

2022

BOTANY

[P.G.]

(CBCS)

(M.Sc. Third Semester End Examinations-2022)

PAPER-301

Full Marks: 40

Time: 02 Hrs

*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

[USE SEPARATE ANSWER SCRIPT FOR EACH UNIT]

Unit -I

F.M. - 20

[Cell Biology Genetics]

Group - A

- 1. Answer any four questions of the following: 1x4= 4**
- a. What is necrosis?
 - b. What is cristae?
 - c. What is 'G' and 'R' bonding?
 - d. Differentiate between sex limited and sex influenced fruits.
 - e. What is dosage compensation?
 - f. What do you mean by degeneracy of the genetic code?

(2)

Group - B

2. Answer any two questions: **2x4= 8**
- Cystic fibrosis is an autosomal recessive disease, and the population is in Hardy-Weinberg equilibrium, the frequency of this disease is 1 in 2000. Calculate the frequency and number of heterozygous carrier.
 - Genes located on a same chromosome often should linkage. Justify the statement.
 - Describe briefly anterograde and retrograde signalling in chloroplast.
 - Mention the role of cyclin-dependent kinases in cell cycle regulation.

Group - C

3. Answer any one question **1x8= 8**
- How the Ac-Ds system of transposition works in maize?
 - Briefly compare between B-DNA and Z-DNA. Write a brief account on nucleosome structure. Write down the enzymes and factors involved in DNA replication. **(2+3+3)**

(3)

Unit -II

F.M. - 20

[Biotechnology]

Group - A

1. Answer any four questions of the following: **1x4= 4**
- What is meant by copy number in rDNA technology?
 - What is explant?
 - Draw the structure of pBluescript II KS +/-.
 - What is transgressive inheritance?
 - What are the *cis* and *trans* regulators in the lac operon?
 - Name one compound used in plant tissue culture medium for providing each of macroelement and microelement?

Group - B

2. Answer any two questions: **2x4= 8**
- Distinguish between cosmid and fosmid. Give a schematic overview of yeast artificial chromosome. **2+2**
 - Describe briefly the principle and procedure of ISSR. **2+2**
 - State various steps of eukaryotic transcription. State the role of two antibiotics in inhibiting transcription. **3+1**
 - What is DNA fingerprinting? How will you interpret Real Time PCR results? **1+3**

(4)

Group - C

- 3. Answer any one question** **1x8= 8**
- a. Describe the alkaline lysis method for plasmid isolation. What are expression vectors? What are the limitations of “blue-white screening technique”? 5+1+2
- b. How does Northern blotting technique differ from Southern blot Hybridization? What is the significance of QTL mapping? How does DNA bind TALENs? What is the biggest concern with CRISPR technology? 2+2+2+2