 2 × 10
- (a) What is chromosome banding ?
- (b) Mention the function of tRNA.

(Turn Over)

- (c) What do you mean by AC-DS system ?
- (d) What are the spindle fibers ? How the spindle fibers formed ?
- (e) What is BGA ? Give one example.
- (f) Point out one function of restriction endonuclease and cloning vector in r-DNA technology.
- (g) Define standard deviation and standard error.
- (h) What do you understand by natural and synthetic seed ?
- (i) What are karyotype and ideogram ?
- (j) What do you understand by Genomics and Proteomics ? Give an example from each.
- (k) What is the function of ER in protein synthesis-?
- (l) Differentiate between linkage group and linkage map.

- (m) Point out the difference between SEM and TEM.
- (n) Mitochondria is called semi autonomous organelle— why ?
- (o) What is apogamy and apospory ? Give an example.

GROUP – B

2. Answer any *five* from the following : 8×5
- (a) In the lac operon inducible or repressible ? Describe the regulation of lac operon with proper illustration. 2 + 6
- (b) What is biofertilizers action ? Mention the importance of *Rhizobium* in the field of Agriculture. What is the advantage of biofertilizers fixation over inorganic fertilizers ? 3+3+2
- (c) Describe the significance of meiosis. What is synaptonemal complex ? What is the importance of G_0 phase in cell cycle ? 4+2+2

- (d) What is bioinformatics ? What are the different type of mutagens ? What is base-analogue ? 4+4
- (e) Differentiate between incomplete dominance and codominance. What is complementary gene action ? What is the full form of cp DNA and mt DNA ? 3+3+2
- (f) Mention the importance of VAM fungi in agriculture. Write name of any two DNA sequence database. What are the differences between a cloning and an expression vector. 3+2+3
- (g) Write the differences between a hybrid and a cybrid. Mention the effects of inbreeding depression. 3+5
- (h) What is split gene ? Discuss the matter in brief. 2+6

GROUP - C

3. Answer any *two* from the following : 15×2

- (a) Mention the differences between missense and nonsense mutation. Describe

Meselson-Stahl experiment about 'DNA replication is semiconservative in nature'.

Write down the applications of protoplast culture. What is heterosis ? 2+5+5+3

- (b) Write down the general features of pBR322. Make a short note on chromosomal structure alteration with special emphasis on deletion and translocation. How scanning electron microscopic (SEM) principle is different than of transmission electron microscope (TEM). 3+8+4
- (c) (i) Write down the significance of meiosis. What are cistron, recon and muton ? 2+6
- (ii) What is null hypothesis ? What are the components of MPF ? Briefly explain the role of check points in different stages of cell cycle. 2+2+3
- (d) (i) Draw schematically the electron transport chain in mitochondria. Mention the function of nucleolus and nuclear membrane in a nucleus. 3+4

**(ii) What do you mean by transgenic plant ?
Draw and describe the structure of Ti
plasmid vector. Mention the different
steps of formation of transgenic plant
using Ti plasmid vector. 4+4**
