



VCE Bulletin Supplement 1

Sample examination questions 2002

VCE VET Laboratory Skills: Written examination

VCE VET Laboratory Skills

Written examination – November

Introduction

The VCE VET Laboratory Skills examination paper will consist of two sections.

Section 1 will comprise multiple-choice and short-answer questions relating to the following core competencies:

PMLQUAL 300A Contribute to achievement of quality objectives

PMLTEAM 300A Work efficiently as part of a team

PMLTEST 302A Calibrate test equipment and assist with its maintenance

Section 2 will comprise multiple-choice, short-answer and descriptive-answer questions related to each of the following elective competencies:

PMLTEST 300A Perform basic tests

PMLTEST 301A Perform biological laboratory procedures

PMLTEST 303A Prepare working solutions

Students should attempt **two** of the **three** electives in Section 2 and answer **all** questions related to the two selected competencies. Students should be advised to answer only questions relating to the elective competencies they have studied as part of their training program.

The following are examples of types of questions that could be asked in each section. Please note, the final examination will contain more questions within most areas to tally the mark distribution indicated below.

Section 1: approx 30 marks

Section 2: approx 60 marks

Total: approx 90 marks

Sample questions

SECTION 1

Indicate the correct answer by ticking the appropriate box.

Question 1

You are required to set up a control chart to record the % (W/V) concentrations of glucose in a solution. 95% confidence limits are to be used on the chart. Your supervisor states that the mean concentration is to be 20.20 with a standard deviation of 0.15.

The upper control limit would be set at

20.05

20.35

20.50

20.75

Question 2

Observations taken in a laboratory should be recorded

- in the laboratory logbook.
- on the closest piece of paper.
- on the whiteboard next to the workbench.
- into a computerised laboratory record-keeping system.

1 mark

Question 3

A random error is one that

- causes minor fluctuations in results.
- is repeatable and therefore measurable.
- is caused by poor calibration of equipment.
- is difficult to detect as it does not cause fluctuations.

1 mark

Question 4

Shutdown procedures for laboratory equipment include

- a warm-up period.
- calibration checks.
- cleaning equipment.
- reading the scale or gauge correctly.

1 mark

Question 5

One type of minor repair undertaken by a laboratory technician is

- changing a fuse on a pH meter.
- replacing a steam valve on an autoclave.
- replacing a power cord on an electronic balance.
- cleaning the internal glass lenses of an optical microscope.

1 mark

Question 6

Work teams are often formed within a larger group. Work teams are formed

- as a compromise.
- for disciplinary reasons.
- to enhance communication.
- to inhibit independence in the workplace.

1 mark

Answer all questions in the spaces provided.

Question 1

Quality is a term that can cause some confusion in the laboratory. One definition of quality from the dictionary is 'high grade, superior excellence'. This is not the definition that strictly applies in the laboratory. Explain what is meant by quality in the context of laboratory testing.

2 marks

Question 2

All National Association of Testing Authorities (NATA) accredited laboratories maintain instrument logbooks.

a. Where are the instrument logbooks kept?

1 mark

b. Who is responsible for keeping instrument logbooks up to date?

1 mark

c. List two types of information recorded in the logbook.

i. _____

ii. _____

2 marks

Question 3

Brainstorming is a technique that can be used in a laboratory to solve a problem. A research scientist, laboratory manager and two technicians are asked to consider a problem and propose solutions. The group must work as a team. What are two advantages of working as a team?

2 marks

SECTION 2

Section 2 consists of three electives. Complete **two** elective areas **only**. Answer all questions within both electives chosen.

ELECTIVE 1 PMLTEST300 Perform basic tests

Indicate the correct answer by ticking the appropriate box.

Question 1

Standard operating procedures are _____ instructions to ensure that a task is always completed according to the standards set in the workplace.

- basic
 generalised
 specific

1 mark

Question 2

Standard operating procedures ensure that a task is always completed in _____.

- the shortest possible time
 the same way
 a different way

1 mark

Question 3

_____ can be used to improve the homogeneity of a sample.

- sieving
 coning
 filtering

1 mark

Question 4

The term _____ point is a measure of the temperature at which a sample changes from the solid state to the liquid state.

- boiling
 evaporating
 melting

1 mark

Question 5

When reading the volume of water contained in a measuring cylinder the _____ of the water meniscus is read.

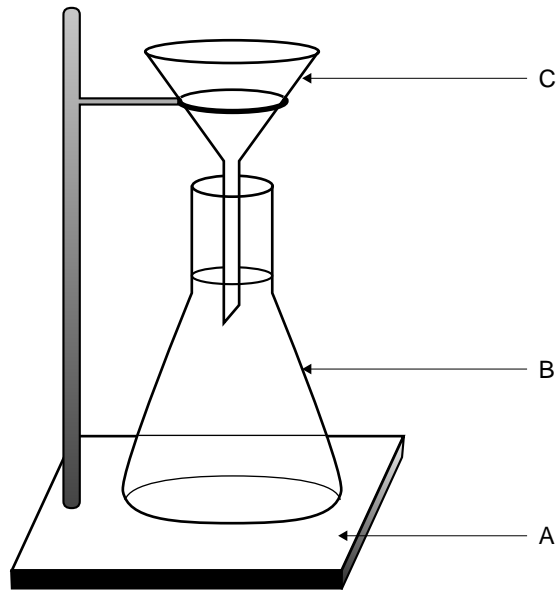
- top
 middle
 bottom

1 mark

Answer all questions in the spaces provided.

Question 1

Examine the diagram of the laboratory apparatus below.



a. Name the three pieces of equipment.

i. A _____

ii. B _____

iii. C _____

3 marks

b. Explain the purpose of this apparatus.

1 mark

c. What is the name given to the liquid that ends up in the piece of equipment labelled B?

1 mark

d. Care must be taken not to overfill the paper in the piece of equipment labelled C.

Explain why this care must be taken.

1 mark

ELECTIVE 2 PMLTEST301 Perform biological laboratory procedures

Indicate the correct answer by ticking the appropriate box.

Question 1

The fluid used to clean microscope slides is _____ .

- Ajax
- 70% ethanol
- xylene

1 mark

Question 2

You are examining a cell under a light microscope and it has a cell wall. You know that this cell is _____ .

- a plant cell
- an animal cell
- a bacterial cell
- either a plant or a bacterial cell

1 mark

Question 3

A Haemocytometer is an instrument used to count cells and it consists of _____ counting chambers.

- one
- two
- three

1 mark

Question 4

Cells can be grouped into two main types, they are _____ .

- round and oblong
- prokaryotic and eukaryotic
- animal and plant

1 mark

Answer all questions in the spaces provided.

Question 1

- a. Sally is working in a histology laboratory. She must check the steps carried out in tissue processing before commencing. Number the steps in correct order (from 1–4).

Steps	Correct order (1–4)
embedded in wax	<input type="checkbox"/>
cleared in xylene	<input type="checkbox"/>
fixed in fixative	<input type="checkbox"/>
dehydrated in ethanol	<input type="checkbox"/>

2 marks

- b. You are sectioning a block and find you are getting curved ribbons. What could be one cause of this?

1 mark

Question 2

Describe the technique used to prepare a thin film of blood for microscopic examination. Include in your answer sketches of the slide at different stages of the procedure.

- i. Diagram

- ii. Description

2 + 4 = 6 marks

ELECTIVE 3 PMLTEST303 Prepare working solutions

Indicate the correct answer by ticking the appropriate box.

Question 1

To dilute a sample of 1 M HCL to 0.1 M HCL a technician would perform a _____ dilution.

- 1 in 10
 1 in 100
 1 in 2

1 mark

Question 2

The concentration of a working solution might only be known approximately because _____
_____.

- it is already one day old
 a technician prepared it not a supervisor
 the quality of materials used was limited

1 mark

Question 3

A solute and a solvent make up a _____.

- precipitate
 solution
 aggregation

1 mark

Question 4

Water of appropriate purity for most laboratory solutions may be obtained from _____.

- filtration
 distillation
 town supply

1 mark

Answer all questions in the spaces provided.

Question 1

Laboratories hold many stock solutions. List **two** log details that would be held in a laboratory register.

i. _____

ii. _____

2 marks

Question 2

In preparing a % (W/V) solution a laboratory technician mixed a 200 ml sample containing 2 g of sugar. Calculate the % (W/V) in g/ml.

1 mark

Question 3

A primary standard is accurately weighed and diluted to volume in quantitative glassware to make a primary standard solution. List **two** characteristics of a primary standard solution.

i. _____

ii. _____

2 marks

Question 4

A quality accredited laboratory will maintain a central register of stock solutions. In addition to the central register of solutions each stock solution container for a hazardous material should carry a label. List **two** pieces of information that must be included on a stock label.

i. _____

ii. _____

2 marks