

Module Title: Bioanalytical Science I CA

Module Code: BIOL 6003

School: Science

Programme Title: Bachelor of Science in Applied Sciences – Year 1
Bachelor of Science in Nutrition and Health – Year 1
Bachelor of Science in Pharmaceutical Biotechnology – Year 1

Programme Code: CR_SBIOS_7_Y1
CR_SNHSC_8_Y1
CR_SPHBI_8_Y1

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Internal Examiners: Ms. R. Kiernan, Dr. M. Sheahan

Instructions: Answer **TWO** questions from each section
Question 4 is **compulsory**
Use **separate answer book** for each section

Duration: 2 hours

Sitting: Autumn 2010

Section A

Q1. (a) Write a note on carcinogens under the following headings:

- (i) Methods for their identification (5 marks)
- (ii) Primary, secondary and cocarcinogens (4 marks)
- (iii) Measures to prevent exposure (4 marks)

(b) Apart from carcinogenicity, identify **four** common hazards associated with chemical reagents. In the case of any **three** of the hazards identified, (a) sketch the relevant hazard symbol; (b) where appropriate, give the parameters which may be used to measure the extent of the hazard and (c) give the precautions which should be observed to minimize the risks (12 marks)

Q2. (a) Summarize the main functions of the Health and Safety Authority (5 marks)

(b) Give an account of the responsibility of (i) the employer and (ii) the employee as outlined by the Safety, Health and Welfare Act (2005) (10 marks)

(c) Write a comprehensive note on safety statements (10 marks)

Q3.

(a) Clearly differentiate between the different ways by which the passage of electrical current through the body can lead to death (5 marks)

(b) Explain the importance of the earth wire, the use of the correct fuse size and the use of the appropriate cable for both the operation of a device and the safety of its users (6 marks)

(c) Briefly outline the precautions that need to be taken to eliminate injury or accidents due to electrical current in the laboratory (4 marks)

(d) Describe in detail the course of action to be undertaken in the event of a laboratory fire (10 marks)

Section B

Q4. Answer all of the following:

- (a) List two safety precautions which should be observed when working in a biology laboratory environment. (2 marks)
- (b) Convert 350 microlitres to mls. Which of the following pipettes should be used to deliver this volume: P100, P1000 or P5000? (3 marks)
- (c) What is a standard solution? Name the glassware used in their preparation. (3 marks)
- (d) List three methods used to measure the pH of a solution. (2 marks)
- (e) Name three indicators used in acid-base titrations. (2 marks)
- (f) When using a spectrophotometer, what is the purpose of the blank? (3 marks)
- (g) What is the difference between *accuracy* and *precision*? (5 marks)
- (h) State in words what you understand by each of the following concentration terms; 1% w/v, 0.5% v/v, 0.25% w/w (5 marks)

Q5. Discuss burns and scalds under the following headings:

- (a) Types of burns
- (b) Classification
- (c) Severity
- (d) Treatment

(25 marks)

Q6.

- (a) What is a biohazard? Sketch its safety symbol. (5 marks)
- (b) Write a comprehensive note on laboratory biosafety levels (10 marks)
- (c) Describe the necessary clean up procedure should a spill occur in a Biological Safety Cabinet (10 marks)