

EXAMINATION FOR QUALIFIED MEDICAL LABORATORY TECHNICIAN



Candidate Name:

Candidate Number:

Subject: MORTUARY

Examination Date: 8 October 2022

Time Allowed: 3 hours – 9.30am – 12.40pm
10 minutes extra time for reading the paper

General Instructions

1. Total marks for paper = 100.
2. Marks for each question are as indicated,
3. The paper consists of:

	<i>Common</i>	<i>Discipline Specific</i>
Section A, questions 1-30 = Total Marks 15	<i>6 Marks</i>	<i>9 Marks</i>
Section B, questions 31-36 = Total Marks 10	<i>5 Marks</i>	<i>5 Marks</i>
Section C, questions 37-39 = Total Marks 10	<i>4 Marks</i>	<i>6 Marks</i>
Section D, questions 40-45 = Total Marks 10	<i>5 Marks</i>	<i>5 Marks</i>
Section E, questions 46-65 = Total Marks 35	<i>10 Marks</i>	<i>25 Marks</i>
Section F, questions 66-67 = Total Marks 20	<i>0</i>	<i>20 Marks</i>
4. All questions are to be attempted.
5. Use of calculator is permitted.
6. Put all answers into the examination booklet provided.

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WORD DEFINITIONS	
Calculate	Perform a mathematical process to get the answer
Classify	Be able to designate to a group
Compare	Detail both the differences and the similarities
Complete	Finish, have all the necessary parts
Convert	Express in alternative units
Define	State meaning clearly and concisely
Describe	Give a complete account demonstrating a thorough practical knowledge
Discuss	Give details, explaining both the positives and negatives
Distinguish	To briefly point out the main differences
Expand	To express at length or in a greater detail
Identify	Recognise according to established criteria
Indicate	Briefly point out
Interpret	Express the results of a test or series of tests in a meaningful format
Label	Give a name to
List	Headings only
Match	Find one that closely resembles another
Name	A word or group of words used to describe or evaluate
Outline	Write brief notes incorporating the essential facts
State	Give the relevant points briefly

SECTION A

Section A – Question 1 to Question 30 = Total Marks: 15

Multi choice questions

Multi choice questions – choose one answer for each question

(0.5mark per correct answer)

Circle the letter for the correct answer

Example. Which of the below is a primary colour?

- a. Green
- b. Purple
- ☒ c. Red
- d. Orange

C.1 Approximately what percent alcohol is in a standard use hand sanitiser?

- a. 95%
- b. 75%
- c. 30%
- d. 10%

C.2 The patella is part of which human joint?

- a. Shoulder
- b. Elbow
- c. Knee
- d. Wrist

C.3 An anticoagulant is used to:

- a. stop blood clotting
- b. stop blood haemolysing
- c. help blood separating
- d. separate red cells and plasma

- C.4 Which of the following is **NOT** listed in the Health and Safety at Work Act 2015 as “Duties of Workers”?
- a. take reasonable care for his or her own health and safety
 - b. take reasonable care that his or her acts or omissions do not adversely affect the health and safety of other persons
 - c. co-operate with any reasonable policy or procedure of the PCBU (person conducting a business or undertaking) relating to Health and Safety at the workplace that has been notified to workers
 - d. issue provisional improvement notices
- C.5 Which of the following statements is true of an acidic solution?
- a. has a pH less than 7
 - b. is caustic
 - c. has a pH greater than 7
 - d. is Isotonic
- C.6 The reference interval for a given test is based on the results that are seen in what percent of the healthy population?
- a. 5%
 - b. 10%
 - c. 90%
 - d. 95%
- C.7 Treating all blood and body fluids as potentially infectious is an example of:
- a. Laboratory standard operating procedures
 - b. CDC guidelines
 - c. Standard precautions
 - d. Health and safety requirements
- C.8 Which laboratory department is primarily responsible for the diagnosis of leukaemia?
- a. Haematology
 - b. Histology
 - c. Blood Transfusion
 - d. Biochemistry

C.9 Hormones are produced by which bodily system?

- a. Lymphatic
- b. Cardiovascular
- c. Endocrine
- d. Digestive

C.10 Formalin is a laboratory fluid used to

- a. Preserve tissue samples
- b. Wash histology cutting knives
- c. Clean benches
- d. Decontaminate centrifuges

C.11 A chemical that is described as a carcinogen poses what specific risk?

- a. It may burn the skin
- b. It may cause cancer
- c. It may poison the liver
- d. It may cause loss of vision.

C.12 The practice of enforcing document management standards within the workplace is referred to as:

- a. Quality management
- b. Quality control
- c. IANZ requirements
- d. Document control

D.13 Which of the following lists best illustrates the idea of increasing levels of organisational complexity?

- a. Chemical, tissue, cellular, organ, system
- b. Chemical, cellular, tissue, organ, system
- c. Cellular, chemical, tissue, organ, system
- d. Tissue, cellular, chemical, organ, system

- D.14 The skull is _____ in relation to your heart
- a. Distal
 - b. Anterior
 - c. Superficial
 - d. Superior
- D.15 Which organelle is responsible for housing the majority of the genetic material in a human cell?
- a. Endoplasmic reticulum
 - b. Nucleus
 - c. Ribosome
 - d. Mitochondria
- D.16 The medical term used to describe an 'increase in cells from an increased frequency of cell division' is
- a. Hyperplasia
 - b. Cellular atypia
 - c. Hypoplasia
 - d. Necrosis
- D.17 In which organ would you find simple squamous epithelium?
- a. Lungs
 - b. Kidney
 - c. Uterus
 - d. Brain
- D.18 The connective tissue sheath that surrounds an **entire** skeletal muscle is known as the
- a. Perimysium
 - b. Myofilament
 - c. Epimysium
 - d. Fascicle

- D.19 During a post-mortem, the pathologists asks for the retrieval of a portion of bone marrow. Where would this specimen be taken most routinely from?
- a. Costochondral margin of rib
 - b. A portion of thoracic spinal vertebrae
 - c. Diaphyseal portion of long bone
 - d. Rear portion of the pelvic bone
- D.20 The parathyroid glands lie in contact with what other organ?
- a. Thalamus
 - b. Thymus
 - c. Hypothalamus
 - d. Thyroid
- D.21 What act covers the return and retention of post-mortem coronial tissue samples?
- a. The Human Tissues Act
 - b. The Coroners Act
 - c. NZ Burial and Cremation legislation
 - d. ISO 15189
- D.22 The pacemaker of the heart is the
- a. Sinoatrial node
 - b. Atrioventricular node
 - c. Purkinje fibres
 - d. Atrioventricular bundle
- D.23 Oxygenated blood enters the kidney through
- a. Renal vein
 - b. Renal portal system
 - c. Hilus arteries
 - d. Renal artery

D.24 BBFE is a medical term used to abbreviate

- a. The order in which organs are removed in a coronial post-mortem
- b. Personal protective equipment
- c. Blood, body or fluid exposure
- d. Blood borne foreign entities

D.25 The body's ability to ward off disease using a number of defences is best defined as

- a. Resistance
- b. Predisposition
- c. Homeostasis
- d. Vulnerability

D.26 The pathologist would like to examine the ribs for fractures. What lining can be stripped from the inside of the chest cavity to allow for closer examination?

- a. Serosa
- b. Pleura
- c. Peritoneum
- d. Fascia

D.27 What is considered the functional unit of a kidney?

- a. Nephron
- b. Glomeruli
- c. Renal cortex
- d. Major calyx

D.28 The NZ Burial and Cremation Act 1964 requires a baby to be registered as a death with NZ Births, Deaths and Marriages at what stage?

- a. 20+ weeks or 400g+
- b. Any foetal demise
- c. Still born <400g
- d. Any birth carried out in a NZ hospital

- D.29 NZ Ministry of Health dictates the level of risk/transmission of COVID-19 for mortuary workers. Their accepted guidance for the handling and transport of the deceased is;
- a. Universal precautions as per all cases (N95 mask, standard PPE, bagging to contain fluids only if necessary)
 - b. As per PPE guidelines for suspected 'prion disease' cases
 - c. Routine post-mortem with a VIRAL PCR taken to confirm infection status
 - d. Respirator use with mandatory bagging of every confirmed case
- D.30 What organisation is responsible for returning COR26 minute parts/samples to the family?
- a. NZIMLS
 - b. IANZ
 - c. Communio
 - d. NIIO

END OF SECTION

SECTION B

Labelling of diagrams e.g. anatomy, hazard identification, instrument



Section B – Question 31 to Question 36 = Total Marks: 10

(Answer all questions)

C.31 Name the following hazard symbols

(0.5 marks per correct answer)

(C.31: 1 mark)

a.		b.	
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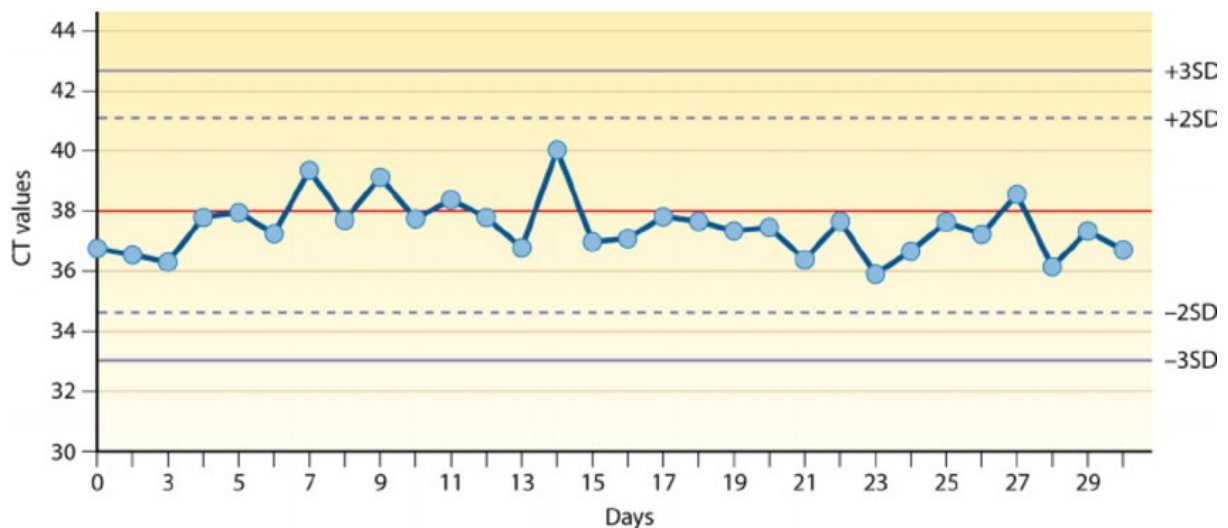
a. _____

b. _____

C.32 Name the type of graph:

(0.5 marks per correct answer)

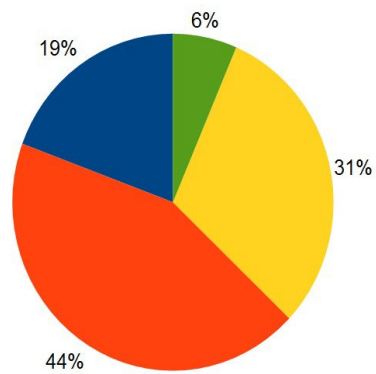
(C.32: 1.5 marks)



Type of graph: _____

Name the axis: CT values = _____ axis

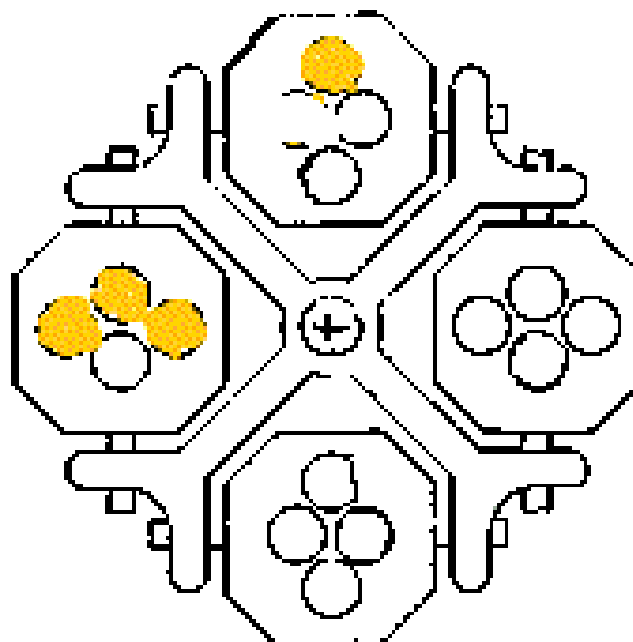
Days = _____ axis



- C.34 The yellow dots represent blood tubes in a swing out centrifuge rotor, assume all tubes are filled to the same level.

You have 4 more tubes to centrifuge, indicate on the rotor where they need to be positioned.

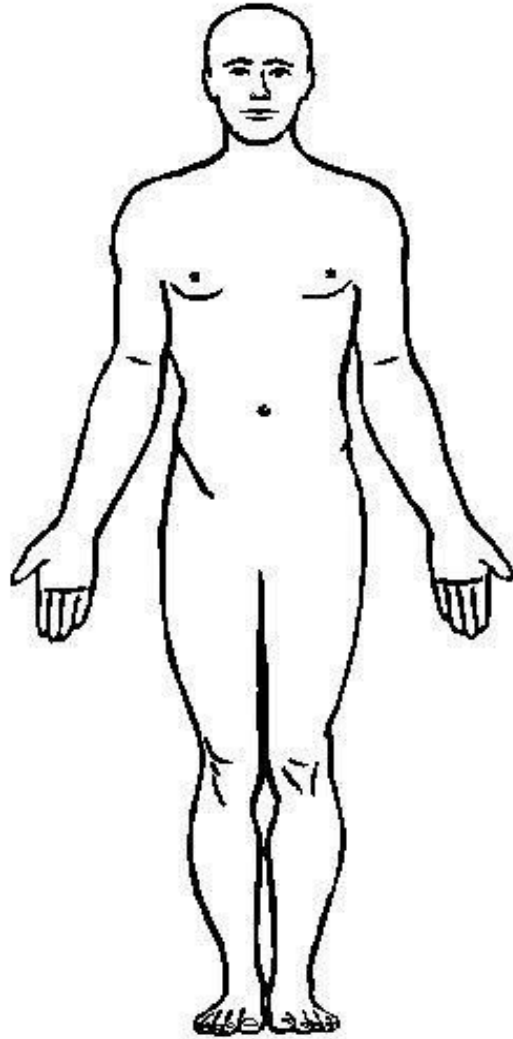
(C.34: 0.5 mark)

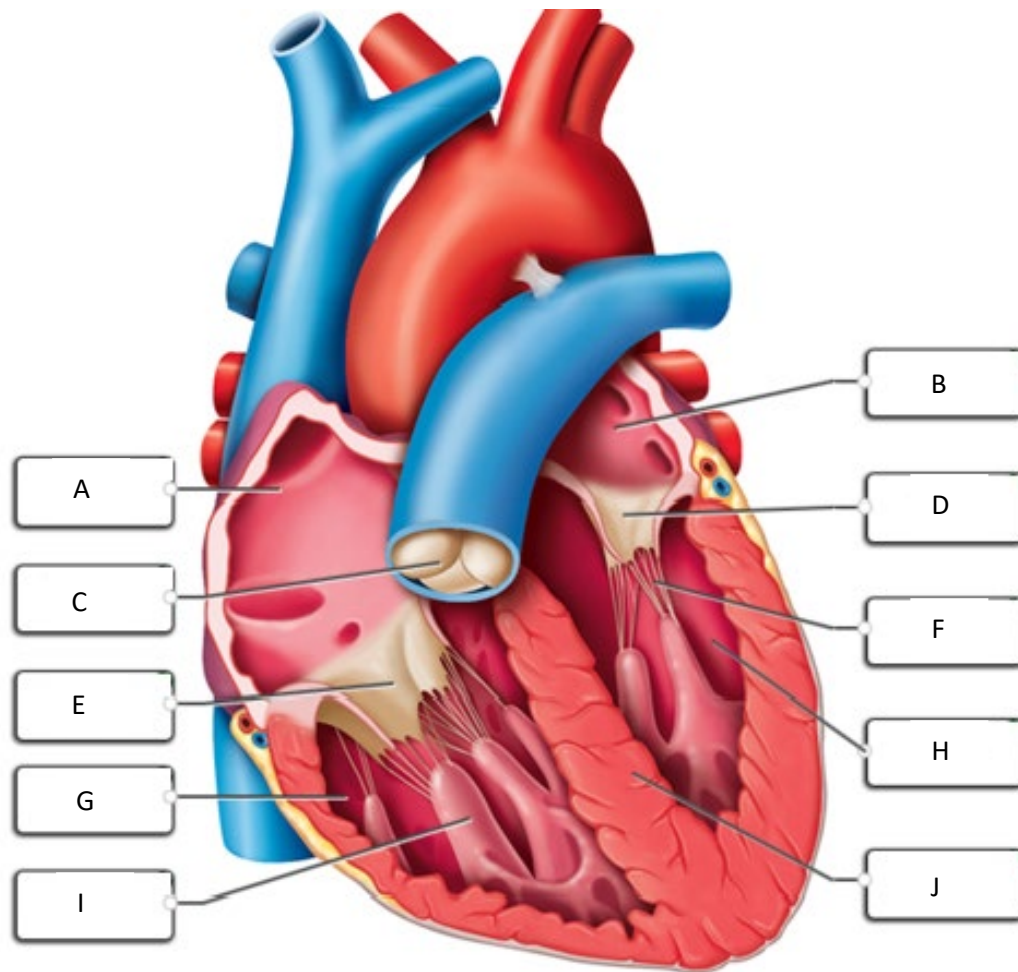


C.35 On the diagram, show the location of the following:

(C.35: 1.5 marks)

- a. Femoral artery
- b. Jugular vein
- c. Median cubital vein





A	B
C	D
E	F
G	H
I	J

END OF SECTION

SECTION C

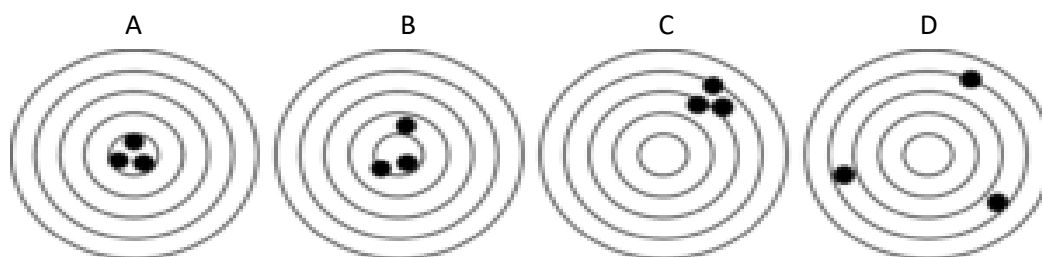
Tables, match column definition

Section C – Question 37 to Question 39 = Total Marks: 10

(Answer all questions)

C.37 Select the correct letter for each description:

(C.37: 2 marks)



Description Letter

Low Accuracy / High Precision = _____

High Accuracy / Low Precision = _____

Low Accuracy / Low Precision = _____

High Accuracy / High Precision = _____

C.38 Match Column A to Column B, and write your answers in the table below:
(Roman Numerals only required):

(C.38: 2 marks)

Column A	Column B
Medical Sciences Council	i. Certifies laboratory quality systems
International Accreditation New Zealand	ii. Issues Annual Practising Certificate
New Zealand Institute of Medical Laboratory Science	iii. Patients' rights for service
Health and disability commission	iv. Professional affairs and education

Column A	Column B (Roman numerals only required)
Medical Sciences Council	
International Accreditation New Zealand	
New Zealand Institute of Medical Laboratory Science	
Health and disability commission	

D.39 Match each mortuary term to its corresponding definition. Write your answers in the table below (Roman Numerals only required):

(0.5 marks per correct answer)

(D.39: 6 marks)

Term	Definition
a. Antemortem	i. The practice of restoring a deceased appearance after post-mortem
b. Decomposition	ii. Direct removal of specimens through the surface skin of the deceased
c. Toxicology	iii. Transfer of charge of body document
d. COR1b	iv. The breakdown of bodily tissues after death
e. Restoration	v. Lesser PM direction document
f. COR3 and 13	vi. The study of the adverse effects of chemical substances on living
g. Trace evidence	vii. Occurring before death
h. COR27	viii. Complete eradication of all microorganisms
i. POL47	ix. Collection of samples created when objects make contact
j. Disinfection	x. Coroners direction for retention of samples
k. Percutaneous sampling	xi. Form the release documents issued by the NZ Coroner
l. BDM39	xii. Documents outlining circumstances of death prepared by the police

Term	Definition (Roman numerals only required)
a. Antemortem	
b. Decomposition	
c. Toxicology	
d. COR1b	
e. Restoration	
f. COR3 and 13	
g. Trace evidence	
h. COR27	
i. POL47	
j. Disinfection	
k. Percutaneous sampling	
l. BDM39	

END OF SECTION

SECTION D

Calculations

Section D – Question 40 to Question 45 = Total Marks: 10

Calculations

C.40 A Glucose Tolerance Test dose is 75g glucose in 350mL water. This test requires the patient to fast for 12 hours before drinking the solution. A blood test is then collected 120 minutes after the drinking the solution. **(C.40: 1.5 marks)**

a. Calculate the percentage glucose in solution. (*Show working*) (0.5 mark)

a. _____

b. If the patient finished their evening meal at 2115 hrs, state the earliest time they can present for the test the following day. (0.5 mark)

b. _____

c. If the patient drinks the solution at 1010 hrs, state the time the blood test is required. (0.5 mark)

c. _____

C.41 Refer to daily fridge temperature monitoring record below. **(C.41: 1 mark)**

Day of the week	Monday	Tuesday	Wednesday	Thursday	Friday
Daily Fridge temperature.	4.6	3.8	3.1	9.3	5.1

a. Calculate the mean recorded temperature for the week. (*Show calculations*)

a. _____

C.42 Convert the following:

(C.42: 1.5 marks)

- a) 4.5 mL to _____ μL
 b) 1.125kg to _____ g
 c) 1500 μmol to _____ mmol

C.43 Calculate how many grams of sodium chloride (NaCl) are required to make 1.0L of a 2 Molar solution?

(Show calculations)

(C.43: 1 mark)

Atomic Weight of sodium (Na) = 23

Atomic Weight of chlorine (Cl) = 35.5

D.44 Calculate the missing figures in this table.

(0.5 marks per correct figure)

(D.44: 2.5 marks)

SARS-COV-2 MORTALITY DATA FOR THE MONTH OF JUNE 2022 FOR XYZ TE WHATU ORA							
Deaths due to confirmed positive SARS-Cov-2 infection							
Week	MON	TUES	WEDS	THURS	FRI	SAT	SUN
1	2	0	1	2	1	3	2
2	1	1	0	0	0	2	1
3	3	5	7	4	5	4	2
4	2	1	1	2	2	3	1
Deaths unrelated to, but positive for SARS-CoV-2 infection							
1	9	3	5	5	4	4	4
2	3	4	6	5	3	7	6
3	5	6	7	7	5	3	2
4	5	3	3	4	3	6	5
TOTAL reported daily SARS-Cov-2 deaths							
1		3	6		5	7	6
2	4	4	6	5	3	9	7
3	8	11	14	11	5	7	
4	7		4	6		9	6

D.45 Calculate the values from the table provided and **show your workings.** (D.45: 2.5 marks)

Mode of transport	Days of the week						
	M	T	W	T	F	S	S
Ward orderly	5	7	5	8	6	7	5
Funeral transporter	2	1	3	6	4	5	2
Ambulance	1	1	0	2	1	3	3

- a. What percentage of Thursday's cases were transported to the mortuary by ambulance? (1 mark)

- b. What is the average number of cases transported from the ward?
Round your answer to the nearest 2dp. (1 mark)

- c. Calculate the mode value for cases transported Tuesday (0.5 mark)

END OF SECTION

SECTION E

Short answer questions (answers = one or more words, short sentences)

Section E – Question 46 to Question 65 = Total Marks: 35

Short Answer Questions

C.46 List the activities that registered laboratory staff must do to comply with the HPCA act?

(C.46: 1 mark)

C.47 Outline cultural competency as it relates to medical laboratory science?

(C.47: 2 marks)

C.48 Outline Total Quality Management in the medical laboratory setting

(C.48: 2 marks)

C.49 Describe the procedures taken when dealing with a blood spill in the laboratory or phlebotomy clinic? **(C.49: 2 marks)**

C.50 Define Occupational Overuse Syndrome in a medical laboratory workplace. Name a common cause and who should you speak to if you suffer from it? **(C.50: 1.5 marks)**

C.51 On removing a reagent or product from a laboratory fridge, it is found to be a room temperature. What is the correct process to follow? **(C.51: 1.5 marks)**

D.52 Outline **THREE** objectives of autopsy and discuss the importance of each. (D.52: 3 marks)

D.53 List the **THREE** meninge layers of the brain in order from **medial to lateral** and outline one defining characteristic of each layer. (D.53: 4.5 marks)

- D.54 List **THREE** specimens that can be submitted for ESR toxicology and identify the preferred site for retrieval of each of these specimens. **(D.54: 3 marks)**

- D.55 List the **TWO** active substances of skeletal muscle. Outline the process that occurs within these structures after death and state one defining characteristic of this process. **(D.55: 1.5 marks)**

- D.56 Outline **TWO** of the guiding principles of Te Tiriti O Te Waitangi and detail how you apply this Tikanga best practice in your mortuary. **(D.56: 2 marks)**

D.57 Name the circle of arteries located at the base of the brain and explain the distribution of blood through this network. **(D.57: 1 mark)**

D.58 Distinguish between exocrine and endocrine glands and give an example of each. **(D.58: 2 marks)**

D.59 The pathologist has requested ESR toxicology blood and urine samples. Identify which container each sample would be collected in and state the additive within each bottle. **(D.59: 2 marks)**

D.60 Outline the objective of formalin and differentiate between the various strengths.

(D.60: 1.5 marks)

D.61 Define a 'haemopericardium' and state one internal finding.

(D.61: 1 mark)

D.62 Define HOMEOSTASIS and describe its importance in health and disease.

(D.62: 1 mark)

D.63 State the purpose of a COR27 document and outline what action is taken in your mortuary after one has been received

(D.63: 1 mark)

D.64 Define fistula and give an example of one type of fistula that may be encountered during a post-mortem.

(D.64: 1 mark)

D.65 State the correct direction document required before a lesser examination can take place.
(D.65: 0.5 mark)

END OF SECTION

ESSAY

Section F – Question 66 to Question 67 = Total Marks: 20

Essay Questions

ESSAY

Section F – Question 66 to Question 67 = Total Marks: 20

Essay Questions

ESSAY

Section F – Question 66 to Question 67 = Total Marks: 20

Essay Questions

D.66 The pathologist has directed you to perform a full en-bloc throat dissection following a death by ligature strangulation. In essay format, detail your procedure and rationale of evisceration using correct anatomical terms and orientation. **(D.66: 10 marks)**

[illegible]

(D.67: 10 marks)

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[illegible]

[illegible]