

(3 Hours)

[Total Marks : 100]

- N.B.:** 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Draw neat labelled diagrams wherever necessary.

**Q. 1) Answer ANY TWO of the following: (20)**

- Explain the sequencing of DNA by chemical degradation method.
- Give the applications of polymerase chain reaction technique.
- Describe the nuclear genome sequences used in plant DNA barcoding. Add a note on their merits and demerits.
- Write a note on "Present status of DNA barcoding in plants."

**Q. 2) Answer ANY TWO of the following: (20)**

- Explain the classification and organisation of Biological Database.
- Explain the principles and applications of BLAST in the context of bioinformatics and molecular biology research?
- Give the classification of homologs. How does the study of these proteins help to distinguish between proteins?
- How does phylogenetic analysis contribute to our understanding of evolutionary relationships among different species?

**Q. 3) Answer ANY TWO of the following: (20)**

- Give an account on source and extraction of Rose oil, add a note on its uses.
- Write on the source, plant part used, method of extraction and uses of Citronella oil.
- Define the term drying oil, add a note on source, extraction process and uses of any one drying oil you had studied.
- Explain the source, useful plant part, method of extraction and uses of Coconut oil.

**Q. 4) Answer ANY TWO of the following: (20)**

- With reference to hot air drying, discuss the technique of drying.
- Define freezing. Explain the different freezing methods used in food preservation techniques.
- Discuss the technique of canning for food preservation.
- Define food preservative. Explain the various types of preservative used for food preservation

**Q. 5) Write Short Notes on ANY FOUR of the following: (20)**

- Steps of Sangers methods
- DNA barcoding in Plants
- GenBank
- Source and uses of Olive oil
- Methods of extraction of essential oils
- Role of Brine and vinegar in pickling

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