ASSIGNMENT TITLE: NUTRITION

COURSE TITLE: INTRODUCTION TO CELL

COURSE CODE: BCH242

QUESTION:

1. Write on the factors affecting basal metabolic rate.
2. What do you understand by protein energy malnutrition?
3. Distinguish between marasmus and kwashiorkor.

1. **BASAL METABOLIC**

Basal Metabolic Rate is the number of calories required to keep your body functioning at rest. It is also known as your body's metabolism.

FACTORS THAT INFLUENCE BASAL METABOLIC RATE ARE:

1. Body size: Metabolic rate increases as weight, height, and surface area increase.
2. Body composition: Fat tissue has a lower metabolic activity than muscle tissue. As lean muscle mass increases, metabolic rate increases.
3. Gender: The basal metabolic rate (BMR) averages 5 to 10 percent lower in women than in men. This is largely because women generally possess more body fat and less muscle mass than men of similar size.
4. Age: A decrease in lean muscle mass during adulthood results in a slow, steady decline of roughly 0 3 percent per year in BMR after the age of about 30. This can be largely avoided by strength training throughout adulthood.
5. Climate and body temperature: The BMR of people in tropical climates is generally 5 to 20 percent higher than their counterparts living in more temperate areas because it takes energy to keep the body cool. Exercise performed in hot weather also imposes an additional metabolic load. Body fat content and effectiveness of clothing determine the magnitude of increase in energy metabolism in cold environments; it takes energy to keep the body warm if you work or exercise in very cold weather.

6. Hormonal levels: Thyroxine (T4), the key hormone released by the thyroid glands has a significant effect upon metabolic rate. Hypothyroidism is relatively common, especially in women near or after menopause. Everyone with a weight problem should have their thyroid function checked by their doctor and treated appropriately if it turns out to be low.

7. Health: Fever, illness, or injury may increase resting metabolic rate two-fold.

2. PROTEIN-ENERGY MALNUTRITION (PEM)

The World Health Organization (WHO) defines malnutrition as "the cellular imbalance between the supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions."The term protein-energy malnutrition (PEM) applies to a group of related disorders that include marasmus, kwashiorkor, and intermediate states of marasmus-kwashiorkor.

Children with kwashiorkor have nutritional edema and metabolic disturbances, including hypoalbuminemia and hepatic steatosis, whereas marasmus is characterized by severe wasting. Studies suggest that marasmus represents an adaptive response to starvation, whereas kwashiorkor represents a maladaptive response to starvation. Children may also present with a mixed picture of marasmus and kwashiorkor or with milder forms of malnutrition.

Children with marasmus are often low weight-for-height and have a reduced mid-upper arm circumference, as well as a head that appears large relative to the rest of their body. Other findings include dry skin, thin hair, and irritability. Kwashiorkor is characterized by peripheral pitting edema, as well as "moon facies," hepatomegaly, and a pursed mouth.

3. DIFFERENCES BETWEEN KWASHIORKOR AND MARASMUS

One of the major ways to distinguish between Kwashiorkor and marasmus is that Kwashiorkor is protein deficiency with adequate energy intake whereas marasmus is inadequate energy intake in all forms, including protein.

Some of the other notable differences are:

S/N	KWASHIORKOR	MARASMUS
1	It develops in children whose diets are deficient of protein.	It is due to deficiency of proteins and calories.
2	It occurs in children between 6 months and	It is common in infants under 1 year of

	3 years of age.	age.
3	Subcutaneous fat is preserved.	Subcutaneous fat is not preserved.
4	Oedema is present.	Oedema is absent
5	Enlarged fatty liver.	No fatty liver.
6	Ribs are not very prominent.	Ribs become very prominent.
7	Lethargic	Alert and irritable.
8	Muscle wasting mild or absent.	Severe muscle wasting
9	Poor appetite.	Voracious feeder.
10	The person suffering from Kwashiorkor needs adequate amounts of proteins.	The person suffering from Marasmus needs adequate amount of protein, fats and carbohydrates.