

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

**BOTANY – VII  
MOLECULAR BIOLOGY, GENETICS AND BIOMETRICS**

**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) What is Northern blotting?
  - b) State Wobble hypothesis.
  - c) Give the composition of Thymidine.
  - d) What is meant by Restriction Fragment Length polymorphism?
  - e) Give an example for haploidy.
  - f) What is emasculation?
  - g) Define germinal mutation.
  - h) How many types of trisomics are expected in Datura?
  - i) Name any two chemical mutagens.
  - j) What is deletion with reference to point mutation?
  - k) What is sampling? Mention the types.
  - l) What is standard deviation?

**PART – B  
UNIT – I**

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

2.
  - a) Explain Griffith's experiment. **05**
  - b) Write a note on Transposons. **2½**
  - c) List out the characteristics of Taq. Polymerase. **2½**
3.
  - a) Explain Watson and Crick model of DNA. **05**
  - b) List out any Five characteristics of Genetic code. **2½**
  - c) Mention the uses of Southern blotting technique. **2½**
4.
  - a) Explain the steps involved in the replication of DNA. **05**
  - b) Write a note on Plasmids. **2½**
  - c) How does activation of amino acid occur during translation? **2½**

## UNIT – II

Answer **any TWO** of the following.

**10x2=20**

5. a) Explain *Raphanobrassica*. **05**  
b) Explain the types of deficiencies. **2½**  
c) What is back cross? Explain monohybrid test cross with an example. **2½**
6. a) Explain polygenic inheritance with a plant example. **05**  
b) Write a short note on incomplete dominance. **2½**  
c) Give a diagrammatic representation of pericentric inversion. **2½**
7. a) Define linkage. Write a short account of incomplete linkage with a plant example. **05**  
b) Write a note on Genetic significance of Duplications. **2½**  
c) What is Duplicate gene Interaction? Give the F<sub>2</sub> phenotypic ratio. **2½**

## UNIT – III

Answer **any TWO** of the following.

**10x2=20**

8. a) What is Frame Shift Mutation? Explain the events that lead to Frame Shift Mutation. **05**  
b) What are the uses of Histogram? **2½**  
c) Differentiate between cDNA and Genomic DNA sequences. **2½**
9. a) With the help of a diagram explain title, sub caption and Box-head, body, source and footnote of a table. **05**  
b) Write a note on physical mutagens. **2½**  
c) What are bioinformatic tools? Explain any two uses. **2½**
10. a) Define the following terms. **05**  
i) Class frequency  
ii) Cumulative frequency  
iii) Class limit  
iv) Relative frequency  
v) Mid Point  
b) How does an intercalating agent cause mutation? **2½**  
c) Write a note on BLAST. **2½**

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**CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION  
APRIL 2013**

**BOTANY**

**MOLECULAR BIOLOGY, GENETICS AND BIOMETRICS**

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) What is a map unit? How is it determined?
  - b) Differentiate between mean and median.
  - c) Write any two effects of deficiencies.
  - d) Name the types of rRNA in the smaller and larger units of eukaryotic ribosomes.
  - e) What are the effects of UV radiation on genes?
  - f) What is the type of linkage seen in maize? Why?
  - g) Write the principle involved in PCR. Mention one of its uses.
  - h) What is dataprocessing? Mention its uses.
  - i) Write two important features of transposons with two examples.
  - j) Write any two differences between primary and secondary data.
  - k) Write the significance of haploidy.
  - l) Write any two differences between prokaryotic and eukaryotic transcription.

**PART – B**

**UNIT – I**

Answer any TWO of the following. 10x2=20

2.
  - a) Explain briefly the steps involved in translation process. 05
  - b) Write the principle and application of SDS page. 2½
  - c) Write a note on Contribution of Avery et.al. 2½
  
3.
  - a) Explain the process of RNA splicing. 05
  - b) What is genetic code? Mention the characteristics features. 2½
  - c) Draw a neat labeled diagram of Watson and Crick model of DNA. 2½

4. a) Explain briefly the mechanism of DNA replication. **05**  
 b) Define the terms  
 1) Inducer 2) Repressor 3) Regulator 4) Promotor 5) cestrum **2½**  
 c) Write a note on plasmids. **2½**

### UNIT – II

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

5. a) Explain allopolyploidy with two examples. **05**  
 b) What is cross over? Write its significance. **2½**  
 c) Write the features of polygenic inheritance. **2½**
6. a) Describe the cytological behavior of translocation heterozygotes with its effects. **05**  
 b) In *Mirabilis Jalapa* F2 ratio is 1:2:1. Give reasons. **2½**  
 c) Give the characteristic features of linkage. **2½**
7. a) Explain complementary factors with a plant example. **05**  
 b) Differentiate between paracentric and pericentric inversions. **2½**  
 c) Write a note on trisomy in plants. **2½**

### UNIT – III

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

8. a) What are frame shift mutations? Explain. **05**  
 b) What are biological data bases? Write a note on any one of them. **2½**  
 c) What is sampling? Mention the types **2½**
9. a) Calculate the standard deviation of the following data. **05**

|               |       |       |       |       |       |       |       |        |
|---------------|-------|-------|-------|-------|-------|-------|-------|--------|
| Pods/Plants   | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 |
| No. of Plants | 30    | 58    | 62    | 85    | 112   | 70    | 57    | 26     |

- b) Mutations have a role in improvement of crops. Justify with examples. **2½**  
 c) Write a brief note on genome annotations. **2½**
10. a) Explain chemical mutagenesis **05**  
 b) Write a note on histograms. **2½**  
 c) Define the terms.  
 1) Transition 2) Mode 3) Population 4) Blast 5) Genome **2½**

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

**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) Which is the main types of vegetation in tropical areas? Give reasons.
  - b) What is vivipary? Give one example.
  - c) Name the different types of vegetation based on temperature.
  - d) What is meant by mortality and natality?
  - e) What are Epiphytes? Give two examples.
  - f) Mention the harmful effects of lead and mercury.
  - g) What is meant by biotransformation? What is its importance?
  - h) Name any two indicators of water quality.
  - i) What is Red data book? What is its importance?
  - j) Write two main objectives of social forestry.
  - k) What are the uses of solar energy?
  - l) Define 't' test write its formula.

**PART – B****UNIT – I**

- Answer **any TWO** of the following. **10x2=20**
2. a) Discuss the effects of light on vegetation. **5**
  - b) Write a note on 'biological systems' of soil complex. **3**
  - c) Comment on the roots of hydrophytes with examples. **2**
  3. a) Give an account of anatomical adaptations of Xerophytes. **5**
  - b) Write a note on mutualism with two examples **3**
  - c) Define growth rate of a population. How it is calculated? **2**
  4. a) Write note on soil water. **5**
  - b) Write a note on age pyramids. **3**
  - c) List any two types of negative interactions among organisms. **2**

## UNIT – II

Answer **any TWO** of the following.

**10x2=20**

5. a) Define succession. Explain the process of succession occurring in a pond. **5**  
b) Write a note on biochemical toxicity testing methods. **3**  
c) Mention the types of disinfection of water. **2**
6. a) Give an account of noise pollution, its causes, effects and control measures. **5**  
b) Write a note on Shola vegetation. **3**  
c) Write a note on Invasion. **2**
7. a) Write short notes on (i) Green house effect  
(ii) Acid rain  
(iii) Photochemical smog **5**  
b) What is bioaccumulation? Write its significance. **3**  
c) Write four examples for the plants of wet forests of Karnataka. **2**

## UNIT – III

Answer **any TWO** of the following.

**10x2=20**

8. a) Explain the different agronomic practices of soil conservation. **5**  
b) List any three endemic plants of India. **3**  
c) Name any two types of frequency distribution. **2**
9. a) Calculate the standard deviation for the following data, which shows the weight of seeds in gms. **5**
- |                 |      |       |       |       |       |
|-----------------|------|-------|-------|-------|-------|
| Weight in gms.  | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| Number of seeds | 2    | 4     | 6     | 5     | 3     |
- b) Write a note on National Parks with two examples. **3**  
c) Discuss polyculture with its advantages and disadvantages. **2**
10. a) Explain the method of vermicomposting. **5**  
b) What is meant by productive forestry? **3**  
c) Write a note on discrete data with an example. **2**

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

**BOTANY**

**PAPER VIII – ENVIRONMENTAL BIOLOGY AND 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**
- What are heliophytes? Give one example.
  - Differentiate between phylloclade and cladode.
  - Define population
  - Name the relationship of organisms in the following examples.  
(i) Hermit crab and sea anemone.  
(ii) Mycorrhizae inside the roots.
  - Differentiate between primary succession and secondary succession.
  - Give four examples for the plants found in the rooted submerged stage.
  - What are greenhouse gases? Give two examples.
  - What is meant by hard water?
  - What is mulching? Write its importance.
  - Name any four endemic plants.
  - Expand NEERI and CRZ.
  - What is Chi square test? Write its formula.

**PART – B**

**UNIT – I**

- Answer **any TWO** of the following: **2x10=20**
- Discuss the effect of temperature on Vegetation **5**
    - What is meant by carrying capacity of the environment **3**
    - Write a note on Mull and Mor humus **2**
  - Explain soil profile with a suitable diagram. **5**
    - Write any three physical effects of wind on plants. **3**
    - What are pneumatophores? Mention their importance? **2**
  - Discuss morphological adaptations of hydrophytes with suitable examples **5**
    - Name the different phases of growth curve. **3**
    - What is antibiosis? Give one example **2**

## UNIT – II

Answer **any TWO** of the following:

**2x10=20**

5. a) Give a detailed account of Xerosere **5**  
b) What is sand dune flora? Give two examples. **3**  
c) What is meant by threshold of hearing? **2**
6. a) Give an account of dry and wet forests of Karnataka. **5**  
b) Write a note on bioaccumulation with an example. **3**  
c) What is BOD? Mention its significance. **2**
7. a) Explain the effects of water pollution. **5**  
b) Explain the method to measure the microbial contamination of water. **3**  
c) What is climax stage? **2**

## UNIT – III

Answer **any TWO** of the following:

**2x10=20**

8. a) Give a detailed account of urban rain water harvesting, its methods and advantages **5**  
b) What is poly culture? What are its advantages? **3**  
c) Represent the following data in the form of a line graph. **2**  
Monthly fish landing in a Pond

| Month           | Jan | Feb | March | April | May | June |
|-----------------|-----|-----|-------|-------|-----|------|
| Catch in tonnes | 20  | 25  | 30    | 10    | 35  | 40   |

9. a) Explain the different types of soil erosion and its consequences. **5**  
b) Write a brief note on Hot spots of India. **3**  
c) Give a comparison of primary and secondary data. **2**
10. a) Calculate the Standard Deviation for the following data. **5**
- |                         |   |   |   |   |   |    |   |   |   |   |
|-------------------------|---|---|---|---|---|----|---|---|---|---|
| Weight of fruits in gms | 8 | 6 | 7 | 5 | 6 | 10 | 8 | 6 | 7 | 7 |
|-------------------------|---|---|---|---|---|----|---|---|---|---|
- b) Write a short note on different stages of sewage treatment. **3**  
c) What is Agroforestry? What are its advantages? **2**

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

**BOTANY**

**PAPER V – 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 is immunological screening? Mention its use.
  - b) Write the contribution of any two scientists to the field of gene cloning.
  - c) Write the principles in the working of laminar airflow cabinet.
  - d) What are vaccines? Write an example for genetically engineered vaccines.
  - e) Differentiate between hybrids and cybrids.
  - f) What are transgenes? Name the source of transgenes in golden rice.
  - g) What are somaclonal variations? Give an example.
  - h) What are the applications of pollen culture?
  - i) What is upstream processing?
  - j) What is Adjunct?
  - k) Write the microbial source and importance of glutamic acid.
  - l) Write the applications of monolayer culture.

**PART – B**

**UNIT – I**

- Answer any TWO of the following. 2x10=20
2.
    - a) What is somatic embryogenesis? Explain. 5
    - b) Write any three milestones in the field of plant tissue culture. 3
    - c) What are surface sterilants? Give any two examples 2
  3.
    - a) Explain the nutritional requirements to be met in tissue culture media. 5
    - b) Write a note on technique employed in the isolation of protoplasts. 3
    - c) Differentiate between dedifferentiation and redifferentiation. 2
  4.
    - a) What are synthetic seeds? Comment on the production technique with applications. 5
    - b) What are Calli? Write their importance. 3
    - c) Mention any two methods of growth measurement. 2

## UNIT – II

Answer any TWO of the following.

2x10=20

5. a) Explain briefly *Agrobacterium* mediated gene transfer technology . 5  
b) Comment on “Yeast as a suitable eukaryotic gene model”. 3  
c) Draw a labelled diagram of P<sup>BR322</sup>. 2
6. a) Write a note on herbicide tolerance and Bt toxin gene. 5  
b) Differentiate between cDNA and genomic DNA. 3  
c) What is antisense RNA technology? What is the significance of this process. 2
7. a) Explain the physical methods of direct gene transfer. 5  
b) Write a note on ( i) DNA ligase (ii) *Taq* Polymerase 3  
c) Write any four importance features of restriction enzymes 2

## UNIT – III

Answer any TWO of the following.

2x10=20

8. a) Explain the concept of enzyme immobilization with applications. 5  
b) Write the flow chart of basis steps of downstream processing. 3  
c) Write any four sources of SCP. 2
9. a) Explain the microbial production of vit B<sub>12</sub> . 5  
b) Differentiate between batch and continuous fermentation. 3  
c) Write a note on biohazards. 2
10. a) Comment on (i) chemostat (ii) Roux bottle. 5  
b) What are the guidelines and advantages of IPR. 3  
c) Give an example for microbial sources of flavours and organic acid. 2

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