Q. Code: 229997

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

BT18004 – NUTRITIONAL BIOCHEMISTRY

(Biotechnology)

(Regulation 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Identify the importance of carbohydrate metabolisms in human diseases.	**3**
CO 2	Assess the lipid prospects in biological samples and food products.	**3**
CO 3	Demonstrate the nutritional value of proteins in human homeostasis and disorders.	**3**
CO 4	Assess the importance of lipids in human physiology.	**3**
CO 5	Perceive the requirement of minerals in nutritional diet.	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Compare and contrast the digestion and absorption between simple and complex carbohydrates.	**1**	**2**
2.	What happens to your blood sugar levels after consuming added sugars compared to complex carbohydrates?	**1**	**2**
3.	How do saturated, unsaturated, and monounsaturated fats structural differences affect their functions in the body?	**2**	**2**
4.	How does the body maintain cholesterol homeostasis when dietary intake of cholesterol changes?	**2**	**2**
5.	What is meant by "amino acid imbalance," and what are its potential consequences?	**3**	**2**
6.	List the difference between complete and incomplete proteins.	**3**	**2**
7.	Differentiate between vitaminosis and hypervitaminosis.	**4**	**2**
8.	Can symptoms of vitamin deficiency be easily confused with symptoms of vitamin toxicity? Explain why or why not.	**4**	**2**
9.	Why is iodine necessary for proper development, and what are the symptoms of deficiency?	**5**	**2**
10.	Mention the roles of sodium and potassium in maintaining fluid balance.	**5**	**2**

PART- B (5 x 14 = 70 Marks)

			Marks	CO	RBT LEVEL
11. (a)	**(i)**	Explain the concept of the "sparing action" of carbohydrates metabolism.	**(7)**	**1**	**3**
	(ii)	How does adequate carbohydrate intake prevent the breakdown of muscle protein for energy and promote fat storage?	**(7)**	**1**	**3**

(OR)

(b)		Discuss the concept of glycogen storage in the body and analyse factors that influence glycogenolysis and glycogenesis.	**(14)**	**1**	**3**
12. (a)		Analyze the various mechanisms by which the body regulates cholesterol production and how dietary factors can influence these processes.	**(14)**	**2**	**3**
		(OR)			
(b)	**(i)**	Compare and contrast specific functions of essential fatty acids with non-essential fatty acids.	**(7)**	**2**	**3**
	(ii)	How do dietary fats aid in the absorption of vitamins A, D, E, and K, and what health problems could arise if we don't consume enough fat with these vitamins?	**(7)**	**2**	**3**
13. (a)	**(i)**	Explain the events that takes place on dietary protein and amino acids after ingestion.	**(7)**	**3**	**3**
	(ii)	How does the human body determine which amino acids are essential, and what are the consequences of their deficiencies?	**(7)**	**3**	**3**
		(OR)			
(b)	**(i)**	Compare and contrast the essential amino acid content of animal and plant protein sources.	**(7)**	**3**	**3**
	(ii)	Discuss the concept of limiting amino acids and their role in determining protein quality.	**(7)**	**3**	**3**
14. (a)		Summarize the dietary sources, physiological functions, and potential consequences of deficiency for B-complex vitamins.	**(14)**	**4**	**3**
		(OR)			
(b)		Discuss different biological methods with principles used to assay vitamins.	**(14)**	**4**	**3**
15. (a)	**(i)**	Discuss the dietary sources of calcium and magnesium and factors affecting its absorption.	**(7)**	**4**	**3**
	(ii)	Evaluate the potential health risks associated with calcium and magnesium deficiency.	**(7)**	**4**	**3**
		(OR)			
(b)	**(i)**	Explain the role of iron in hemoglobin formation and oxygen transport.	**(7)**	**5**	**3**
	(ii)	Compare and contrast iron deficiency anemia with iron overload disorders.	**(7)**	**5**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

			Marks	CO	RBT LEVEL
16.	**(i)**	Outline the potential consequences of minerals deficiencies.	**(5)**	**5**	**3**
	(ii)	Analyze the health consequences of both sodium deficiency and high sodium intake.	**(5)**	**5**	**3**

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