Shahjalal University of Science & Technology, Sylhet

Department of Biochemistry and Molecular Biology

4th Year 1st Semester B. Sc. (Hons) Final Examination, 2014

Course No. : **BMB-425** Course Title: **Plant Biotechnology**

Credit: **2.0** Total Marks: **70** Time: **2** Hours

Instructions:

- *Number in the right side indicates the marks of the question.*
- *Marks for each question are same.*
- ***Answer any two (2) questions from each Part (A and B).***

Part-A

1.	a)	What are the minimum facilities needed for the development of a plant molecular biology lab.	5
	b)	Describe the following things of media composition- Inorganic nutrients, Carbon source, Growth regulators, Gelling agents	10
	c)	What is sterilization? Write down the name of some sterilization techniques used in a lab.	2.5
2.	a)	Explain the statements (ア) Plant cells are totipotent (イ) Plant cells are recalcitrant	6
	b)	Write down the name of different types of culture. Discuss embryo culture with its application briefly.	7
	c)	What is somatic embryogenesis. Schematically show the protocol of somatic embryogenesis in carrot.	4.5
3.	a)	What do you mean by plant tissue culture? Write down the application of plant tissue culture in agriculture.	5
	b)	What are the major stages of micropropagation in vitro? Discuss the advantage and problems associated with micropropagation.	8
	c)	What is molecular marker? Write down the qualities of a good molecular marker.	4.5

Part-B

4.	a)	What is reporter gene? What are the general features of an ideal reporter?	3
	b)	Describe the use of following reporter genes Opine synthase, β glucuronidase (GUS), the firefly luciferase (LUC)	6
	c)	What is Ti plasmid? Write down the process of agrobacterium mediated transformation method. ~~What is Ti plasmid? Write down the process of agrobacterium mediated transformation method~~. Discuss its pros and cons.	8.5
5.	a)	What is gene silencing? Describe the gene silencing by antisense oligonucleotide and RNA interference (RNAi).	9
	b)	Write down the differences between RAPD and RFLP.	4
	c)	Describe the general process of gene cloning.	4.5
6.	a)	How plants are used as bioreactors? Define different types of bioreactors.	7
	b)	What is GM crop? Write your point of view on the use of GM crops.	4.5
	c)	What do you understand by the term biosafety? Provide the basic biosafety guidelines for a biosafety level 2 laboratory.	6