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Course Name: Four Year Undergraduate Programme (FYUP) in Toxicology, Semester-I
End term Examination (2022-23)

Paper Name: Chemistry of Life
Time: 2.5 hrs

Paper Code: BTX-DSC101
Maximum Marks: 60

Note: This paper has 3 section A, B and C, Attempt all the three sections.

Section A: Answer all the questions; Section B: Answer any 4 out of 6; Section C: Answer any 2 out of 4

Abbreviations Used

BTL-Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level-3 Apply; BT level 4 Analyse; BT level 5- evaluate, BT level 6 Create

SECTION A

Very Short Type Questions (one word to one sentence)

20 Marks

Q. No.	Question	Marks	BTL-
1.	How do you identify if a solution is acidic?	1	3
2.	A five carbon sugar lacking a hydrogen at the number 2 carbon is found in.....	1	2
3.	Which of nitrogenous base is found on RNA but not DNA?	1	1
4.	phosphodiester bonds are present in	1	5
5.	Which of the following nucleotide contains only ribose sugar and not deoxyribose?	1	3
6.	Enzymes are mainly.....(Protein/DNA).	1	
7.	Glucose is a reducing sugar. (True/False)	1	2
8.	What are three aromatic amino acids.	1	1
9.	Hydrochloric acid is a strong acid. This means that	1	4
10.	Give an example of a buffer solution with a pH less than 7.	1	3
11.	CELL THEORY was Proposed by and in 1839	1	1
12.	Define protoplasm.		
13.	Rough Endoplasmic Reticulum containson the surface	1	2
14.	Nucleolus is present in cytoplasm. (True/false)	1	4
15.	To be able to add a strong acid or base to a solution without causing a large change in the pH, we need to create a	1	5
16.	If the pK_a of ammonium is 9.3 and we want a pH of 10. What ratio of ammonia to ammonium should be added to the solution?	1	6

17	Practically when making specific pH buffers, it is important to have the pKa be close to the target pH to have the biggest range of buffering capability. (True/False)	1	3
18	What do you understand by a protein sequence.	1	4
19	If a strand of a DNA molecule has the sequence GTCCAC, what would be the sequence of the complementary section of DNA?		
20	Define pKa of a molecule.	1	1

SECTION C

Short-type Questions. (Attempt any four) (4 X5)

Q. No.	Question	Marks	BTL-
1.	Three unknown solutions are given with pH value of 3, 4 & 5 respectively. Which solution will contain the maximum OH ⁻ ion? Explain your answer.	4	5
2.	Name and draw the structure of all nucleotides present in DNA.	4	3
3.	What is peptide bond? Using any two amino acids show the formation of the peptide bond.	4	2
4.	What do you understand by lipid bilayer. Where is it found in the cell.	4	5
5.	Write a short note on structure and function of Carbohydrates	4	1
6.	Explain cell theory in short.	4	2

SECTION C

Long type Question (Attempt any two out of four) (Marks 2X10)

Q. No.	Question	Marks	BTL-
1.	What are four different levels of protein structure? Discuss secondary structure of protein in detail.	10	4
2.	What are different amino acids present in proteins. Classify these on the basis of polarity and charge.	10	3
3.	Discuss the structure and function of Mitochondria, Golgi complex and Endoplasmic reticulum in short	10	1
4.	A. Calculate the volume of 0.2M solution of acetic acid that needs to be added to 100 ml of 0.2M solution of sodium acetate to obtain a buffer solution of pH 5.00. pKa of acetic acid is 4.74. B. Calculate the pH of a buffer solution containing 0.100 mol dm ⁻³ ethanoic acid and 0.100 mol dm ⁻³ sodium ethanoate. Ka for ethanoic acid = 1.74×10^{-5} mol dm ⁻³ .	10	5

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