

Total No. of Printed Pages—3

**5 SEM TDC BOT M 3**

**2 0 1 7**

( November )

**BOTANY**

( Major )

Course : 503

**( Genetics, Plant Breeding and Biostatistics )**

*Full Marks : 48*

*Pass Marks : 19/14*

*Time : 2 hours*

*The figures in the margin indicate full marks  
for the questions*

1. (a) Express the following in 1 word :  $1 \times 2 = 2$
- (i) The gene that masks the effect of an another gene.
  - (ii) A physical or chemical agent which induces mutation.
- (b) Fill in the blanks :  $1 \times 3 = 3$
- (i) The chromosome theory of linkage was proposed by \_\_\_\_\_ .

(ii) Crossing of two parents belonging to different species is called \_\_\_\_\_ cross.

(iii) The value in a series which occurs most frequently, i.e., has the maximum frequency is termed as \_\_\_\_\_.

(c) Write short notes on the following :

3×4=12

(i) Multiple gene

(ii) Cytological basis of crossing over

(iii) Mutation breeding

(iv) Cumulative frequency

2. What is cytoplasmic inheritance? Distinguish between cytoplasmic gene and chromosomal gene. Give a detailed account of cytoplasmic inheritance with special reference to plastid inheritance and Kappa particle inheritance.

1+3+7=11

Or

Write explanatory notes on the following :

5½+5½=11

(a) Sex-limited traits

(b) Microbial transduction

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3. What do you mean by heterosis? Give genetic explanations of heterosis. Mention the role of heterosis in plant breeding.  $2+6+4=12$

Or

Write short notes on the following :  $6+6=12$

(a) Acclimatisation

(b) Application of tissue culture in the improvement of crops

4. Distinguish between standard error and standard deviation. Find out the mean, mode, median and standard deviation of the following data :  $3+5=8$

<i>Size of item</i>	10	11	12	13	14	15	16
<i>Frequency</i>	2	7	11	15	10	4	1

Or

What are the basic differences between statistics and biostatistics? Discuss the application and uses of statistics in biological science.  $2+6=8$

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Total No. of Printed Pages—3

**5 SEM TDC BOT M 5**

**2 0 1 7**

( November )

**BOTANY**

( Major )

Course : 505

**( Functional and Chemical Biology )**

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

*The figures in the margin indicate full marks  
for the questions*

1. (a) Choose the correct answer of the following : 1×3=3

(i) A protein having two or more polypeptide chains is called Monomeric / Oligomeric / Polymeric protein.

(ii) Animals, bacteria and fungi store carbohydrates as cellulose / dextrose / glycogen.

(iii) Non-reducing commercial sugar is glucose / sucrose / fructose.

(b) Fill in the blanks : 1×3=3

(i) Nucleotide without a \_\_\_\_\_ is called nucleoside.

(ii) Simple lipids are esters of fatty acids with \_\_\_\_\_ .

(iii) \_\_\_\_\_ is a growth inhibiting hormone.

(c) Write short notes on the following :

$2\frac{1}{2} \times 4 = 10$

(i) Polysaccharides as reserve food matter

(ii) Storage products in plants

(iii) Phytochrome

(iv) Role of lipid in organisms

2. (a) Explain why proteins have been called 'biological polymers'. Give the importance of tertiary structures of protein. Give one example of a tertiary protein.

$4+5+1=10$

Or

(b) What are auxins? Discuss briefly the role of auxins in the growth of plants.

$3+7=10$

( 3 )

3. (a) What do you mean by metabolic concept? Explain the pathways of metabolic concept. What are the regulations of metabolic pathways? 10

Or

- (b) What are carbohydrates? What is the main source of carbohydrate? Explain how glycosidic bonds are formed in carbohydrates. Name three common disaccharides. 2+1+4+3=10

4. Write short notes on (any four) : 3×4=12

- (a) Biomolecule
- (b) Function of chlorophyll
- (c) Terpenoids
- (d) Anabolism and catabolism
- (e) Use of cellulose
- (f) Anthocyanins

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Total No. of Printed Pages—3

**5 SEM TDC BOT M 7**

**2 0 1 7**

( November )

**BOTANY**

( Major )

Course : 507

**( Plant Ecology, Phytogeography and Evolution )**

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

*The figures in the margin indicate full marks  
for the questions*

1. (a) Fill in the blanks : 1×3=3

- (i) The aspect of plant ecology which is concerned with the study of individual plant is called \_\_\_\_\_.
- (ii) The process by which migrants establish themselves in a new area after migration is known as \_\_\_\_\_.
- (iii) \_\_\_\_\_, is a macronutrient, has inorganic pools in both atmosphere and soil.

(b) Choose the correct answer :  $1 \times 2 = 2$

(i) Interpretations of causes of plant distribution on the earth is called phytogeography / descriptive geography/dynamic phytogeography.

(ii) The mutation theory of evolution was proposed by Weismann/ de Vries/Huxley.

(c) Write short notes on the following :  $3 \times 3 = 9$

(i) Deforestation and its consequences

(ii) World's biodiversity hot spots

(iii) Global climate change

2. What are pollutants? Give an account of the sources of air pollution. Suggest suitable methods of control of air pollution.  $1+5+4=10$

Or

What is endemism? Write concise notes on the endemic and endangered species of North-East India. What do you mean by biosphere reserve?  $2+(3+3)+2=10$

3. Define plant succession. Describe in detail the sequential stages of a typical hydrosere. What is meant by climax concept?  $1+7+2=10$



Or

What is biogeochemical cycle? Describe with sketches, the phenomena with special reference to water cycle. Mention the impact of human activities on water cycle. 1+6+3=10

4. (a) Write a precise note on any one of the following : 7
- (i) Flora of Assam
  - (ii) Mangrove forests of India
- (b) What do you mean by organic evolution? Describe briefly the mechanism of organic evolution. 1+6=7

Or

Write an explanatory note on the origin of life in the light of chemical evolution. 7

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