MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2011-12**
Course No.	: BOT 356	**Title**	: **Principles of Plant Biotechnology**		
Credits	: 3(2+1)				
Day & Date	: Thursday, 22.09.2011	**Time**	: 14.00 to 17.00	**Total Marks**	: **80**

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 What do you mean by biotechnology? Write in detail about branches of biotechnology and scope and importance of biotechnology.

Q.2 a) What is transformation?
b) Enlist the method of gene transfer in plants.
c) Which is the widely adopted plant transformation method?

Q.3 Write in detail about nutritional requirement of plant tissue culture.

Q.4 Write down about techniques of plant tissue culture.

Q.5 a) Define Embryo Culture.
b) What are the applications of Embryo culture?

Q.6 Define Soma clonal variation. Explain in detail about mechanism of soma clonal variation.

Q.7 Define artificial seeds. What are the steps for making artificial seeds?

Q.8 Define Anther culture and write in detail about protocol for Anther culture.

Q.9 a) Define Somatic hybrid.
b) Write down about method of Isolation of protoplast.

Q.10 Write short notes (Any Two)
1) Southern blotting
2) DNA finger printing application
3) Types of mapping population

SECTION "B"

Q.11 Define the following terms.

1) Aseptic
2) Callus
3) Biotechnology
4) Tissue
5) Explants
6) Micro-propagation
7) In-vitro
8) Totipotency

(P.T.O.)

Q.12 Match the pairs.

"A"	"B"
1) Indole acetic acid	a) Salt solution formulation
2) Benzyl adenine	b) Anther culture in Datura
3) Industrial Biotechnology	c) Concept of Hormonal Control
4) Karl Earke	d) Cytokinin
5) Skoog and Miller	e) Father of Tissue culture
6) Guha and Maheshwari	f) Auxin
7) Gautheret white	g) Branch of Biotechnology
8) G. Haberlandt	h) Coined the term Biotechnology

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	**: V (New)**	**Term**	**: I**	**Academic Year**	**: 2010-11**
Course No.	**: BOT 356**	**Title**	**: Principles of Plant Biotechnology**		
Credits	**: 3(2+1)**				
Day & Date	**: Saturday, 16.10.2010**	**Time**	**: 14.00 to 17.00**	**Total Marks**	**: 80**

Note :
1. Solve **ANY FIVE** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Define somatic embryogenesis. Describe in brief the developmental pattern of somatic embryos. Differentiate between somatic embryos and zygotic embryos.

Q.2 Define tissue culture. Discuss the application of *in vitro* cultures in agriculture.

Q.3 Define anther culture. Discuss the factors affecting anther culture and limitations of anther culture techniques.

Q.4 Define somaclonal variation. Describe in brief the procedures used for obtaining somaclonal variation along with achievements in somaclonal variation.

Q.5 Define Genetic Engineering. Discuss in brief the indirect method of gene transfer along with a diagram.

Q.6 What is a molecular marker? Enlist its types. Explain in brief any three of them.

Q.7 Write short notes on

1) Mapping population 2) Southern blotting 3) Restriction enzymes
4) Test tube fertilization

SECTION "B"

Q.8 Define the followings

1) Biotechnology
2) Organ culture
3) Ovule culture
4) Vector
5) QTL
6) Callus
7) Batch culture
8) Asymetric hybrid
9) DNA probes
10) Double haploids

Q.9 Give the contribution of following scientists in one or two lines.

1) Murashige and Skoog
2) Laibach
3) Maheshwari and Guha
4) Kary B.Mullis
5) Braun
6) G.Morel
7) Karl Ereky
8) P.R.White
9) Edward and Cocking
10) W.H.Muir

(P.T.O.)

Q.10 Fill in the blanks.

1) The process of organogenesis resulting in the formation of shoot is known as _____.
2) Shoot buds are_____structure.
3) _____ callus is suitable for suspension culture.
4) The plating technique for culturing cells or protoplasts is developed by_____.
5) Commercially exploited technique of tissue culture is_____.
6) Disease free or virus free plants are obtained by_____culture.
7) Embryos isolated before_____stage are most suitable for embryo culture.
8) Somatic hybrid plants which retain the full or nearly full somatic complements of the two parental species are called_____.
9) _____is a short sequence that pairs with one strand of DNA and provides free 3' off end at which a DNA polymerase starts synthesis of a deoxyribonuleotide chain.
10) _____ are commonly used as explants for protoplast culture.

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2013-14**
Course No.	: BOT 356	**Title**	: **Principles of Plant Biotechnology**		
Credits	: 3(2+1)				
Day & Date	: Wednesday, 23.10.2013	**Time**	: 14.00 to 17.00	**Total Marks**	: **80**

Note : 1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 What is micropropagation? Enlist stages of micropropagation and describe applications of micropropagation.

Q.2 Define plant biotechnology. Give a brief account on features and scope of plant biotechnology.

Q.3 What is genetic engineering? Describe steps involved in genetic engineering process.

Q.4 Describe the techniques of embryo culture and discuss their various applications.

Q.5 Define the term transgenic plant and describe in brief its application and achievements.

Q.6 What is media? Explain in brief the basic constituent of media.

Q.7 Define totipotency. Why all cells are not totipotent in culture? Mention the importance of totipotency in plant science.

Q.8 What do you mean by somatic hybridization? Enlist steps involved in it and describe in detail methods for protoplast fusion.

Q.9 What are molecular markers? Write down different molecular markers along with their applications.

Q.10 Write short notes on. (Any Two)

1) RFLP 2) Cryopreservation 3) Synthetic seed

SECTION "B"

Q.11 Define the following terms.

1) Vector 2) Plasmid 3) Somaclonal variation
4) Differentiation 5) Sub culture 6) Organoids
7) Cybrid 8) Explant

Q.12 Give major contribution of following scientists.

1) Kary B. Mullis 2) Murashige and Skoog 3) E.C. Cocking
4) C.H. Chen 5) W.H. Muir 6) G. Haberlandt
7) Laibach 8) Maheshwari and Guha

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION
B.Sc. (Agri.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2015-16**
Course No.	: BOT 356	**Title**	: **Principles of Plant Biotechnology**		
Credits	: 3(2+1)				
Day & Date	: Monday, 26.10.2015	**Time**	: 14.00 to 17.00	**Total Marks**	: 80

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Define Biotechnology. Give a brief account on branches and scope of Biotechnology.

Q.2 What is micropropagation? Describe in brief stages and advantages of micropropagation.

Q.3 What is media? Explain in brief the basic constituents of media.

Q.4 Define tissue culture. Discuss the applications of *in-vitro* cultures in agriculture.

Q.5 What is mean by somatic hybridization? Enlist steps involved and describe methods of protoplast fusion.

Q.6 What is DNA recombinant technology? Describe steps involved in genetic engineering process.

Q.7 What is artificial seed? Describe steps for making artificial seeds and limitations of artificial seed.

Q.8 Write short notes on (Any two).

1) Secondary metabolites

2) Totipotency

3) Transgenic plants

Q.9 What is haploid production? Describe different factors affecting androgenesis and applications of androgenesis.

Q.10 Define molecular markers. Describe different molecular markers along with their application.

SECTION "B"

Q.11 Define the following terms.

1) Callus
2) Dedifferentiation
3) Somaclonal variation
4) Vector
5) Cybrid
6) Explant
7) Protoplast
8) Sub culture

Q.12 Give the contribution of following scientists.

1) G. Morel
2) Maheswari and Guha
3) Karl Ereky
4) Edward and Cocking
5) G Haberlandt
6) Laibach
7) C H Chen
8) Ian Wilmut

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