



HAD-003-001611 Seat No. _____

B. Sc. (Sem. VI) (CBCS) Examination

June / July - 2017

Botany : Paper - 601

(Genetics, Mole. Bio., Biotech, Bioinfo. & Anatomy) (New Course)

Faculty Code : 003

Subject Code : 001611

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) Draw neat and labelled diagrams wherever necessary.
(2) Figures to the right side indicate full marks for the question.

1 Answer in short : 20

- (1) Explain : Cork cambium forms tissues that form the cork.
- (2) Who proposed the terms muton, cistron and recon ?
- (3) Define : Mass selection.
- (4) What is Biparental inheritance ? Give example.
- (5) The T.S. of a plant material shows the following features -
 - (a) the vascular bundles are conjoint, scattered and surrounded by a sclerenchymatous bundle sheath,
 - (b) Phloem parenchyma is absent. What will you identify it as ?
- (6) On what does the phenotype of progeny will depend in *Mirabilis* ?
- (7) What are the steps to sharpen the common microtome knife ?
- (8) What is palindromic sequence ?
- (9) What is used as selective markers in cloning vectors ?
- (10) Which is the first step in r-DNA technology ?
- (11) What do you mean by Blue Biotechnology ?
- (12) Is the lac operon inducible or repressible ?

- (13) What is the potential of trans gene ?
- (14) What are the constituents of plant tissue culture nutrient media ?
- (15) Who coin the term Bioinformatics ?
- (16) Which is an example of FASTA format ?
- (17) What is sequence in database ?
- (18) What can bioinformatics be used for ?
- (19) Explain : Embedding in histology ?
- (20) In which fields plant tissue culture applications are most important ?

- 2** (a) Answer in short : (any three) **6**
- (1) Define term : operon and operator gene.
 - (2) Explain : Explant in tissue culture.
 - (3) Write three essential features of modern concept of gene.
 - (4) Write significance of data banking.
 - (5) Distinguish between : collenchyma and sclerenchyma.
 - (6) Write notes on : Aerenchyma tissue.
- (b) Answer in brief : (any three) **9**
- (1) Differentiate between : Autopolyploids and Allopolyploids.
 - (2) Write note on : PBR₃₂₂ as a vector.
 - (3) Write note on : DNA cleavage.
 - (4) Explain : Stain and its types.
 - (5) Give information : Scope of Bioinformatics.
 - (6) Discuss : Formation of cambium ring in dicotstem.
- (c) Answer in detail : (any two) **10**
- (1) Write note on : Insect resistant transgenic plant and its market in India.
 - (2) Discuss cytoplasmic inheritance in yeast.
 - (3) Write an applications of tissue culture.
 - (4) Discuss the role of Bioinformatics in plant science.
 - (5) Explain sticky end ligation methods for the joining of foreign DNA fragment to a cloning vector.

- 3** (a) Answer in short : (any three) **6**
- (1) Describe : Southern blotting.
 - (2) Discuss : Heartwood and Sapwood.
 - (3) Explain : Mounting in microtomy.
 - (4) Explain the term : Pureline selection.
 - (5) Give the reason for sequence alignment to be performed.
 - (6) Explain the term : Companion cell.
- (b) Answer in brief : (any three) **9**
- (1) Write note on : Gene scan.
 - (2) Describe : Freezing microtome.
 - (3) How extraction of enzyme is done ? Explain.
 - (4) Explain with diagram : Annealing.
 - (5) Discuss : Natural and Synthetic media in tissue culture.
 - (6) Discuss : Abnormal secondary growth.
- (c) Answer in detail : (any two) **10**
- (1) Discuss any two tools used in bioinformatics.
 - (2) You have to prepare a permanent slide of *Mirabilis*.
Mention methods of preparation of it.
 - (3) What is Biotechnology ? Mention applications of
biotechnology modern era.
 - (4) Explain the case of Maternal inheritance in *Mirabilis*
jalapa with chart.
 - (5) Describe with diagram : Abnormal secondary growth in
Bignonia stem.
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