



Karanjia Auto College, Karanjia, Mayurbhanj

CC-XVI: Plant biotechnology

Unit-1

1. Answer the following questions: (1x 8 =8)

- i) Who is known as father of plant tissue culture?
- ii) In tissue culture ----- and ----- are responsible for acceleration of mitosis.
- iii) Haploid cultures can be obtained from -----
- iv) Which of the growth hormones is responsible for apical dominance?
- v) Widely used chemical for protoplast fusion is-----.
- vi) Which plant part is free from viral attack?
- vii) Pomato is ----- hybrid.

Group-B 2. Answer the following questions: (1.5x 8 =12)

- i) What is totipotency? ii) What is a cybrid?
- iii) What is somatic embryogenesis? iv) What is a callus?
- v) What is plant tissue culture?
- vi) What is an explant? vii) What are somaclones?
- viii) Define a protoplast.

Group-C 3. Answer the following questions: (2x 8 =16)

- i) What is cell culture?
- ii) What are the sterilization techniques used in plant tissue culture?
- iii) What is MS medium? iv) What is artificial seed?
- v) What is cryopreservation?
- vi) Differentiate between cybrids and hybrids. vii) What is the role of EDTA in synthetic media?

Group-D 4. Answer the following questions: (6x4= 24)

- i) Discuss the role of culture media in plant tissue culture? ii) Discuss in brief the applications of plant tissue culture?
- iii) Discuss the available methods of isolation and purification of protoplasts? iv) Describe different stages of somatic embryogenesis?

Unit-2

1.OBJECTIVE QUESTIONS [1 MARK]

1. _____ is referred to as molecular scalpes/knife/scissor.
2. _____ is referred to as Molecular glue?
3. The enzyme which cuts the DNA into many fragment called _____?
4. The DNA fragments are separated by the method _____.
5. A particular DNA fragment can be identified by _____.
6. A oligo nucleotide chain used for identification of DNA or RNA is called _____.
7. In Gel Electro phoresis the Gel is made up of _____.
8. Nitro cellulose sheets are used in the method _____.
9. _____are most commonly used vectors used in recombinant DNA technology?
- 10.Recombinant DNA = _____ DNA + _____ DNA
- 11.Recombinant DNA is also called as _____ DNA.
- 12.Restriction endonucleases cut the DNA in _____ sequence.
- 13.The recognition site for EcoRI is _____.
- 14.The Recognition site for HindII is _____.

15. The transfer of Recombinant DNA into the Host is called _____ and it takes place in the presence of _____ ion.
16. The vector should possess _____ gene for screening of Recombinant DNA.
17. The most commonly used vectors for gene transfer technology in plants are _____ and _____.
18. The most commonly used plasmid as vector in Recombinant DNA technology is _____.
19. Staggered cut by Restriction endo-nuclease produce _____ ended fragment?
20. A blunt ended DNA fragment can be converted into sticky ended fragments by using _____.
21. Gene amplification is done through _____.
22. The DNA polymerase used in PCR is _____ and is obtained from _____.
23. PCR is carried out in a machine called _____.
24. DNA obtained from RNA is called _____ DNA.
25. Plasmid DNA + Phage DNA is called _____.

2. ANSWER IN 1 TO 2 SENTENCES [1.5 MARKS]

1. What is recombinant DNA technology?
2. What is Restriction mapping?
3. What is marker gene?
4. What is BAC and YAC?
5. What is Southern Blotting?
6. What is northern Blotting?
7. What is western Blotting?
8. How many types of restriction enzymes are there? Which type is used as most is Recombinant DNA technology?
9. What is the definition of shuttle vector?
10. What is transformation?

3. Answer within 75 words [2 marks]

1. Write a note on Restriction mapping?
2. What are the important character of a vector?
3. What are the important character of Restriction endonuclease?
4. Write briefly about Gel Electro phoresis?

5. Write briefly about southern Blotting?

4. Answer within 500 words [6 marks]

1. Describe the tools and techniques of Recombinant DNA technology?
2. Describe the History, types, biological role and application of restriction endo nuclease?
3. Give an account of vectors?
4. Describe the PCR mediated Gene Cloning?

Unit-3

1. Answer the following questions :(1×8)

- (1)_____ method uses high voltage electrical impulses for gene transfer?
- (2)_____ bacterium is considered as ' natural genetic engineer'.
- (3)The Ti is referred to as_____.
- (4)The size of Ti plasmid is around_____.
- (5) *Agrobacterium tumefaciens* form ____ plasmids and *Agrobacterium rhizogenes* form ____ plasmids.
- (6)_____ is a collection of the total genomic DNA from a single organism.
- (7)cDNA is produced from_____.
- (8)The process by which a probe is used to screen a library is known as_____.
- (9)For protein detection,most commonly used probe is_____.
- (10)_____ chemical used to gene transfer.
- (11)_____ chemicals regulate the expression of vir gene in case of tobacco?

2. Answer the following questions:(2×8)

- (1)Write short notes on cDNA libraries
- (2) Colony hybridization
- (3) Electroporation
- (4) Selectable marker(5)Reporter genes
- (6)Microinjection(7)Probes(8) cDNA(9)Ti plasmid(10) PEG

(3) Answer the following questions:(6×4)

- (1) Describe the methods of Agrobacterium-mediated gene transfer?
- (2) Describe the vector less mediated gene transfer method?
- (3) Describe the process of construction of genomic and cDNA libraries.
Describe screening of DNA libraries to obtain gene of interest.
- (4) Describe colony hybridization?

Unit-4

1. Answer the following questions:(1×8)

- (1) Golden rice is _____.
- (2) Genetically altered plants, animals and microorganisms are called _____ organism.
- (3) Bt genes are obtained from _____.
- (4) Transgenics plants are developed by _____.
- (5) Give an example of herbicide resistance plants _____.
- (6) If the small part of polypeptide is used as a vaccine then the vaccine is known as _____.
- (7) Give the full form of virus cPMV _____.
- (8) _____ is a biological treatment to destroy the concomitant of hazards wastes from contaminated site?

2. Answer the following questions:(1.5×8)

- (1) Gene therapy (2) Golden rice (3) Industrial enzyme
- (4) Moondust carnations (5) Transgenic crops
- (6) Cry proteins (7) Biosafety concerns
- (8) Significance of transgenic plants (9) Herbicide resistance plant

3. Answer the following questions:(2×8)

- (1) Bioremediation (2) Edible vaccine (3) GM plants

(4)Virus resistance plant (5)Flavor savr Tomato

(5)Golden rice(6)Superbug(7)By.cotton

(8)Improved crop varieties

4. Answer the following questions:(6×4)

(1)What is By cotton and how was developed?Discuss the impact of Bt cotton in India?

(2)What are round up ready soyabeans?How were these developed? Discuss their impact on soyabean cultivation in USA?

(3) Describe the different strategies used for developing virus resistance transgenic crops?

(4)How can Transgenic plants be developed for the production of edible vaccines with examples?

(5)What do you understand by biosafety of growing transgenic crops?

(6)Discuss the transgenic crops with improved quality traits?

(7)What is Humulin? Give strategy for production of human insulin?

(8)What is difference between vaccine and edible vaccines?