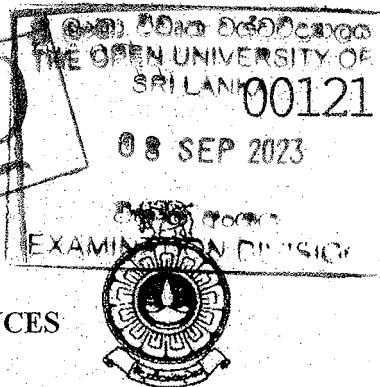


THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF MEDICAL LABORATORY SCIENCES
ACADEMIC YEAR 2022/2023 – SEMESTER II



BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS
MDU5209 – ADVANCED TECHNIQUES IN MEDICAL LABORATORY SCIENCES

FINAL EXAMINATION

DURATION: 02 HOURS

DATE: 08TH SEPTEMBER 2023

TIME: 09.30 AM – 11.30 AM

INDEX NUMBER

Part B: Structured Essay Questions (60 Marks)

Q1. You are conducting an animal study using a rodent model to investigate the efficacy of a novel anticancer drug.

1.1 List four (04) species of rodents used as animal models in research. (04 Marks)

- i.
- ii.
- iii.
- iv.

1.2 State five (05) specific housing requirements for rodents used in animal studies. (10 Marks)

- i.
- ii.
- iii.
- iv.
- v.

1.3 Outline correct specimen collection methods that can be used for rodents in the following scenarios. (06 Marks)

- i. Blood collection not requiring anesthesia

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- ii. Blood collection requiring anesthesia (local/general anesthesia)

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(Total 20 Marks)

Q2. You are provided with a hybridoma cell line that produces a monoclonal antibody of interest. Your goal is to purify this antibody from the cell culture that contains a mixture of the antibody, other proteins, and cell debris.

2.1 List two (02) methods suitable for hybridoma cell breakdown. (02 Marks)

- i.
- ii.

2.2 List five (05) suitable chromatography techniques and specify the most appropriate one for purifying these monoclonal antibodies from hybridoma cell cultures. Give reasons. (10 Marks)

- i.
- ii.
- iii.
- iv.
- v.

Most appropriate method:

Reasons:

.....
.....
.....
.....

2.3 State two (02) techniques which can be used to verify the presence and purity of the monoclonal antibody. Provide reasons for selecting these techniques. (08 Marks)

Technique 01:

Reasons for selecting:.....

.....
.....
.....

Technique 02:

Reasons for selecting:.....

.....
.....
.....

(Total 20 Marks)

INDEX NUMBER

Q3.

3.1 State five (05) examples of nanostructures found in nature. (05 Marks)

- i.
- ii.
- iii.
- iv.
- v.

3.2 "High surface area-to-volume ratio is a very important characteristic of nanoparticles".

Briefly explain this statement. (05 Marks)

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3.3 Outline the advantages and limitations of the given nano particles types. (10 Marks)

	Polymeric nanoparticles	Lipid-based nanoparticles	Inorganic nanoparticles
Advantages			
Limitations			

(Total 20 Marks)

Part C: Essay Questions (20 Marks)

Q1. "Sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE) is a superior method compared to conventional electrophoresis due to its enhanced separation specificity". With suitable examples, explain the statement.

(20 Marks)

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