

[Time: Two and half Hours]

[ Marks:75]

Please check whether you have got the right question paper.

N.B: Attempt all questions

All questions carry equal marks

Draw neat labeled diagrams wherever necessary

Q.1

- a. Give one example of the following (**any three**) 03
- i. Restriction enzyme used for detection of SCA
  - ii. Method used for DNA sequencing
  - iii. Virus used for preparation of vector vaccines
  - iv. Restriction enzyme used for preparation of attenuated Cholera vaccine
  - v. Thermostable enzyme used in PCR
  - vi. Cells used for HSV vaccine preparation

- b. Answer the following (**any two**) 12
- i. What is a subunit vaccine? State its advantages and disadvantages.
  - ii. Give an account of Di-deoxy sequencing
  - iii. Discuss the role of VNTRs in solving paternity case.
  - iv. Give an account of peptide vaccines with suitable example.

Q.2

- a. Do as directed ( **any three**): 03
- i) Mention the voltage time requirements for 'high voltage – short pulse' approach of electroporation .
  - ii) State the significance of Cry protein.
  - iii) Give significance of : Golden rice
  - iv) Give significance of triparental mating while using Ti plasmid vector.
  - v) What are opines?
  - vi) Define: Protoplast

- b. Attempt the following (**any two**) 12
- i) What are transgenic plants? Explain in details any one transgenic plant.
  - ii) Discuss: Liposomes and explain their role in plant transgenesis.
  - iii) Diagrammatically describe : Binary Ti plasmid vector
  - iv) Define edible vaccines. Explain with suitable example.

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- Q.3** a. What do you understand by the following terms (any three): 03
- i) Embryonic stem cells
  - ii) Transgenic founder
  - iii) Karyogamy
  - iv) Knock out mouse
  - v) Biosensor
  - vi) Quiescent state

- b. Elaborate the following (any two): 12
- i) Establishment of transgenic mouse by DNA microinjection
  - ii) Positive negative selection system
  - iii) Cre-*loxP* recombination system for activating a gene
  - iv) Application of transgenic fish

- Q.4** a. Explain the following terms (any Three) 03
- i. EMBL
  - ii. Internet explorer
  - iii. Book mark
  - iv. FTP
  - v. Internet
  - vi. HTML

- b. Answer the following (any two): 12
- i) Define Bioinformatics. Give a detailed account of its scope and applications
  - ii) Describe the heuristic tools used in sequence similarity searching.
  - iii) Give an account of protein databases.
  - iv) Discuss the role of world wide web in bioinformatics

- Q.5** Write short note on (any three): 15
- i) Any one method for producing transgenic livestock
  - ii) Data retrieval tool
  - iii) RT-PCR
  - iv) DNA vaccines
  - v) Electroporation
  - vi) Microprojectile Bombardment technique
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