

B.Sc. Semester - 6 (CBCS) Examination

March/April -2020

GENETICS, MOLECULAR BIO, BT, HORTI, PLANT BREED AND ANATOMY (CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q-1 Answer the following questions as per instruction.

A. Answer in very short (any three) :

03

1. What is repulsion?
2. **Complete the statement:** The points of contact between non-sister chromatids is called.....
3. **True or False?** The 3' end of m-RNA is a polyadenylate sequence.
4. Name the type of m-RNA is formed from many cistrons and encodes several different polypeptide chains.
5. **Define:** Chromosome map

(B) Answer in brief (any one): 04

1. Describe the structure of t-RNA
2. Distinguish between: Somatic and germ line mutation

(C) Answer in detail (any one): 07

1. Discuss phenomenon of Coupling and Repulsion in *Lathyrus odoratus*.
2. Describe basis and preparation of chromosome map.

Q-2 Answer the following questions as per instruction.

(A) Answer in very short (any three): 03

1. Name first isolated restriction endonuclease enzyme.
2. **True or False?** The plasmids are single stranded DNA.
3. Write the function: Restriction endonuclease
4. Which main technique is used to isolate DNA from any plant cell?
5. Match the column:

A. Gene-z	1. Transacetylase
B. Gene-y	2. b-Glactosidase
C. Gene-a	3. Permease

(B) Answer in brief (any one): 04

1. Explain: The sticky ends cutting of DNA by a restriction enzyme.
2. Write notes on: Properties of Plasmids

(C) Answer in detail (any one): 07

1. Explain insertion of r-DNA into bacterial cell.
2. Discuss the lac operon concept of gene expression in E.coli.

(A) Answer in very short (any three): 03

1. What is the first transgenic plant?
2. What is used as a source of carbon in M.S. medium?
3. Define the term: Cryoprotectants
4. The collection and storage of hereditary material is called?
5. Mention the property that enables the explants to regenerate into new plant.

(B) Answer in brief (any one): 04

1. Explain transgenic plant with male sterility.
2. Describe application of tissue culture in Somaclonal variation.

(C) Answer in detail (any one): 07

1. Explain: Technique of Cryopreservation.
2. Describe composition of M.S. medium.

Q-4 Answer the following questions as per instruction.

(A) Answer in very short (any three): 03

1. Which technique is used to protect flower from contaminating pollen grains in hybridization?
2. Which method of emasculation is used in very small flowers?
3. True or False? In bulk method of hybridization selection is started from the F₂ generation.
4. Explain: Bud wood
5. In cleft grafting, which type of shape is cut at the base of the scion?

(B) Answer in brief (any one): 04

1. Explain various steps involved in the preparation of air layering.
2. What is Emasculation? Discuss the forceps or Scissor method of emasculation.

(C) Answer in detail (any one): 07

1. What is cutting? Describe root and stem cutting
2. Describe Bulk methods of Hybridization.

Q-5. Answer the following questions as per instruction.

(A) Answer in very short (any three): 03

1. Name type of collenchyma, the thickenings is restricted to the wall of the regions bordering air spaces.
2. **Fill in the blank:** xylary fibres with very thick secondary wall and simple pits are called.....fibres.
3. What is double staining?
4. **Complete the statement:** All xylem elements when mature becomes dead except.....
5. What type of anomalous structure will be formed by cambium strips which are normal in position but abnormal in function?

(B) Answer in brief (any one): 04

1. Write notes on: Principles and mechanism of staining
2. Write characteristics and types of sclerenchyma

(C) Answer in detail (any one): 07

1. With the help of suitable diagrams, describe location and structure of xylem elements
2. Give an illustrated account of anomalous secondary structure in stem of member of Nyctaginaceae.

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| 1.(A) | Write the brief answer (Any 1 out of 2) | 07 |
| (1) | Explain – Somatic and spontaneous mutation. | |
| (2) | Describe the structure of t – RNA. | |
| 1.(B) | Give the Answer: (Any 1 out of 2) | 04 |
| (1) | Write short note on – germ line mutation | |
| (2) | Explain – Bateson and Punnett Repulsion hypothesis. | |
| 1. (C) | Write the answer following Objective type questions: (Any 3 out of 5) | 03 |
| (1) | Write the three main component of ribonucleic acid | |
| (2) | One centimorgan is defined as ____ percentage of the total recombination events. | |
| (3) | Write the definition of gametic mutation? | |
| (4) | What is the average molecular weight of m- RNA? | |
| (5) | Copy choice model of crossing over was used by in 1955. | |
| 2.(A) | Write the brief answer (Any 1 out of 2) | 07 |
| (1) | Explain – Lac operon concept. | |
| (2) | Describe Blue white screening method. | |
| 2.(B) | Give the Answer: (Any 1 out of 2) | 04 |
| (1) | Explain: Plasmid as vector. | |
| (2) | Discuss – Restriction endonuclease | |
| 2.(C) | Write the answer following Objective type questions: (Any 3 out of 5) | 03 |
| (1) | Which vector is used as a best genetic vector in plants? | |
| (2) | pBR 322 haveand selection marker. | |
| (3) | Eco RI is derived from | |
| (4) | Which type of disc is used in plaque hybridization technique? | |

(5)	The ALS gene was isolated from	
3.(A)	Write the brief answer (Any 1 out of 2)	07
(1)	Discuss the role of different constituents of culture media?	
(2)	Discuss different strategies and genes used for developing herbicide resistance transgenic crop.	
3.(B)	Give the Answer: (Any 1 out of 2)	04
(1)	Explain in - situ conservation of germplasm.	
(2)	Give information about GM Papaya.	
3.(C)	Write the answer following Objective type questions: (Any 3 out of 5)	03
(1)	Write the full form of ICAR.	
(2)	Write the definition of germplasm.	
(3)	Bt genes are obtained from	
(4)	What is the full form of NAA?	
(5)	Which tropical fruit crop has been successfully engineered to be protected against a lethal virus?	
4.(A)	Write the brief answer (Any 1 out of 2)	07
(1)	Explain Budding as vegetative propagation method.	
(2)	Describe different type of grafting method.	
4.(B)	Give the Answer: (Any 1 out of 2)	04
(1)	Explain – Emasculation	
(2)	Describe – Pedigree method.	
4.(C)	Write the answer following Objective type questions: (Any 3 out of 5)	03
(1)	Define – hybridization.	
(2)	Cryopreservation is a technique used for (a) Crystallization of food (b) Food packing (c) Seed saving (d) Preservation of excess production of vegetables	
(3)	Mound layering is also known as	
(4)	Explain the term: clone.	
(5)	Cutting is not suitable for (a) Lime (b) Sugar-cane (c) Oleander (d) Tapioca	
5.(A)	Write the brief answer (Any 1 out of 2)	07
(1)	Explain with figure anomalous secondary growth in <i>Bougainvillea</i> stem.	
(2)	Describe the xylem tissue with figure.	
5.(B)	Give the Answer: (Any 1 out of 2)	04
(1)	Describe anomalous secondary growth in <i>Salvadora</i> stem.	
(2)	Describe the procedure of Block preparation	
5.(C)	Write the answer following Objective type questions: (Any 3 out of 5)	03
(1)	Write the name of Simple Permanent Tissues.	
(2)	The term phloem is coined by	
(3)	Husk of coconut is made up of:	
(4)	The food conducting element of phloem is called	
(5)	Write the main function of parenchyma.	
