UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

SECOND SEMESTER EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (BIOLOGY) AND BACHELOR OF SCIENCE (MICROBIOLOGY AND BIOTECHNOLOGY)

SBL/SBC 202: LABORATORY TECHNIQUES

DATE: APRIL 6, 2018 **TIME: 11:00 AM– 1:00 PM**

INSTRUCTIONS: Answer any ten (10) questions (7 marks each)

1. Explain the basics of experimental design in laboratory techniques.
2. Discuss sources of hazards in a biology laboratory.
3. Explain the following;
   a) the reaction between an acid and a base (2 marks)
   b) role a buffer in a biological system (2 marks)
   c) Three safety measures when using an autoclave (3 marks)
4. Explain how centrifuge technique can be used to diagnose parasitic infections.
5. Explain the applications of electrophoresis technique in a biology laboratory.
6. Describe the principles of adsorption and partition chromatography.
7. Explain the working principle behind the following:
   a) Nano spray mass spectroscopy (4 marks)
   b) Identification of disulphide linkages by mass spectrometry (3 marks)
8. Discuss seven rules and regulations in a biology laboratory.

9. Explain the application of enzyme-linked immunosorbent assay in diagnosis of pathogens.
10. Describe the following:

    a) properties of different types of radiation (3 marks)

    b) Two common isotopes used in radiation (2 marks)

    c) safety precautions when using radioisotopes (2 marks)

11. Design a criterion that can be used to select an appropriate analytical technique to diagnose ill health.

12. Describe the effects of temperature and pH on enzymes reactions.

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