

**CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION  
APRIL 2012**

**BOTANY - VIII  
PLANT BIOTECHNOLOGY**

Time: 3 Hrs

Max. Marks: 70

**Instructions:**

1. Answer both Part A & Part B.
2. Answer TWO full questions from each unit of Part B.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

**PART – A**

1. Answer **any TEN** of the following. **1x10=10**
- a) Mention any two methods of isolation of desired gene.
  - b) Write any two examples of saline and drought resistant genes.
  - c) What is a stock culture?
  - d) Write an example for palindrome sequence.
  - e) Give any 2 examples for surface sterilants.
  - f) What is gynogenesis?
  - g) What is hardening?
  - h) Write the significance of meristem culture.
  - i) Name the enzyme responsible for fruit ripening.
  - j) Mention any one important ethical issues in gene cloning.
  - k) Name the methods for purifying DNA.
  - l) What is a gene construct?

**PART – B  
UNIT – I**

- Answer **any TWO** of the following. **2x10=20**
2.
    - a) Give a brief explanation of the steps involved in the production of R DNA. **05**
    - b) Write the flow chart of Butanol production. **2½**
    - c) Write a note on bioreactors for suspension culture. **2½**
  3.
    - a) Write a note on any two types of cloning vectors. **05**
    - b) What is bioconversion? Write a note with examples. **2½**
    - c) Write a note on microbial production of flavours. **2½**
  4.
    - a) Enumerate the steps involved in the production of wine. **05**
    - b) Outline the steps of the preparation of DNA probes. **2½**
    - c) What is green biotechnology? **2½**

## UNIT – II

Answer **any TWO** of the following.

**10x2=20**

5.
  - a) Write about the technique of culturing of haploid plants. **05**
  - b) Comment on batch culture. **2½**
  - c) Write a note on LAF (Laminar Air Flow) cabinet. **2½**
  
6.
  - a) Write a note on media in tissue culture. **05**
  - b) Write a note on methods of isolation of protoplast. **2½**
  - c) What is somatic embryogenesis? Write their significance. **2½**
  
7.
  - a) Explain somaclonal variations with examples. **05**
  - b) Comment on endosperm culture. **2½**
  - c) Write a note on Callus. **2½**

## UNIT – III

Answer **any TWO** of the following.

**10x2=20**

8.
  - a) With Schematic Sketches outline Agromediated gene transformation. **05**
  - b) Write a note on plant derived vaccines. **2½**
  - c) Comment on male sterility genes. **2½**
  
9.
  - a) Explain the production of GE insulin. **05**
  - b) What are the types of genes, their source and significance in the production of GM Rice **2½**
  - c) Herbicide tolerant plants can be developed by cloning. Justify with examples. **2½**
  
10.
  - a) Explain the production of hybridoma cells through diagrammatic representation. **05**
  - b) Write a note on delay in fruit ripening as Genetic Engineering. **2½**
  - c) Write a note on interferons. **2½**

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## CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION - APRIL 2013

**BOTANY**  
**PLANT BIOTECHNOLOGY**

Time: 3 Hrs

Max. Marks: 80

**Instructions:**

1. Answer both Part A & Part B.
2. Answer TWO full questions from each unit of Part B.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

**PART – A**

1. Answer **any TEN** of the following. **2x10=20**
- a) Define biotechnology. Mention any two applications.
  - b) What is androgenesis? Mention its applications.
  - c) Name the transgene and source in transgenic cotton.
  - d) What are DNA probes? Give its use.
  - e) What are the advantages of meristem culture?
  - f) What are somatotropins? Name the technology used in its production.
  - g) Mention any four advantages of using yeast strains in fermentation.
  - h) What are batch cultures? Mention its uses.
  - i) What is herbicide tolerance? Give an example.
  - j) Name the transgenes and sources involved in the production of golden rice.
  - k) Write the principle used in laminar air flow.
  - l) What are interferences? Mention the types.

**PART – B****UNIT – I**Answer **any TWO** of the following. **2x10=20**

2. a) Give the general construction of a bioreactor. **05**
- b) Write a note on p<sup>BR322</sup>. **2½**
- c) Write a note on microbial flavours. **2½**
3. a) Give an account of microbial production of alcohol. **05**
- b) Write a note on scorable markers. **2½**
- c) Write a note on Cowpea trypsin inhibitor gene. **2½**

4. a) Discuss the tools and steps involved in recombinant DNA technology. **05**  
b) Explain saline resistant plants. **2½**  
c) Write the steps involved in the production of amino acids. **2½**

### UNIT – II

Answer **any TWO** of the following. **10x2=20**

5. a) Give an account of composition of tissue culture media. **05**  
b) Write a note on synthetic seed production. **2½**  
c) Write a note on sterilization of explant. **2½**
6. a) Describe the methods of protoplast isolation. **05**  
b) Write a note on Hanging Droplet method. **2½**  
c) What are somaclonal variations? Write any three. **2½**
7. a) Explain the steps involved in somatic embryogenesis. **05**  
b) Write a note on morphogenesis. **2½**  
c) Write the steps involved in micropropagation. **2½**

### UNIT – III

Answer **any TWO** of the following. **10x2=20**

8. a) Explain any 5 methods of gene transfer in plants. **05**  
b) Draw a labeled diagram of Ti plasmid. **2½**  
c) Give a schematic representation of production of monoclonal antibodies. **2½**
9. a) Give an account of recombinant Human insulin production. **05**  
b) Write a note on ethical issues of genetically engineered cells. **2½**  
c) Write a note on Cytoplasmic male sterility. **2½**
10. a) Explain the production of human vaccine. **05**  
b) Write a note on GE plants for virus resistance. **2½**  
c) Give an account of antisense RNA technology. **2½**

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CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2014

**BOTANY - VII**

**PLANT BIOTECHNOLOGY**

Time: 3 Hrs

Max. Marks: 80

**Instructions:**

1. Answer both Part A & Part B.
2. Answer two full questions from each unit.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

**PART – A**

1. Answer **any TEN** of the following. **10x2=20**
- a) Differentiate between phagemids and cosmids.
  - b) Give any two examples of secondary metabolites produced by micropropagation.
  - c) What is herbicide tolerance? Give an example.
  - d) Name the source organism of *Taq polymerase*. Mention its function.
  - e) Name two chemical agents used for the preparation of synthetic seeds. Give one reason for using them.
  - f) What is the underlying principle used in autoclave?
  - g) How is quality enhancement achieved in tomatoes?
  - h) Differentiate between trophophase and idiophase.
  - i) What is somatic hybridization? Mention its significance.
  - j) Mention any two ethical issues raised in GMO's.
  - k) Write the principle involved in turbidostat.
  - l) Name the microbial source for the production of vit B<sub>12</sub> and glutamic acid.

**PART – B**

**UNIT – I**

- Answer **any TWO** of the following. **10x2=20**
2. a) Explain the steps involved in protoplast culture technique. **5**  
b) Write a note on basic principles of tissue culture. **3**  
c) Give the applications of meristem culture. **2**
  3. a) Explain the steps involved in micropropagation. **5**  
b) Give the contributions of any two scientists to the field of tissue culture. **3**  
c) What is suspension culture? Give its applications. **2**
  4. a) Discuss briefly the mechanism of somaclonal variations. Mention its significance. **5**  
b) Give the importance of growth regulators in plant tissue culture. **3**  
c) What is cybrid technology? Mention any one of its significance. **2**

## UNIT – II

Answer **any TWO** of the following.

**10x2=20**

5.
  - a) Explain the different methods employed in direct gene transfer technology. **5**
  - b) Write a note on golden rice. **3**
  - c) Give the contribution of any two scientists in the field of rDNA technology. **2**
  
6.
  - a) Explain the methods used for the isolation of plant genomic DNA. **5**
  - b) Draw a neat labeled sketch of p<sup>BR322</sup>. **3**
  - c) What is ligation? Mention the conditions for ligation. **2**
  
7.
  - a) What are restriction enzymes? Write a note on the types with functions. **5**
  - b) What is transformation? Mention the techniques involved in screening of transformed cells. **3**
  - c) What are edible vaccines? Give an example. **2**

## UNIT – III

Answer **any TWO** of the following.

**10x2=20**

8.
  - a) Explain 1) Packed bed bioreactors 2) Air lift fermenters. **5**
  - b) Write a note on SCP. **3**
  - c) Define the following 1) Inoculum 2) Wort. **2**
  
9.
  - a) Write the steps in the production of citric acid. **5**
  - b) What is monolayer culture? How is it achieved? **3**
  - c) Differentiate between upstream and downstream processing. **2**
  
10.
  - a) What is submerged fermentation? Mention the types. Describe any one of them. **5**
  - b) What are microbial foods? Give any 2 examples with their microbial source. **3**
  - c) Classify biohazards with examples. **2**

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## CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2015

**BOTANY****PAPER VII - PLANT BIOTECHNOLOGY**

Time: 3 Hrs

Max. Marks: 80

**Instructions:**

1. Answer both Part A & Part B.
2. Answer two full questions from each unit.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

**PART – A**

1. Answer **any TEN** of the following: **10x2=20**
- a) What are the advantages of microbially produced flavours?
  - b) Mention the role of any two macronutrients in tissue culture media.
  - c) What is the role of Sodium Chloride in the studies involved in DNA?
  - d) Define redifferentiation.
  - e) What are the microbial strains used for industrial production of cheese and Vit B12?
  - f) What is somatic hybridization? Give its application.
  - g) Write the principle involved in the production of synthetic seeds.
  - h) What is transformation of cells? Mention the methods of screening of transformed cells.
  - i) State the factors that influence fermentation.
  - j) Differentiate between turbidostat and chemostat.
  - k) Give the application of gene cloning in the development of disease resistant plants.
  - l) What is reverse transcription? Mention its role in genetic engineering studies.

**PART – B****UNIT – I**

- Answer **any TWO** of the following: **2x10=20**
2. a) Write a note on the steps involved in *in-vitro* micropropagation **5**
  - b) Write about the contribution of any two scientists to the development of tissue culture **3**
  - c) What are androgenic plants? Write their significance. **2**
  3. a) Explain the steps involved in the isolation and culturing of protoplasts. **5**
  - b) Write a note on suspension culture. **3**
  - c) Differentiate between hybrids and cybrids **2**
  4. a) What are Somaclonal variations? Write a note on the mechanism and its applications. **5**
  - b) What is meristem culture? Give its applications. **3**
  - c) Give the significance of hormones in *in-vitro* micropropagation technique. **2**

## UNIT – II

Answer **any TWO** of the following:

**2x10=20**

5. a) Explain the steps of Agromediated gene transfer technology. **5**  
b) Yeast is a plant genetic model. Substantiate. **3**  
c) Write the disadvantages of gene cloning technique. **2**
6. a) Explain the production of golden rice & flavr savr tomato. **5**  
b) What is herbicide tolerance? How is it achieved? **3**  
c) Mention any four milestones in the field of rDNA technology. **2**
7. a) Write a note on a) P<sup>BR 322</sup>  
b) Bt toxins **5**  
b) Mention the physical methods of gene transfer into living cells. Add a note on any one of them. **3**  
c) What is restriction digestion? **2**

## UNIT – III

Answer **any TWO** of the following.

**2x10=20**

8. a) Write a note on the following:  
1) Continuous fermentation  
2) Need for Biosafety **5**  
b) What is monolayer culture? Write its applications. **3**  
c) State the principle involved in a bioreactor. **2**
9. a) Explain  
1) Packed bed bioreactor  
2) SCP **5**  
b) Give the flow chart representation in the industrial production of penicillin. **3**  
c) Mention the ethical issues concerning biotechnological research and developed products. **2**
10. a) Narrate the steps leading to the industrial production of beer. **5**  
b) Write a note on biohazards? **3**  
c) What are edible vaccines? Give an example. **2**

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## CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2016

**BOTANY****ENVIRONMENTAL BIOLOGY & BIOMETRICS**

Time: 3 Hrs

Max. Marks: 80

**Instructions:**

1. Answer both Part A & Part B.
2. Answer two full questions from each unit.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

**PART – A**

1. Answer any **TEN** of the following. 10x2=20
- a) What are heliophytes and sciophytes? Give one example each.
  - b) Give one example each for succulents, cladodes, Phylloclades and phyllodes.
  - c) What is soil humus? Mention its types.
  - d) Mention the role of velamen tissue giving one example.
  - e) What is ecesis? Mention its role in plant succession.
  - f) Give two control measures of noise pollution.
  - g) What is meant by bioaccumulation? Give one example.
  - h) Expand BOD and COD, mention their significance.
  - i) Give two examples for petroplants. What are the uses?
  - j) List two positive effects of monoculture.
  - k) Expand NEERI and CRZ.
  - l) Differentiate between discrete and continuous data with suitable examples.

**PART – B****UNIT – I**

- Answer any **TWO** of the following. 2x10=20
2.
    - a) Give an account of morphological adaptations of hydrophytes. 5
    - b) Explain any three characteristic features of population. 3
    - c) What is meant by soil  $P^H$ ? Mention its importance. 2
  3.
    - a) Explain the influence of wind on vegetation. 5
    - b) List the anatomical adaptations of xerophytes 3
    - c) What are nest epiphytes? Give one example. 2
  4.
    - a) Give an account of positive interaction as biotic factors. 5
    - b) Write a short note on vivipary and pnuematophore. 3
    - c) What is meant by carrying capacity of a population? 2

## UNIT – II

Answer any TWO of the following.

2x10=20

5. a) Explain the succession on a bare rock with suitable examples. 5  
b) Write short note on photochemical smog and green house effect. 3  
c) List any four trees of Evergreen forests with their Botanical names. 2
6. a) Give an account of soil pollution and its effects. 5  
b) Write a note on sedge meadow stage. 3  
c) Give two examples for water borne diseases. 2
7. a) List the vegetational types of Dakshina Kannada and explain shola forest and mangrove vegetation. 5  
b) Give any three toxicity testing methods. 3  
c) What is meant by oxidation pond?. 2

## UNIT – III

Answer any TWO of the following.

2x10=20

8. a) Give an account of Endemic plants of India and their conservation. 5  
b) Write a note on advantages of vermicomposting. 3  
c) What is meant by gully erosion. 2
9. a) Give an account of Biogas production. 5  
b) What is afforestation? Write short note on urban forestry. 3  
c) Write a short note on scope of statistics in biological science. 2
10. a) Calculate the standard deviation for the following data. 5

Weight of seeds in Grams

11	12	13	14	15	16	17	18	19	20	21
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- b) Write a note on National sanctuaries of India. Name any two. 3  
c) What are wind breaks? 2

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