Jimma University, College of Natural Science, Department of Biology

Plant tissue Culture and Propagation Course assignment for 3rd year BSc Biology Students

(Biol3131)

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID. No\_\_\_\_\_\_\_\_\_\_\_\_\_

**Instruction I.**  **Read each questions carefully and then choice the best answer from the given alternatives.**

**1. Define plant tissue culture?**

A. Tissue taken from its original site and transferred to an artificial medium for growth or maintenance

B. The growing of plant cells, tissues, organs, seeds or other plant parts on a nutrient mediumunder sterile condition

C. Culturing non-human animals through socially transmitted behaviors

D. Farming systems which include the use of synthetic chemical fertilizers, pesticides, herbicides and other continual inputs, genetically modified organisms

E. None of these mentioned above

2. **Which one is not correct about cryopreservation?**

A. Use ultra-low temperature and stop metabolic processes

B. Need pre culturing step with rapid growth rate

C. Requires the formation of the ice crystal during the freezing step

D. Recovery process can be done after rapid thawing

3. **What is soma clonal variation?**

A. Variation among cells in the same organism

B. Variation among different plants that grown from different mutated embryos

C. The variation seen in plants that have been produced by plant tissue culture.

D. A tissue culture problem that is useless and must be avoided

4. **In plant tissue culture, what is the term ORGANOGENESIS means?**

A. Formation of callus culture

B. Formation of root & shoot from callus culture

C. Genesis of organ

D. None of the above

5. **In Plant Tissue Culture, the callus is grown in plantlet by altering the concentration of**

A. Amino acid

B. Glucose

C. Hormone

D. All of the above

6. Which one is not correct about somatic hybridization?

A. Involve protoplasts fusion

B. Results recombination of nuclear and cytoplasmic genomes

C. Produces sterile somatic hybrids with target traits of wild species

D. Avoids biosafety regulatory issues associated with transgenic

E. All are correct

**Instruction II. Differentiate the following terms in plant tissue culture and give possible examples for each question by your own understanding**

7. Tissue culture vs. Micro propagation

8. Callus culture vs. Suspension culture

9. Autoclaving vs. Sterilization

10. Direct Organogenesis vs. indirect embryogenesis

11. Haploid culture vs. Embryo culture

**Instruction III. Elaborate the following questions with all possible examples**

12. Explain the principles, technical requirements and applications of plant tissue culture in general?

13. Mention and discuss all the facilities and organization of Plant Tissue Culture under in vitro condition?

14. State and describe the kinds & components of tissue culture media in standardized laboratory. Your answer should be supported by examples for each?

15. Justify all the factors that may affect plant tissue culture under in vitro conditions?

**GOOD LUCK!!!**