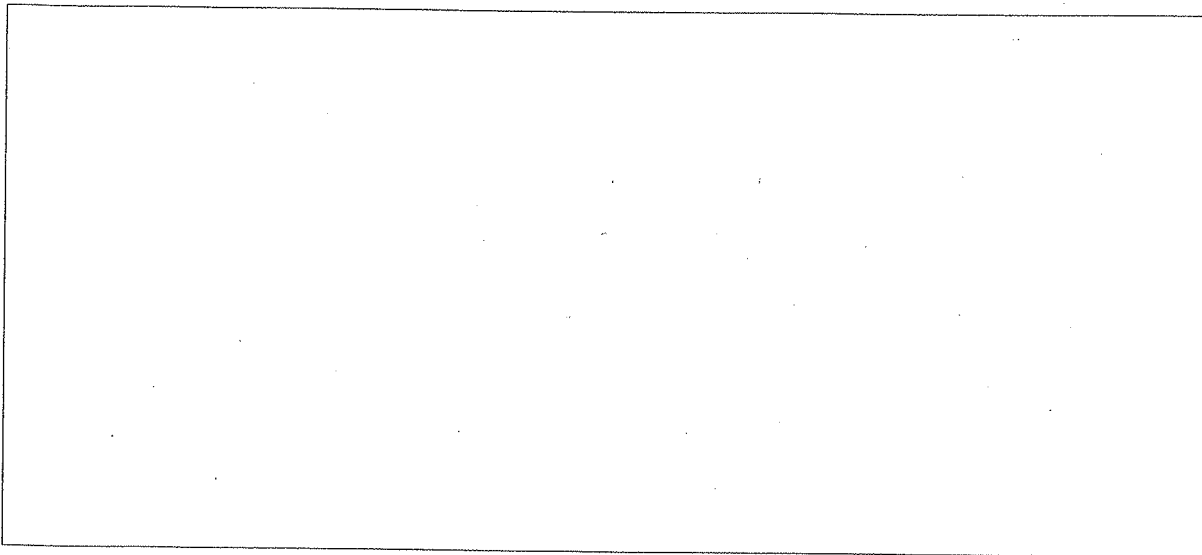


Part B: Structured Essay Questions (40 Marks)

Q1. Blotting and electrophoresis are both essential laboratory techniques used in molecular biology.

1.1 Draw a labelled schematic diagram of an electrophoresis instrument. (02 Marks)



1.2 Briefly explain three (03) factors affecting electrophoretic separation.

(03 Marks)

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

1.3 List four (04) major steps involved in blotting techniques.

(02 Marks)

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

1.4 State three (03) differences in southern and northern blotting techniques. (03 Marks)

- i.
- ii.
- iii.

(Total 10 Marks)

Q2. Automation is defined as the replacement of human hands by machines and thereby increasing productivity and obtaining more uniform product quality.

2.1. State three (03) specific tasks in a hematology laboratory that require automation.

(03 Marks)

- i.
- ii.
- iii.

2.2 State two (02) basic measurement principles used in hematology analyzers. (02 Marks)

- i.
- ii.

2.3 Briefly explain one (01) of the principles stated in 2.2.

(03 Marks)

-
-
-
-
-

2.4 Write four (04) parameters determined by blood cell histograms given by modern automated hematology analyzers. (02 Marks)

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

(Total 10 Marks)

Q3.

3.1 State the three (03) major steps included in urine analysis and write two (02) parameters monitored in each step. (03 Marks)

	Step of urine analysis	Parameters
i.
ii.
iii.

3.2 Briefly describe two (02) different technologies used in the fully automated urinalysis. (02 Marks)

- i.
.....
.....
.....
- ii.
.....
.....
.....

3.3 State four (04) types of auto analyzers used in biochemistry laboratories depending on the working principle. (02 Marks)

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

3.4 Briefly explain one (01) type of auto analyzer stated in 3.3. (03 Marks)

.....

(Total 10 Marks)

Q4. Equipment maintenance is one of the key aspects of quality assurance in the laboratory.

4.1 List two (02) requirements for equipment maintenance in a medical laboratory.

(02 Marks)

- i.
- ii.

4.2 State one (01) reason and one (01) solution for the following incidents which may occur in a medical laboratory. (02 Marks * 2 = 04 Marks)

a) The cuvette does not fit in the sample holder compartment of the wet chemistry analyzer.

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

b) The dry chemistry analyzer does not perform as expected.

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

4.3 State two (02) components which should be included in the maintenance programme of a laboratory. (02 Marks)

- i.
- ii.

4.4 What is the purpose of a 'Sample System Leak Test' in troubleshooting of analyzers?

(02 Marks)

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

(Total 10 Marks)

Part C: Essay Questions (30 Marks)

Q1. Discuss the importance and benefits of implementing automation in microbiology laboratories. (15 Marks)

Q2. Write brief accounts on the following chromatographic techniques. (15 Marks)

- a) Thin Layer Chromatography (TLC)
- b) Gas Chromatography (GC)
- c) High Performance Liquid Chromatography (HPLC)

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