

[Time: 2½ Hours]

[Marks:75]

Please check whether you have got the right question paper.

- N.B:
1. Attempt **all** questions.
 2. All **questions** carry **equal** marks.
 3. **Draw** neat labelled **diagrams** wherever necessary.

Q.1 a. Give the role/application of **(any three)**:-

- i. Probe
- ii. VNTR
- iii. RFLP
- iv. Primers
- v. Peptide vaccine
- vi. Subunit vaccine

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b. Discuss the following **(any two)**:-

- i. Southern Hybridization.
- ii. DNA Typing.
- iii. Genetic immunization.
- iv. Vector vaccines.

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Q.2 a. Explain the significance of the following **(any three)**:-

- i. Opines
- ii. T-DNA
- iii. Disarming
- iv. Helper plasmid
- v. PEG
- vi. Cry gene

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b. Attempt the following **(any three)**:-

- i. Give an account of Bt cotton and its applications.
- ii. Give an account of 'Microprojectile bombardment as a method of producing transgenic plants'.
- iii. Schematically explain the production of T-DNA copy.
- iv. What are edible vaccines? State their advantages.

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Q.3 a. Define the following **(any three)**:-

- i. Pluripotency
- ii. Retrovirus
- iii. Transgene
- iv. Knock out mouse
- v. cre gene
- vi. Male pronucleus

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b. Give an account of the following **(any two)**:-

- i. Use of Cre- loxP recombination to regulate the expression of transgene.
- ii. Embryonic stem cell method of producing transgenic mice.
- iii. Transgenic mouse as model system to study human disease.
- iv. Cloning livestock by nuclear transfer.

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Q.4 a. Explain of the following terms (any three):-

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- i. Book mark
- ii. HTML
- iii. DDBJ
- iv. WWW
- v. IP address
- vi. BLAST

b. Answer the following (any two):-

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- i. Discuss: NCBI and its importance in Bioinformatics.
- ii. What are Data retrieval tools? Give an account of the data retrievals tools and their importance.
- iii. Write a note on Internet and its protocols associated with Bioinformatics.
- iv. Elaborate on: Protein databases.

Q.5 Write short notes on (any three):-

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- a) RT – PCR.
 - b) Cholera vaccine.
 - c) Electroporation.
 - d) Mode of action of Bt toxin.
 - e) Transgenic fish as biosensors of environmental pollutants.
 - f) Applications of Bioinformatics.
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