SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

BCH 204: BIOTECHNOLOGY I

DATE:14TH DECEMBER, 2016 **TIME: 4.00-6.00 P.M**

INSTRUCTIONS TO CANDIDATES

(a) Answer ALL the Questions in Section A
(b) Answer ANY TWO Questions in Section B
(c) Illustrate your answers with well labeled diagrams where appropriate

SECTION A (30 MARKS)

1. Briefly describe **four** plant growth regulators required for nutrient media.(**4 marks**)
2. Give **three** advantages of micropropagation over conventional methods. (**3 marks**)
3. State **three** applications of somatic hybridisation. (**3 marks**)
4. Distinguish between organ culture and cell culture. (**2 marks**)
5. Outline the various ways in which the desired gene of interest can be isolated for the purpose of gene cloning. (**4 marks**)
6. State **three** functions that Ti plasmids genes are responsible for. (**3 marks**)
7. Describe **three** prerequisites for Agrobacterium gene transfer. (**3 marks**)
8. Outline the steps taken to accomplish particle bombardment in plants. (3 **marks**)
9. Describe the chemical reaction of Lactic acid fermentation from sugar. (**1 mark**)
10. List **four** limitations of fermentation technology. (**4 marks**)

SECTION B (40 MARKS)

11. Discuss the process required to express totipotency, after dedifferentiation in plants. (**20 marks**)

12. a) Discuss the considerations to be taken when choosing appropriate culture vessels for animal cell cultures. (**12 marks**)

    b) Describe the basic morphologies of animal cell cultures. (**8 marks**)

13. Describe the *Agrobacterium* mediated gene transfer process. (**20 marks**)

14. Discuss the roles of transgenic plants in crop improvement (**20 marks**)