

DATE: 05TH MAY 2021

TIME: 1.30 PM – 3.30 PM

PART B – Structured Essay Questions (60 marks)

1. The manipulation of material at the atomic and molecular scale to create new functions and properties sounds like it should be a profoundly modern concept. But artisans, technologists, and scientists have utilized nanoscale particles for many purposes for centuries.

1.1. Provide two (02) examples to show that the concept of nanotechnology has been existed over the years among cultures. (04 marks)

I.

.....

II.

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1.2. What are two (02) main types of nanofabrication techniques used for nanoparticle preparation and briefly state the difference among the two techniques (07 marks)

Technique 01	Technique 02
.....

1.3. Briefly explain how targeted drug delivery approach is possible using nanoparticles.

(09 marks)

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(Total: 20 marks)

2.

2.1. Name four (04) techniques which are used for physical disruption of cells in protein extraction. (02 marks)

I.

II.

I.

II.

2.2. Briefly explain what dialysis is and state the associated variables in protein analysis.

(06 marks)

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2.3. State the importance of protease inhibitors in protein extraction process.

(04 marks)

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2.4. List four (04) criteria that can be used for the identification of a purified protein.

(04 marks)

- I.
- II.
- III.
- IV.

2.5. State three (03) functions of proteins as important targets in scientific research.

(04 marks)

- I.
- II.
- III.

(Total: 20 marks)

3.

3.1. State why acclimatization period is important prior to the animal experiment?

(02 marks)

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3.2. State the importance of animal metabolic cages?

(02 marks)

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3.3. List four (04) factors that you have to consider before you choose to do an animal experiment.

(04 marks)

- I.
- II.
- III.
- IV.

3.4. Write four (04) purposes of doing animal research.

(06 marks)

- I.
- II.
- III.
- IV.

3.5. Write four (04) reasons for use of animals in biomedical research.

(06 marks)

- I.
- II.
- III.
- IV.

(Total: 20 marks)

PART C – Essay Questions (20 marks)

1. Explain the 3R principle with regard to research based on animal experiments. (20 marks)

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