**ST MARY’S UNIVERSITY**

**TWICKENHAM, LONDON**

**BSc** Degree Examination students registered for

Level **SIX**

Title: **Sports Nutrition**

Code: **NUT6038**

Semester: **TWO**

Date: **May 13th 2019**

Time: **9:30AM – 12 noon**

TIME ALLOWED: **TWO** HOURS **THIRTY** MINUTES

Answer **ALL** section **A** questions on the separate **MCQ** answer form. Answer section **B** and **C** in the answer booklet.

Notes on how to complete the answer form:

1. Please mark section **A** with a pencil
2. If you make a mistake erase it completely.
3. Do **NOT** mark with ticks or crosses.
4. Do **NOT** staple or fold this answer form.
5. Remember to enter your Name, the Module Title, Module Number, your Regnum (Student ID Number) adding an extra 0 at the beginning of your number.

Answer **ALL** questions in section **A** and **B**

Answer **THREE** questions in section **C**

**Section A – 25 marks**

Answer **ALL** the questions in this section on the separate **MCQ** form.

1. Glycogen that is broken down in the muscle is not released as glucose into the circulation because the muscle lacks

a. phosphorylase

b. glucose-6-phosphatase

c. hexokinase

d. glucose dehydrogenase

e. pyruvate dehydrogenase

1. A normal blood glucose concentration is

a. 2.0 to 3.0 mmol/L

b. 4.0 to 4.5 mmol/L

c. 6.0 to 8.0 mmol/L

d. 8.0 to 10.0 mmol/L

e. 10 to 12 mmol/L

1. The maximal exogenous carbohydrate oxidation rate from a single carbohydrate is approximately:

a. 1 g/h

b. 30 g/h

c. 60 g/h

d. 1.5 g/min

e. 1.75 g/min

1. Soy protein contains less leucine per 100 g than does whey protein.

a. True

b. False

1. A deficiency of the micronutrient \_\_\_\_\_\_\_\_\_ is associated with anemia.

a. iodine

b. iron

c. vitamin D

d. biotin

e. vitamin K

1. Research has shown that time to exhaustion can be \_\_\_\_\_\_\_\_\_\_\_ with consumption of a \_\_\_\_\_\_\_\_\_\_\_ carbohydrate diet.

a. decreased; high-

b. increased; high-

c. decreased; low-

d. increased; low-

e. painful; high-

1. Which of the following is not a limitation to fluid replacement during exercise?

a. the volume consumed

b. the gastric emptying rate

c. intestinal absorption

d. the osmolarity of the beverage consumed

e. the colour of the beverage consumed

1. If a squash player loses 3 kg in weight during a match, how much fluid should he or she drink to rehydrate fully?

a. 3 L

b. 3.5 L

c. 4 L

d. 4.5 L

e. 5 L

1. Which of the following can be added to a carbohydrate meal to help promote glycogen resynthesis?

a. protein

b. vitamin C

c. alcohol

d. vitamin A

e. fat

1. Which of the following is not a role of sodium in a sports drink?

a. to reduce hyperthermia

b. to maintain thirst (and therefore promote drinking)

c. to prevent hyponatremia

d. to increase palatability

e. to increase retention of fluid

1. Which of the following will help iron absorption?

a. vitamin C

b. alcohol

c. caffeine

d. copper

e. myoglobin

1. Muscle protein synthesis increases after resistance exercise.

a. True

b. False

1. The glycaemic index is:

a. the ratio of carbohydrate calories to fat calories of a particular food

b. an indicator of the blood glucose response to the ingestion of a particular food

c. the number of calories per gram of a particular food

d. the amount of glucose in a particular food

e. None of the answers are correct

1. The RDA for protein in adults is \_\_\_\_\_ per kilogram of body weight per day.

a. 0.95 g

b. 0.85 g

c. 0.80 g

d. 1.5 g

e. 1.6 g

1. Major food sources of vitamin B12 are meat, liver, and milk, and so vegetarian athletes are at risk for vitamin B12 deficiency.

a. True

b. False

1. If energy intake matches the energy requirement and an athlete consumes a reasonably balanced diet, he or she will get all the vitamins necessary from food without any need for supplements.

a. True

b. False

1. A deficiency of the micronutrient \_\_\_\_\_\_\_\_\_ is associated with weakening of bones.

a. iodine

b. iron

c. vitamin D

d. biotin

e. vitamin K

1. Hypoglycemia may result in dizziness, nausea, cold sweat, reduced mental alertness and ability to concentrate, loss of motor skill, increased heart rate, excessive hunger, and disorientation.

a. True

b. False

1. Which of the following tissues has the lowest water content?

a. skeletal muscle

b. heart muscle

c. adipose tissue

d. liver

e. kidney

1. Evidence suggests that training with low muscle glycogen results in better adaptations of fat metabolism.

a. True

b. False

1. At what intensity does fat oxidation peak?

a. 65% HR Max

b. 55% HR Max

c. 40% HR Max

d. 85% HR Max

1. Which of the following populations is more likely to have a negative nitrogen balance?
2. People who are sick or unwell
3. People who are fit and healthy
4. Older people
5. Young people
6. Protein oxidation accounts for what proportion of total daily fuel/energy?
7. 10-15%
8. 20-25%
9. <5-10%
10. >25%
11. Exercising for prolonged periods in the heat without fluid intake also increases the risk of cramps and heat illness.

a. True

b. False

1. Probiotics are dead or inactivated bacteria that when ingested in sufficient amounts can stimulate the gut-associated immune system.

a. True

b. False

**Section B – 30 marks**

Answer all the questions in this section

Table 1. Current fuelling strategies for three different sports participants

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Activity/Sport Information** | **Fuelling Strategy** | | | **Other Information** |
| **Pre** | **During** | **Post** |
| A | Morning Run: 45 minute (sub-maximal ~60% HRMAX) | Large bowl of porridge | 2 x 30g CHO gels |  |  |
| B | Footballer: Morning Match | Breakfast: Scrambled Eggs (2) & 1 slice of toast | Half time mouth rinse |  | Often feels lethargic at half time |
| C | Cyclist: Two days of 5-hour road cycling @ moderate intensity |  | Water only | Large bowl of pasta with chicken | Temperature: 25-30°C |

With reference to the dataset given in Table 1, answer the following questions:

1. Discuss participant A’s fuelling strategies and give suggestions to maximise performance. (6 marks)
2. Discuss participant B’s fuelling strategies and give suggestions to maximise performance. (6 marks)
3. Discuss participant C’s fuelling strategies and give suggestions to maximise performance. (6 marks)

Short Answer Questions:

1. Discuss the importance of considering ‘Informed Sport’ before athletes purchase or take sports supplements. (6 marks)
2. What 6 pieces of advice would you give an athlete looking to improve his/her body composition? Briefly justify your suggestions. (6 marks)

(30 marks)

**Section C – 45 marks**

Answer **THREE** questions from this section:

1. Discuss the general carbohydrate guidelines recommended for exercisers and athletes. (15 marks)
2. Discuss whether sports drinks are more effective for hydration compared to water alone. Consider the type of athletes and the duration of their event. (15 marks)
3. Write a layman’s article about how the importance of energy balance for athletes (15 marks)
4. Discuss the race-day nutrition advice that could be given to a female endurance runner who weighs 60 kg and is taking part in a marathon race starting at 10 a.m. on a cool, dry day. Focus on her carbohydrate needs before, during, and after the race. (15 marks)

(45 marks)

**END OF EXAMINATION**