

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
B.Sc. Summer 2017-18 Examination

Semester: 6
Subject Code: 11102351
Subject Name: Agricultural Biotechnology

Date: 08/05/2018
Time: 10:30 am to 1:00 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**
 (a) Discuss in detail *Agrobacterium tumefaciens mediated* T-DNA transfer mechanism.
 (b) Draw a labeled diagram of any one Physical gene transfer methods.
- Q.1. B) Answer the following questions (Any two)**
- (a) **Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) (04)**
 1. Why is abscisic acid also known as stress hormone?
 2. Would a defoliated plant respond to photoperiodic cycle? Why?
- (b) Short note on Golden rice. (04)
 (c) Short note on Reporter gene. (04)
- Q.2. A) Answer the following questions.**
- (a) **Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)**
 1. After fertilization, the ____ develops into seed and the ovary develops into a fruit.(Ovule/egg)
 2. In shoots,branching is inhibited by ____ from the tip of a growing shoot,but this effect is countered by cytokinins from the roots.(Ethylene/Auxin)
- (b) Short note on Polyplody. (04)
- Q.2. B) Answer the following questions (Any two)**
- (a) **Short note/ Multiple choice questions. (Each of 01 marks) (03)**
 1. Nitrogen -fixing bacteria in the soil
 a.) convert nitrates toN₂
 b.) convert ammonia into ammonium
 c.) convert atmospheric nitrogen into ammonia
 d.) use nitrates to make amino acid that plants can use
 2. The relationship between legumes and Rhizobium is
 a.) Mutualistic
 b.) Parasitic
 c.) Competitive
 d.) Commensalism
 3. Mycorrhizae are
 a.) Nutrients required by plants in relatively small amounts
 b.) Plants such as mistletoe that parasitize other plants
 c.) Cells that control evaporation of water from leaves
 d.) Associations of roots with beneficial fungi
- (b) Short note on Apomixis. (03)
 (c) Short note on Binary vector. (03)
- Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**
 (a) What is Heterosis? Explain its genetic basis and significance in Plant Breeding.
 (b) Write a concise account on Cyanobacterial biofertilizers.
- Q.3. B) Answer the following questions (Any two)**
- (a) Write a concise note on Transgenic Crops in Agriculture. (04)
 (b) Short note on Nif genes. (04)
 (c) Short note on Nodulation genes. (04)
- Q.4. A) Answer the following questions.**
- (a) **Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)**

1. Metabolic interference is a term used to describe a method to metabolize a compound and prevent the synthesis of something that is normally produced. 1-aminocyclopropane-1-carboxylic acid and ____ compound(s) have been targeted for metabolic interference in tomato?
(SAM (S-adenosylmethionine)/ Aminoxyacetic acid)
2. _____content of potatoes can be increased by using a bacterial gene, known as ADP glucose pyrophosphorylase gene.(Protein/ Starch)

(b) Short note on reversible male sterility using barnase-barstar gene.

(04)

Q.4. B) Answer the following questions (Any two)

(a) **Short note/ Multiple choice questions. (Each of 01 marks)**

(03)

1. Which hormone is called as stress hormone?
a.) Auxin b.) Epinephrine c.) Ethylene d.) Nitrous oxide
2. What are some examples of chemical stress?
a.) Temperature b.) Salt c.) pH d.) None
3. What are the resistance techniques associated with drought?
a.) Avoidance: CAM plants (stomata closed during day)
b.) Water content of tissue
c.) Abscisic acid bc it is a stress indicator
d.) None

(b) Short note molecular basis of mutations with suitable examples.

(03)

(c) Short note on Ri plasmid.

(03)