**ST MARY’S UNIVERSITY**

**TWICKENHAM, LONDON**

BSc Degree Examination students registered for

Level **SIX**

Title: **Sports Nutrition**

Code: **NUT6038**

Semester: **ONE**

Date: **January 7th 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 your 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. Which of the following may occur after ingesting carbohydrate 45 minutes before exercise?

a. rebound hyperglycemia

b. reactive hyperglycemia

c. rebound hypoglycemia

d. reactive tachycardia

e. increased lipolysis

1. Which of the following factors is not important for maximal glycogen synthesis?

a. the availability of glucose

b. prior exercise

c. insulin concentration

d. muscle glycogen content (low muscle glycogen will stimulate glucose uptake)

e. All these factors are important.

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. Sweating means losing heat through

a conduction

b. evaporation

c. radiation

d. absorption

e. osmosis

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. Gastrointestinal problems are common during endurance running events, and their incidence is influenced by nutrition.

a. True

b. False

1. Muscle protein synthesis increases after resistance exercise.

a. True

b. False

1. Muscle protein breakdown increases after resistance exercise.

a. True

b. False

1. Soy protein is more rapidly digested than whey protein and produces a larger increase in the plasma total amino acid concentration.

a. True

b. False

1. A sensible recommendation for all athletes is to have less than 10% fat in the diet.

a. True

b. False

1. Which of the following statements is correct?

a. Vitamin C losses through sweat can be substantial.

b. Sodium losses through sweat can be substantial.

c. Vitamin K is water soluble.

d. Vitamin D losses through sweat can be substantial.

e. Vitamin A is a water-soluble vitamin.

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. Any substance or phenomenon that enhances performance is

a. an ergogenic aid

b. an ergolytic aid

c. an ergonomic aid

d. an erythrocytic aid

1. Caffeine ingestion has been shown to increase

a. blood glucose levels

b. amino acids

c. free fatty-acid mobilization

d. insulin secretion

1. In the training method "train low, compete high," the high and low refer to

a. intensity

b. altitude

c. muscle glycogen

d. energy

e. mileage

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. According to Schoenfeld and Aragon (2018) what is the recommended protein target per meal (across a minimum of four meals) to meet daily needs?
12. 0.2-0.3g/kg/bm
13. 0.8-1g/kg/bm
14. 0.4-0.55g/kg/bm
15. 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 | Weightlifter | Red-Bull energy drink |  | Protein Shake (0% carbs) | National Level Athlete |
| B | Footballer: Morning Match | Breakfast: Porridge with blueberries and honey | Half time mouth rinse |  | Often feels lethargic at half time |
| C | Half marathon event: Mid-morning start | Breakfast: Avocado on toast | Water at water stations |  | Target completion time: 2 hrs |

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 why a male endurance athlete from Canada or the United Kingdom might consider taking a vitamin D supplement in the winter months (6 marks).
2. Discuss how one can estimate an athlete’s sweat rate. Give a working example and state why this is important for an athlete (6 marks) (30 marks)

**Section C – 45 marks**

Answer **three** questions from this section

1. Discuss the risks of dehydration and hyponatremia during a marathon (15 marks)
2. Discuss nutritional strategies to reduce gut problems in athletes (15 marks)
3. Discuss the importance of protein for sporting performance (15 marks)
4. Discuss the importance of energy balance and impact of low energy intake in athletes (15 marks)

(45 marks)

**END OF EXAMINATION**