**ST MARY’S UNIVERSITY**

**TWICKENHAM, LONDON**

BSc Degree Examination students registered for

Level **SIX**

Title: **Sports Nutrition**

Code: **NUT6038**

Semester: **One**

Date: **10th January, 2020**

Time: **9:30 AM – 12 noon**

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

Answer **ALL** Section A questions on the separate MCQ answer form. Answer Sections B and C in the answer book provided.

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.

**Section A – 25 marks**

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

1. Which of the following factors will influence exogenous carbohydrate oxidation?
2. Feeding schedule
3. Type and amount of carbohydrate ingested
4. Exercise intensity
5. All of the above
6. b and c
7. How can we estimate sweat loss during exercise?
8. SWEAT LOSS = (Pre-exercise weight) + (Post exercise weight) + (fluid consumed during exercise)
9. SWEAT LOSS = (Pre-exercise weight) – (Post exercise weight) + (fluid consumed during exercise)
10. SWEAT LOSS = (Pre-exercise weight) – (Post exercise weight) – (fluid consumed during exercise)
11. None of the above
12. Iron deficiency anaemia is likely to be higher in athletic populations than in healthy sedentary individuals
13. True
14. False
15. A drink less concentrated than human fluids is considered…
16. Asymptomatic
17. Hypertonic
18. Hypotonic
19. Isotonic
20. Osmotic
21. Fat is the predominant fuel at rest and during light exercise.
22. True
23. False
24. Which of the following sports is likely to utilise protein for energy metabolism more readily?
25. Sprinting
26. Football
27. Yoga
28. Ultra-Marathon Event
29. ‘The generation of glucose from non-carbohydrate substrates’ is known as what?
30. Glycolysis
31. Glycogenolysis
32. Gluconeogenesis
33. Proteolysis
34. Which of the following supplements promotes a higher rate of muscle protein synthesis?
35. Pea Protein
36. Whey Protein
37. Casein Protein
38. Soya Protein
39. What is hyponatremia?
40. Sugar imbalance
41. Insulin imbalance
42. Nitrogen imbalance
43. Sodium imbalance
44. Triglycerides are broken down to……
45. Amino acids
46. Glucose
47. Lactic acid
48. Fatty acids
49. None of the above
50. In the 3 to 5 hours before exercise, some carbohydrate may be incorporated into muscle glycogen, but most will be stored as liver glycogen.
51. True
52. False
53. Evidence suggests that supplementation with creatine….
54. increases fat-free mass and strength
55. serves as a buffer that helps to regulate acid-base balance
56. improves endurance performance
57. a and b
58. a and c
59. Prohormones are substances that can be converted in the body to anabolic steroids.
60. True
61. False
62. Bovine colostrum, which is derived from cow semen, is thought to improve mucosal immunity.
63. True
64. False
65. Glycogen that is broken down in the muscle is not released as glucose into the circulation because the muscle lacks
    1. phosphorylase
    2. glucose-6-phosphatase
    3. hexokinase
    4. glucose dehydrogenase
    5. pyruvate dehydrogenase
66. A normal blood glucose concentration is
    1. 2.0 to 3.0 mmol/L
    2. 4.0 to 4.5 mmol/L
    3. 6.0 to 8.0 mmol/L
    4. 8.0 to 10.0 mmol/L
    5. 10 to 12 mmol/L
67. The maximal exogenous carbohydrate oxidation rate from a single carbohydrate is approximately
    1. 1 g/h
    2. 30 g/h
    3. 60 g/h
    4. 1.5 g/min
    5. 1.75 g/min
68. Research has shown that time to exhaustion can be \_\_\_\_\_\_\_\_\_\_\_ with consumption of a \_\_\_\_\_\_\_\_\_\_\_ carbohydrate diet.
    1. decreased; high-
    2. increased; high-
    3. decreased; low-
    4. increased; low-
    5. painful; high-
69. Which of the following is not a limitation to fluid replacement during exercise?
    1. the volume consumed
    2. the gastric emptying rate
    3. intestinal absorption
    4. the osmolarity of the beverage consumed
    5. the colour of the beverage consumed
70. Sweating means losing heat through
    1. conduction
    2. evaporation
    3. radiation
    4. absorption
    5. osmosis
71. A sensible recommendation for all athletes is to have less than 10% fat in the diet.
    1. True
    2. False
72. Which of the following statements is correct?
    1. Vitamin C losses through sweat can be substantial.
    2. Sodium losses through sweat can be substantial.
    3. Vitamin K is water soluble.
    4. Vitamin D losses through sweat can be substantial.
    5. Vitamin A is a water-soluble vitamin.
73. A deficiency of the micronutrient \_\_\_\_\_\_\_\_\_ is associated with weakening of bones.
    1. iodine
    2. iron
    3. vitamin D
    4. biotin
    5. vitamin K
74. Caffeine ingestion has been shown to increase:
    1. blood glucose levels
    2. amino acids
    3. free fatty-acid mobilization
    4. insulin secretion
75. In the training method "train low, compete high," the high and low refer to:
    1. intensity
    2. altitude
    3. muscle glycogen
    4. energy
    5. mileage

(25 marks)

**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 Competition** | **During** | **Post Competition** |
| A | Male Jujitsu Fighter | Caffeine & Beta Alanine Pre workout drink |  | Protein Shake (0% carbs) | Represents local club |
| B | Basketballer: Morning Match | Breakfast: Porridge with blueberries and honey | Water | Fried Chicken | Feels quite tired the day after the match |
| C | London Marathon Event: Early-morning start | Breakfast: Porridge with full fat milk & a protein shake | Water at water stations  & gel every 1.5 hours | No appetite after. 1 x apple and mars bar eaten | Target completion time: Sub 4 hours 30 |

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 an endurance athlete might consider taking a caffeine supplement for competition (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 in endurance sport (15 marks).
2. Discuss ‘train low’ concepts for optimising performance (15 marks).
3. Discuss the role of protein in recovery and body composition management (15 marks).
4. Discuss the role and works of UKAD to promote ‘clean sport’ and manage doping violations (15 marks).

(45 marks)

**END OF EXAMINATION**