



UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

SECOND SEMESTER EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
ANALYTICAL CHEMISTRY, BACHELOR OF SCIENCE INDUSTRIAL CHEMISTRY

SCA 101: SAFETY METHODS IN THE LABORATORY

DATE: APRIL 10, 2018

TIME: 2:00-4:00PM

INSTRUCTIONS:

Answer Question ONE and ANY other TWO Questions

QUESTION ONE (30 MARKS)

- a) Differentiate between the following:
- i) Accident, Hazard, and Risk (3 marks)
 - ii) Incident, scenario, and Consequence (3 marks)
 - iii) Simple distillation and Fractional distillation (2 marks)
 - iv) Toxicity and Corrosivity (2 marks)
- b) i) Describe the three classes of microorganism classified according to lowest temperature at which significant growth occurs. (3 marks)
- ii) Describe fermentation (2 marks)
 - iii) Give some application of fermentation (3 marks)
 - iv) What is the importance of using cold trap (2 marks)
- c) i) Give four causes of accident in laboratory (2 marks)

- ii) Describe some examples of situation where suitable personal protective equipment may be necessary (3 marks)
- iii) Briefly explain the difference between filtration and dialysis separation techniques (3 marks)
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- iv) Describe what is glycolysis (2 marks)

QUESTION TWO (20 MARKS)

- a) Discuss the general guidelines on storing chemicals and chemical equipment (10 marks)
- b) Describe alcoholic fermentation process (5 marks)
- c) Discuss general guidelines that can reduce or prevent injury and damage from fires. (5 marks)

QUESTION THREE (20 MARKS)

- a) Discuss the importance of MSDS (Material Safety Data Sheets) (5 marks)
- b) i) Discuss three ways used to reduce or eliminate hazards (6 marks)
- ii) Discuss the use of hot water bath and hot oil bath (4 marks)
- c) Discuss housekeeping rules that can keep laboratory safe (5 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss risk analysis (10 marks)
- b) Give the items that are included in a typical spill kits (5 marks)
- c) Discuss why personal protective equipment should be considered as the last resort in hierarchy of safety measure (5 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the standard operating procedure on general personal safety in laboratory. (5 marks)
- b) Discuss how separating funnel is used in separation. (3 marks)
- c) Describe the three steps of accident and discuss which ones safety program target. (6 marks)
- d) Discuss storage and disposal of organic peroxides. (6 marks)

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