General nutrition

INFORMATION

The **IBI 217- Nutrition and Physical Activity** exam consists of two parts;
Part 1: Consist of 18 general nutrition questions and has to be answered by all students.
Part 2: This part is divided between two fields of specialization: "*Specialization in nutrition and health"* and *"Specialization in sports nutrition".* You are to pick one of the specializations and answer all of the four questions linked to that field. Follow the instructions given at the end of Part 1 and make sure you answer your desired questions.
Leave the specialization that you do not want to answer blank.
You cannot mix the specializations questions.

1 OPPGAVE

Question 1

Energy and energy availability

a. Gluconeogenesis describes a situation where the body produces glucose. Why and when does this happen, and what is the substrates for glucose production?
b. What are the main determinants of the resting metabolic rate?
c. What is the difference between "energy balance" and "energy availability"? How can you calculate energy availability, and what scores would you want to see?
d. What does the "Female athlete triad" (FAT) model explain?
e. Why is there a new, concurrent model to FAT, called "relative energy deficiency in sport" (RED-s)? (-What does this last concept explain?)

Skriv ditt svar her...

2 OPPGAVE

Question 2

Carbohydrates

a. What is the difference between simple carbohydrates and complex carbohydrates? (in your answer, you should give some information on the simple chemistry, digestion and absorption)

b. Give at least two examples of healthy effects of fiber intake!

Skriv ditt svar her...

3 OPPGAVE

Question 3

Micronutrients

a) Choose one micronutrient (vitamin/mineral) and present the daily needs, the natural food sources, and at least two functions that this nutrient serves in our body!

4 OPPGAVE

Question 4

Fluid balance

a. Mention at least three functions/roles that water serves in our body!

b. What is the recommendation for fluid rehydration after prolonged and intensive exercise?

5 OPPGAVE

Question 5

What are the correct definitions of an essential amino acid?

Select one or more alternatives:

- An amino acid containing sulfur and nitrogen
- An amino acid containing nitrogen
- An amino acid that we cannot produce in the body
- An amino acid that cannot be produced in sufficient amounts to cover the demand for this amino acid
- An amino acid needed for protein synthesis that we cannot produce in the body

6 OPPGAVE

Question 6

What determines the protein quality in food?

Select one or more alternatives

- The total amount of protein
- The total amount of amino acids
- The total amount of essential amino acids
- The relative amount of essential amino acids compared against the etimated need

7 OPPGAVE

Question 7

How much of the protein in a meal is normally absorbed?

Select one or more alternatives:

10-20%
30-40%
50% of protein from milk and meat
70-90% of protein from fruit and vegetables
90-95% of protein from animal sources

8 OPPGAVE

Question 8

Which of the following statements characterizes branched chain amino acids correctly?

Select one or more alternatives:

They are all non-essential amino acids
They are not converted to other amino acids when passing the liver
Leucine is one of three branched chain amino acids
Glycine is one of the three branched chain amino acids
They do not contain nitrogen

9 OPPGAVE

Question 9

Which of the following recommendations are appropriate for protein intake in an elite endurance athlete training 20 hours per week?

Select one or more alternatives:

The daily intake should be 1.4-1.8 g protein per kg body mass per day
The daily intake should be 0.8-1.2 g protein per kg body mass per day
The protein intake should correspond to 10-20% of the total daily energy intake
The protein intake should correspond to 5-10% of the total daily energy intake
The daily intake should be 4-6 g protein per kg body mass per day

10 OPPGAVE

Question 10

Which of the following recommendations are appropriate for protein intake in an adult with normal levels of physical activity?

Select one or more alternatives:

- The daily intake should be 0.4-.6 g protein per kg body mass per day
- The daily intake should be 0.8-1.2 g protein per kg body mass per day
- The protein intake should correspond to 10-20% of the total daily energy intake
- The protein intake should correspond to 5-10% of the total daily energy intake
- The daily intake should be 4-6 g protein per kg body mass per day

11 OPPGAVE

Question 11

Whey protein has become a popular suplement among athletes. Which of the following statements charcterizes whey protein correctly?

Select one or more alternatives:

- Whey protein improves muscular endurance by 30%
- Whey protein is rapidly digested and absorbed
- Whey protein contains high amounts of branched chain amino acids
- Whey protein is slowly digested and absorbed

12 OPPGAVE

Question 12

What kind of fatty acid is shown in the attached image?

Select one or more alternatives

Monounsaturated fatty acid
Saturated fatty acid
Polyunsaturated fatty acid
Monounsaturated fatty acid with cis-configuration
Monounsaturated fatty acid with trans-configuration

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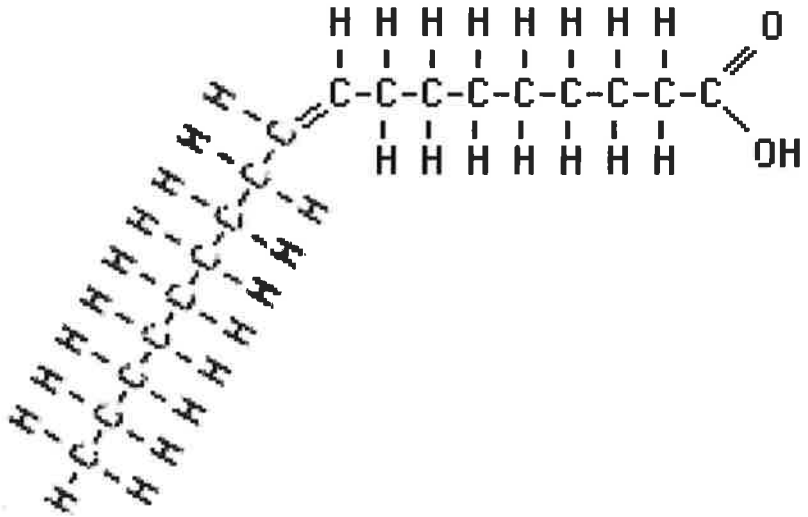

13 OPPGAVE

Question 13

Which group of fatty acids belongs to the group of essential fatty acids? [ ] (Omega 3 fatty acids, Omega 9 fatty acids, Omega 2 fatty acids, Omega 12 fatty acids) .

14 OPPGAVE

Question 14

Which of the following statements characterizes unsaturated fatty acids with trans-configuration correctly?

Select one or more alternatives:

- They are essential fatty acids
- The hydrogens attached to the two carbon atoms sharing a double binding are located at opposite sides of the carbon chain
- Unsaturated fatty acids with trans-configurations has similar physical properties as saturated fatty acids
- Unsaturated fatty acids with trans-configurations has similar physical properties as unsaturated fatty acids with cis-configuration
- The hydrogens attached to the two carbon atoms sharing a double binding are located at the same side of the carbon chain

15 OPPGAVE

Question 15

Which of the following statements characterizes medium chain fatty acids correctly?

Select one or more alternatives:

They contain 6-12 carbon atoms
They contain 4-6 carbon atoms
The can be oxidized rapidly because they can diffuse into the mitochondria
The are oxidized very slowly because they must be build up to longer chains before oxidation
The cannot be built into triglycerides

16 OPPGAVE

Question 16

Which of the following statements characterizes carnitine correctly?

Select one or more alternatives:

Carnitine is an essential fatty acid
Carnitine is an important part of the system transporting fatty acids into the mitochondria
Carnitine supplements can be used to reduce body fat because it increases basal metabolic rate
Carnitine supplements increases VO2max in elite atheltes

17 OPPGAVE

Question 17

Fill in the correct recommendations:

The intake of saturated fattys acids should be less than [ ] % of the total energy intake
The intake of monounsaturated cis-fatty acids should be [ ] % of the total energy intake
The intake of polyunsaturated fatty acids should be [ ] % of the total energy intake

18 OPPGAVE

Question 18

Make a drawing on a separate sheet explaining the process of fat digestion and the further distribution of fat to central and peripheral tissues after a meal. Make short comments to the drawing explaining the different steps and key players in the drawing (e.g. chylomicrons, VLDL, LDL and HDL).

Important information

The next part of the exam will consist of the two specializations offered in IBI217.
If you want to answer the Specialization in Nutrition and health part, you will answer the first four (4) questions and leave the last part of the exam.
If you want to answer the Specialization in Nutrition and Physical performance you will SKIP the first four questions and answer the four last questions.

Specialization in Nutrition and health

19 OPPGAVE

Specialization in Nutrition and health, Question 1

Cancer

a. Mention at least 3 ways nutrients can affect carcinogenesis

b. Mention at least three different food related recommendations to prevent cancer, and explain the effect on cancer development by that food, or by its nutritional constituents.

20 OPPGAVE

Specialization in Nutrition and health, Question 2

Osteoporosis

a. Describe the development of bone mass through different stages of life, and give examples on important lifestyle related factors affecting peak bone mass.

21 OPPGAVE

Specialization in Nutrition and health, Question 3

Diabetes type-2

a. What is insulin resistance? What is the complications from this?

b. Give two diet related advices that can improve the diabetic metabolism; explain how this works.

Specialization in Nutrition and health, Question 4

Cardiovascular diseases

a. What is arteriosclerosis, and give at least two examples of lifestyle related changes that can improve the situation.

b. The Mediterranean diet is often recommended to prevent or treat cardiovascular diseases. What characterizes this diet, and which contrasts do you see to the western, modernized diet? Argue with focus on both nutrients and food items.

Specialization in Nutrition and Physical performance

23 OPPGAVE

Specialization in Nutrition and Physical performance, Question 1

Energy intake in training and competitions

a) What are the general recommendations for carbohydrate intake in athletes with different training volumes and training intensities?

b) You are asked to compose an optimal sports drink for a cyclist who is going to compete in a 120 km race. What would your sports drink contain and how would the drinking strategy look like during the race?

c) How would you plan the last meal before an important match for an elite football player (timing, food items and important nutrients)?

24 OPPGAVE

Specialization in Nutrition and Physical performance, Question 2

Weight management and changes in body composition

a) A junior hockey player wants to gain 4-5 kg in muscle mass. What would be your focus in the nutrition plan for this player and what would be the length of the period to reach this goal?

c) Describe briefly an optimal strategy for a wrestler to lose 4 kg body mass in front of the world championship! (from 79 to 75 kg)

25 OPPGAVE

Specialization in Nutrition and Physical performance, Question 3

Ergogenic substances

a) What are the physiological effects of ingesting bicarbonate the last hours before a competition and in which sports does this potentially improve performance?

b) What are the physiological effects of supplementing your normal diet with creatine and in which sports does this potentially improve performance?

26 OPPGAVE

Specialization in Nutrition and Physical performance, Question 4

Glycogen stores and performance

a) In which type of sport may glycogen loading regimes enhance performance?

b) Describe a well documented protocol for successful glycogen loading in an elite athlete!