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UG/III/BOT/H/VI/18(New)

2018

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

[NEW SYLLABUS]

GROUP—A

1. Answer any *ten* from the following : 2×10
- (a) What is phospho-diester linkage ?
- (b) Why the amphidiploids are more fertile than autotetraploids ?

(Turn Over)

- (c) What is embryoid ? How does it differ from embryo ?
- (d) Why RNA primer is required during lagging strand synthesis ?
- (e) What is wobble hypothesis ?
- (f) What are *G* and *Q* bands ?
- (g) What is tautomeric shift ?
- (h) What is spliceosome ? Mention its function.
- (i) What is sampling ?
- (j) Distinguish between mean and mode.
- (k) What is supernumerary chromosome ?
- (l) Write the working principle of TEM.
- (m) What is duplicate gene action ?
- (n) What is Bombay phenotype ?
- (o) Mention the differences between monoploid and haploid. Give an example.

GROUP-B

2. Answer any *five* from the following : 8 × 5

(a) Describe the phenomenon of dominance and epistasis. Explain the inhibitory gene action. 3 + 5

(b) Write the chemical composition and constitution of plasma membrane with suitable diagram. Explain the structure of cell membrane proposed by Singer and Nicholson. Comment on the passive transport of molecules through cell membrane. 2 + 4 + 2

(c) What do you mean by the term ambiguous and degenerate code ? Briefly describe an experiment for deciphering the genetic code. 2 + 6

(d) Define and briefly describe the recombinant DNA technology. How is synthetic seed prepared ? 5 + 3

(e) Describe the procedure of mass selection. State the merits and demerits of this method. 6 + 2

(4)

- (f) What is heterosis ? Write the manifestation of heterosis in plant breeding. 2 + 6
- (g) Describe Messelson and Stahl experiment as a proof of semiconservative nature of DNA replication. What is Kornberg enzyme ? 6 + 2
- (h) What are jumping genes ? Briefly describe the structure of IS element. Distinguish between transition and transversion. 2+4+2

GROUP-C

3. Answer any *two* from the following : 15 × 2
- (a) Give an account of the ultra structure of the Endoplasmic Reticulum and its relation with nuclear envelope. Comment on the structure and significance of synaptonemal complex. 10 + 5
- (b) What are restriction endonucleases ? Classify different types of restriction endonucleases. Explain sequence specificity

(5)

of restriction endonuclease with suitable example. Write an essay on the application of restriction endonuclease. 2 + 5 + 3 + 5

(c) What is somatic embryogenesis? Differentiate between Zygotic and somatic embryos. Briefly describe the procedure of somatic embryogenesis. Discuss the commercial application of somatic embryogenesis. 2 + 3 + 6 + 4

(d) (i) Compare mass selection and pureline selection methods of plant breeding. Write a note on the practical application of polyploidy in plant breeding.

(ii) Outline the Sanger's method of DNA sequencing. 4 + 4 + 7
