LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **FOOD CHEMISTRY AND FOOD PROCESSING**

FIRST SEMESTER – **APRIL 2023**

PFP1MC03 – HUMAN NUTRITION AND BIOCHEMISTRY

Date: 03-05-2023   Dept. No.   Max. : 100 Marks
Time: 09:00 AM - 12:00 NOON

SECTION A

Answer ALL the Questions

1.	**True or False**		**(5 x 1 = 5)**	
a)	Indirect colorimeter measures energy expenditure by assessing body heat loss within a metabolic chamber.	K1	CO1	
b)	(BMR x PAL) + TEF is the equation meant for calculating total energy	K1	CO1	
c)	Na^+-K^+ ATPase is a best example for anti-porter mechanism of membrane transport.	K1	CO1	
d)	SSBP is an important prerequisite to initiate the replication of DNA double helix.	K1	CO1	
e)	Ammonia is a nontoxic metabolite and hence commencing urea cycle may not be an important event in kidneys.	K1	CO1	
2.	**Define the following**		**(5 x 1 = 5)**	
a)	BMR , BMI and RMR	K2	CO1	
b)	Antioxidants	K2	CO1	
c)	DNA dependent RNA synthesis	K2	CO1	
d)	Fo-F1 Complex	K2	CO1	
e)	Uniport, Symport and Antiporter mechanisms of membrane transport.	K2	CO1	

SECTION B

Answer any THREE of the following in 500 words   **(3 x 10 = 30)**

3.	Evaluate the TDEE of the following persons. i) Mr. Selvam aged 52 years works as an IT professional in Orion Technologies for the last 5 years. He measures about 5ft 7 inches and weighs 140kg. On an average he consumes a 2000 Kcal diet. Calculate his BMR and TDEE and evaluate his energy balance. ii) Ms. Preethi aged 26 years works as a stone cutter in a quarry in the borders of Tamil nadu. She consumes on an average a 1800 Kcal diet daily. She measures 5ft 5 inches weighs 50 kg. Evaluate her energy balance.	K3	CO2
4.	Demonstrate the dietary changes of geriatric population and mention how food consistency impacts dietary consumption.	K3	CO2
5.	Interpret the electron transport mechanism with a suitable illustration. Also calculate the total number of ATP yield as per the oxidation of reducing equivalences.		
6.	Explain the steps involved in the fatty acid synthesis.	K3	CO2
7.	Illustrate the TCA cycle with its energitics.	K3	CO2

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	SECTION C		
Answer any TWO of the following in 500 words			**(2 x 12.5 = 25)**
8.	Prepare a flow chart to write down the functions of micronutrients in human	K4	CO3
9..	Calculate the BMI for the following individuals: 1. Mr. Raju aged 65 years measuring 176cm and weighs 56kg 2. Ms. Jayanthi aged 34 years measuring 5ft 3 inches and weighs 158 kg	K4	CO3
10.	Explain the mechanism of oxidative phosphorylation	K4	CO3
11.	Compare and Contrast replication and transcription process in prokaryotes.	K4	CO3
	SECTION D		
Answer any ONE of the following in 1000 words			**(1 x 15 = 15)**
12.	Recommend suitable dietary interventions for a lactating women and infant between the age group of 3-6 months.	K5	CO4
13.	Evaluate the roles of transamination and deamination in amino acid oxidation,	K5	CO4
	SECTION E		
Answer any ONE of the following in 1000 words			**(1 x 20 = 20)**
14.	Develop a food guide pyramid for a healthy life style; also integrate the functions of macro and micro nutrients.	K6	CO5
15.	Prepare a suitable dietary choice which could help alleviate the onset of DM along with roles of glycogen synthase and phosphorylase in the liver cells; and how it regulates the total blood glucose levels with the aid of hormones like Insulin and Glucagon. Compile the roles of lipoprotein in maintaining the good fat ratios in the human system.	K6	CO5

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