

Botany (P.G.)

[CBCS]

M.Sc. Third Semester End Examination-2023

(Regular & Supplementary Paper)

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

[Cell Biology, Genetics and Biotechnology]

Unit – I

Full Marks 20

[Cell Biology, Genetics]

Group A

1. Answer any four questions of the following: **4x1= 4**
- What is paracentric inversion?
 - What are CDK's?
 - What is GISH?
 - What are Barr body?
 - What are the essential parts of a Transposable element?
 - Mention the role of DNA topoisomerase II?

(2)

Group B

2. Answer any two questions of the following: **2x4= 8**
- a. With a labeled diagram write a note on mechanism of photo reactivation type of DNA repair. **4**
- b. Differentiate between genetic drift from genetic shift? What is inbreeding depression? **3+1**
- c. What is the coiling pattern of a (Dd) snail whose mother's genotype is (dd)? What is lamp brush chromosome? **2+2**
- d. Discuss the solenoid model of chromosome structure. **4**

Group C

3. Answer any one question of the following: **1x8=8**
- a. Give proof that genetic code is triplet in nature Discuss the properties of the genetic code. **4+4**
- b. Mention the molecular mechanism of cell cycle regulation. What is apoptosis?

(3)

Unit – II
Full Marks 20
[Biotechnology]

Group A

1. Answer any four questions of the following: **4x1= 4**
- a) What is zinc finger? What are zinc fingers used for?
- b) The 'Rho' factor is a helicase, logically justify.
- c) What is heterosis?
- d) Define Fusogen. Give example.
- e) What is BAC?
- f) What is callus?

Group B

2. Answer any two questions of the following: **2x4= 8**
- a) Write short notes on i) RFLP and ii) EST **2+2**
- b) What are selection marker and Reporter gene? Mention their role. **2+2**
- c) "LacI is an allosterically regulated repressor" Explain with suitable diagrams. **2+2**
- d) Discuss cDNA library construction with the help of flow charts. **3+1**

Group C

3. Answer any one question of the following: **1x8=8**
- a) What is totipotency? Give an overview of anther culture using a

(4)

flow chart. What is the significance of PEG in tissue culture?

1+5+2

- b) What are the basic steps involved in gene cloning? Give a schematic overview of phagemid. What are the factors that affect the movement of DNA in agarose gel electrophoresis? 2+4+2
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