STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86 (For candidates admitted during the academic year 2019–20 & thereafter)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024 BRANCH IV- CHEMISTRY FIFTH SEMESTER

COURSE PAPER SUBJECT CODE		: MAJOR CORE: BIOCHEMISTRY: 19CH/MC/BC54			
Tl	IME	: 3 HOURS		MAX.MARKS: 100	
		SECTION		(30x1=30)	
Answer ALL questions.					
L	Choose the corr	ect Answer:			
	2. Which among a) Glycine3. Carboxypepti		d) colours the re aromatic and has pola c) Tyrosine	ar non-charged R group? d) Aspartic acid	
	c) R group of 4. The synthesis a) Strecker sy 5. The Reichert a) free fatty ac c) saturated fa	 c) R group of the protein d) All of these 4. The synthesis of amino acid alanine from acetaldehyde, cyanide and ammonia is a) Strecker synthesis b) Gabriel Synthesis c) Urea synthesis d) Sanger synthesis 			
	a) holoenzyr7. Which enzyn		c) apoenzyme or synthesizing mRN	d) coenzyme	
	8. The yellow co	oloured liquid that separates o b) serum following is a water-soluble v	out of blood on centri c) plasma	fugation is called d) pus	
	a) Vitamin A 10. Which of the	b) Vitamin D following is a non-steroid hor	c) Vitamin E rmone?	d) Vitamin C	
	a) Progesteron	ne b) Androsterone	c) Estriol	d) Calcitonin	
II	Fill in the blank	s:			
	12. Insulin is prod 13. The exopeption 14. Ramachandra 15. The induced 16	of free hydroxyl group in fat of duced by of the paralase that specifically hydrolystyll plot is a plot of the torsion at fit model was proposed by is known as the "fight or where one amino acid is converted a congenital disorder character gment in the skin, hair and earlier the blood that causes the is caused due to the lack of _	ncreatic islets. ses the C-terminal pengles and flight hormone." erted to another amineterized in humans beyes. pH to fall below 7.35	o acid is called y the complete or partial leads to disease	

III State whether true or false:

- 21. The molecular logic of life is a set of relationships characterizing the nature, function, and interactions of biomolecules
- 22. Energy is produced in the form of ADP at the end of oxidative phosphorylation.
- 23. Transamination reaction of glutamic acid and pyruvic acid gives α ketoglutaric acid and aspartic acid.
- 24. Thiolytic cleavage during beta oxidation of fatty acids is catalysed by aldolase
- 25. Apoenzyme is the non-protein part of the enzyme

IV Answer the following in a line or two:

- 26. Ketone bodies
- 27. Gluconeogenesis
- 28. White blood cells are known as "the army of human body". Give reason
- 29. What is isoelectric point?
- 30. A segment of one strand from a DNA molecule has the sequence 5'-TCCATGAGTTGA-
 - 3'. What is the sequence of nucleotides in the opposite, or complementary, DNA chain

SECTION - B (5x6=30)

Answer any FIVE questions:

- 31. Bicarbonate buffer play a significant role in maintaining the pH of blood. Explain
- 32. Distinguish between alpha, beta and gamma amino acids based on the action of heat.
- 33. Enumerate the sources and functions of insulin.
- 34. Discuss the mechanism of competitive and non-competitive inhibition of enzyme activity with suitable examples.
- 35. Illustrate with a neat diagram the structure of the Watson and Crick model of the DNA.
- 36. Explain the sequential steps involved in Urea cycle.
- 37. Describe the various steps involved in the formation of glycogen from glucose.

SECTION - C (2x20=40)

Answer any TWO questions:

- 38. a) Discuss the mechanism of coagulation of blood with a neat schematic diagram.
 - b) How are amino acids classified based on 'R' groups? Give examples.
 - c) Explain β oxidation of fatty acids.

(8+5+7)

- 39. a) Differentiate the structure and functions of m RNA, t RNA and r RNA.
 - b) Discuss using relevant biochemical equations the mechanism by which a glucose is oxidised aerobically to pyruvate. Calculate the net gain of ATP molecules generated by this process. (10+10)
- 40. a) Evaluate the classification of enzymes according to the International Union of Biochemists.
 - b) Discuss the source and functions of vitamin A.
 - c) Explain the process of DNA Replication.

(8+6+8)
