Q. P. Code : 36875

2 ½ Hours **Total Marks: 75**

1. **All** questions are **compulsory.**
2. **All questions** carry **equal** marks.
3. Draw **neat, labelled diagrams** wherever necessary.

Q. 1 a. Define the following **(any three):** **03**

i Auxotroph.
ii F+cell.
iii Engineered transformation.
iv Heteroduplex DNA.
v Temperate phage.
vi Permissive host.

b. Answer the following **(any two)**: **12**

i. Chromosome map of *E.coli* is circular. Justify.
ii. Describe natural transformation in *B.subtilis.*
iii. Explain recombinational analysis of rII mutants.
iv. Discuss: Generalized transduction as a method of gene mapping.

Q. 2 a. Do as directed **(any three)**: **03**

i Name the gene used for creating insect resistant plants.
ii State true or false: The deletion of genes governing auxin and cytokine production (the oncogenes) from T-DNA of a Ti plasmid is known as disarming.
iii Fill in the blank: Golden rice was designed to produce _____, a precursor of vitamin A
iv Explain the term: Opine.
v State the role of PEG in plant transformation.
vi Give an example of reporter gene.

b. Answer the following **(any two):** **12**

i. Justify: Transgenic plants have many applications.
ii. Elaborate on the plant viral vectors used for transformation.
iii. Give an account of biolistic method of plant transformation.
iv. Explain the process of direct DNA uptake by protoplast.

Q. 3 a. What do you understand by the following terms? **(any three):** **03**

i Pharming.
ii Transgene.
iii Karyogamy.
iv Spurious site.
v Transfection.
vi In vitro fertilization.

b.	Answer the following **(any two):**	**12**
i.	Explain nuclear cloning.	
ii.	Describe the retroviral method of establishing transgenic mouse.	
iii.	Discuss the establishment of transgenic salmon with enhanced growth rate.	
iv.	Elaborate on the Positive negative selection of transgenic mice.	

Q. 4 a.	Explain the following **(any three):**	**03**
i	Operator	
ii	Allolactose	
iii	Aporepressor	
iv	lacI-d	
v	lac A	
vi	Target site duplication	

b.	Discuss the following **(any two):**	**12**
i.	Repressible operon.	
ii.	Composite and non-composite transposons.	
iii.	Transposable elements in corn.	
iv	Operator mutations of lac operon.	

Q. 5	Write short notes on of the following (**any three):**	**15**
a.	Production of F'factor.	
b.	Application of transgenic mice.	
c.	Edible vaccines.	
d.	Use of Electroporation in plant transformation.	
e.	Positive control of lac operon.	
f.	Insertion sequences.	