MISEM-DI BYMHSI

2023

MEDICAL LABORATORY TECHNICIAN / MEDICAL LAB AND MOLECULAR DIAGNOSTIC TECHNOLOGY

Paper: MHS0100204

(Introduction to Biomolecules, Instrumentation and Reagents)

Full Marks: 45

Pass Marks:

Time: Two hours

The figures in the margin indicate full marks for the questions.

1 _{erij}	Fill i	n the blan	ks:	lry are	W 1x5	5=5
tad!	Wa)	Triglyceric	des consi	st of gly	cerol	and
ske	entini	isituşai as	fatty	acids.	sri.	
	b) *	The proce	ss of conv	erting gl	ucose	into
omo	electr	pyruvate i	s known a	as TE Isri	W (a	

c) The sequence of amino acids in a protein is known as its structure.

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- The two strands of DNA are held together by _____ bonds between complementary base pairs.
- e) The rotating component of a centrifuge that holds the samples is called the

- 2. Answer **any five** from the following questions: 2x5=10
 - a) What are simple carbohydrates? Why are carbohydrates important in a diet? 1+1
 - b) Why are amino acids considered the building blocks of proteins? What happens if you have an insufficient intake of amino acids? 1+1
 - c) What are the key features of an electronic balance?
 - d) How do you handle and clean a cuvette?

OS=1e) What is a standard solution? Why is
NaOH commonly used as a standard
solution in laboratories? \cdot 1+1
f) What are the common types of laboratory
pipettes? In which situations is a botulible of the community of the diluted
micropipette preferred over a serological
pipette? 1+1
g) What are lipids? What are the health
implications of high lipid intake? $1+1$
quots isnotional h) What are common sources of biomedical riose for each and examples for each
waste in healthcare settings?
i) What role does the regularity of packing in
saturated fatty acids play in their higher
melting point compared to unsaturated
edi etateulii or elquade goltalueleo fatty acids?
distancion between the two types of
What is the difference between a beaker
and an Erlenmeyer flask?

centrative and the potential risks

- Answer any four of the following: 5x4=203.
 - a) A solution of hydrochloric acid (HCI) is prepared by diluting 250 mL of a 6 M HCI solution to a final volume of 1 L. Calculate the molarity and normality of the diluted solution.
 - b) Explain the classificati monosaccharides based on the number of carbon atoms and the functional group they contain. Provide examples for each category. 3+2
 - Explain the difference between a normal solution and a molar solution. Provide a calculation example to illustrate distinction between the types of two solutions. 3+2
 - d) Explain the importance of balancing a potential the and centrifuge associated with unbalanced samples. How can balance issues be resolved or 3+2 prevented?

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g) Des

- e) Mention the general properties of amino acids.
- f) Highlight the key structural and functional differences between DNA and RNA.
 - g) Describe the classification of biomedical waste as per the biomedical waste management rules
 - h) Define carbohydrates. What are epimers explain with examples. Mention the biological importance of disaccharides.

1+2+2

Answer **any one** of the following questions: 10x1=10

a) Describe the double helix structure of DNA in detail, highlighting the role of major and minor grooves. How does this structure contribute to the stability and function of DNA?

6+2+2