	Utech
Name:	
Roll No.:	A Grand of Samble Sal Salbari
Invigilator's Signature :	

CS/B.Sc.(H)/GEN/SEM-2/PGN-204/2013 2013 PLANT GENETICS

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

 $10 \times 1 = 10$

- i) In the mitochondrial DNA, UGA codes for
 - a) chain termination
 - b) chain initiation
 - c) tyrosine
 - d) tryptophan.

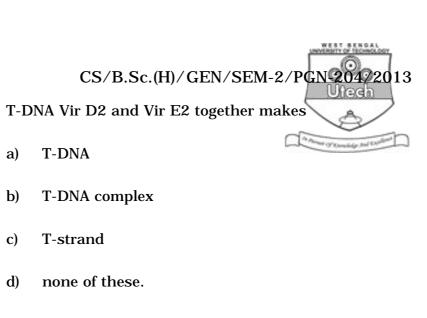
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ii)	Major limiting factor for photosynthesis in C $_{3}$ plants is		
	a)	CO ₃	As Annual (N'Exemples and Explored
	b)	temperature	
	c)	light	
	d)	water.	
iii)	Pro	moter sequence are present	upstream of a
	stru	actural gene of a	
	a)	transcription unit	
	b)	mRNA	
	c)	tRNA	
	d)	none of these.	
iv)	iv) Number of male gametes in one pollen tube is		ı tube is
	a)	1	
	b)	2	
	c)	4	
	d)	6.	
v)	v) Ploidy level of endosperm in angiosperm is genrally		rm is genrally
	a)	n	
	b)	3n	
	c)	6n	
	d)	2n.	
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- vi) A technique in which electricity is used to transfer DNA in a cell is called
 - a) southern blotting
 - b) electrophoresis
 - c) electroporation
 - d) immunoelectrophoresis.
- vii) Genetic modification is advantageous over plant breeding as
 - a) it allows genes to be introduced from any source
 - b) it allows genes transferred to be relatively precise
 - c) the safety of the genes can be tested in the laboratory
 - d) all of these.
- viii) Agrobacterium rhizogenes can be used to genetically engineer plants bacause of which of the following statements?
 - a) It contains a Ti plasmid
 - b) Infected plants produce a good root system
 - c) It infects all types of plants
 - d) It causes gene transfer to plants.

- ix) Plant transformation is
 - a) when a plant grown in culture generate increased genetic variation
 - b) when plant cells in suspension cultures form individual embryos that can grow into plants
 - c) the incorporation of foreign DNA into the plant genome
 - d) when dedifferentiated callus cells develop into tissue that is different from the original source tissue.
- x) When the chromosome number is an exact multiple of the basic number (other than 2n) it is called
 - a) nullisomic
 - b) aneuploid
 - c) euploids
 - d) none of these.
- xi) Cadasteral activity is known as the
 - a) competitive interaction between the genes
 - b) competitive interaction between members of different classes of genes
 - c) combinatorial interactions between members of different classes of genes
 - d) interactions between the members of same gene class.

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- xiii) Octopine and Nopaline type of plasmids differ in their
 - organization of the vir region a)
 - organization of the T-DNA and vir region b)
 - organization of the T-DNA c)
 - d) all of these.

a)

b)

c)

d)

- xiv) The promoter linked upto a gene coding for a cacterial ribonuclease used for male sterility in plants is named as
 - Barnase a)
 - **Barstar** b)
 - Barcode c)
 - d) None of these.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.



- Totipotency is one of the unique features of plant cells discuss.
- 3. Define C value. How repeats play an important role in C value paradox ? What are the effects of GC value on melting temperature in a DNA ? 1+2+2
- 4. What are enhancers? Giving one example show how enhancers work both as enhancer and silencers in plants.

2 + 3

- 5. What are the features of response elements?
- 6. Write a short note on zein protein in maize with emphasis on nutritional improvement.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Briefly outline the steps involved in the initiation of the T-DNA transfer process in *Agrobacterium*. Describe the major components of Ti plasmid. What do you mean by disarming of t-DNA?

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- 8. Distinguish between auto and allopolyploidy. Discuss the role of autopolyploidy in crop improvement Schematically describe the evolution of bread wheat. 2 + 7 + 6
- 9. Explain with example that specific promoter sequences are necessary for gene expression regulation. What is the role of introns in gene expression? What are the properties of trans acting factors in plants? Name few conserved sequences in eukaryotic promoter mentioning their role.

4 + 4 + 3 + 4

- 10. What are plantibodies ? What is the importance of plantibodies ? Discuss molecular pharming with reference to vaccines with examples. Why vaccines made in plants are preferred ? 2+4+6+3
- 11. Write short notes on any *three* of the following : 3×5
 - a) ABC model for development of flower
 - b) Promiscuous DNA and RNA Editing
 - c) Gene transfer in plants
 - d) Molecular markers
 - e) Role of 3' sequence in gene expression.