



## Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
I V 0 5 6 G	3 0 0 0	2 0 1 8 - 0 3 - 2 9
Kursnamn	Idrottsvetenskap GR (B), Nutrition med inriktning mot idrott	
Provnamn	Moment 3 Tentamen	
Ort	Östersund	
Termin	V18	
Ämne	Idrottsvetenskap	



Mittuniversitetet

MID SWEDEN UNIVERSITY

Kodnr: \_\_\_\_\_

# EXAM, 4HP

VT18

**IDROTTSVETENSKAP GR (B)**

**NUTRITION WITH A FOCUS ON SPORTS IV056G**

Date: 2018-03-29

Time: 5 hours

Permitted items: English dictionary (English-Swedish and/or English-German)

Maximum points: 60

*You must score at least 50% on each section in order to pass the whole exam.*

A – Outstanding (90%)	54 p
B – Very good (80%)	48 p
C – Good (70%)	42 p
D – Satisfactory (65%)	39 p
E – Pass (60%)	36 p
Fx – Fail; oral re-exam (57-60%)	34-36 p
F – Fail (< 57%)	< 34 p

Instructions to students:

- Answer ALL questions
- Use a separate sheet of paper for each new topic (e.g. 'Digestion', 'Macronutrients' and the long question)
- Remember to write your student number on every piece of paper that you use
- Write legibly and concisely
- Take your time and think about each question carefully

Course Leader: Helen Hanstock, 073 060 22 02 / 010 142 8124

**GOOD LUCK!**

# SECTION 1 – SHORT QUESTIONS

## ANSWER ALL QUESTIONS

### DIGESTION (10p)

ANSWER IN ENGLISH OR SWEDISH

1. Match the four functions of the gastrointestinal system with their definitions: (2p)
  - a) Digestion
  - b) Absorption
  - c) Motility
  - d) Secretion
  1. Movement of digested material along GI tract through rhythmic muscular contractions
  2. Transport of small molecules across the GI tract membrane into the blood or lymphoid system
  3. Release of digestive enzymes and regulatory hormones into the gut lumen.
  4. Breakdown of ingested nutrients into their molecular parts
  
2. Describe the structure and function of villi in the small intestine. (3p)
  
3. Where and by what process is water absorbed by the GI tract? (2p)
  
4. Give three factors that may influence the rate of gastric emptying (also include whether the factor would decrease or increase gastric emptying). (3p)

## MACRONUTRIENTS (10p)

ANSWER IN ENGLISH OR SWEDISH

5. What is GLUT4 and what is it important for? (1p)
6. This question is about insulin resistance:
  - a. What is insulin resistance? (1p)
  - b. What type of diet is desirable if you have developed insulin resistance? (1p)
7. Explain why we can survive by only eating proteins and fats, without consuming carbohydrates. (1.5 p)
8. Fatty acids can have three different saturation levels, which are they? (1.5 p)
9. Why is it extra important to eat protein from different food sources if you are a vegan? (1p)
10. Describe briefly how you can measure muscle breakdown by measuring the intake and secretion ("output") of a specific element. (1.5p)
11. A human needs to consume enough of two different essential fatty acids. Which are they and why are they important for a healthy life? (1.5 p)

## VITAMINS, MINERALS & SUPPLEMENTS (10p)

ANSWER IN ENGLISH OR SWEDISH

12. Provide two general functions of vitamins and minerals. In what situation might a multivitamin and mineral supplement be necessary? (3p)
  
13. Present the functions, sources and RDI/AI (with units) of one of the water-soluble vitamins. (2p)
  
14. Where in the world and at what time of year is Vitamin D deficiency most common? What level of Vitamin D is optimal? Describe two recommendations to maintain Vitamin D levels at or near their optimal range? (3p)
  
15. Suggest one potential cause of iron deficiency. How might iron deficiency affect an athlete's performance? (2p)

## HYDRATION (10 p)

ANSWER IN ENGLISH OR SWEDISH

16. a) Estimate daily body water turnover (in ml) for an adult human on a resting day in temperate environmental conditions. (1p)
- b) Name three ways by which we lose water from the body of water for the body. (1p)
17. Briefly explain the hormonal signalling pathways that help to maintain water homeostasis in the body. (4p)
18. A 67 kg male runner finishes a race having lost approximately 3% of his body mass (2kg) through sweating. How much fluid should he consume in the 4 hours post-race to ensure euhydration is restored? Suggest a sodium chloride (salt) content for the rehydration beverage. (2p)
19. Define hyponatremia. Suggest a sporting situation in which it could occur. (2p)

## SECTION 2 – LONG QUESTION

ANSWER IN SWEDISH OR ENGLISH

20. An athlete competing in a sport where strength/power is important would like to gain weight by increasing his/her muscle mass during the pre-competition phase. Describe a preferable intake and distribution of different macronutrients for an athlete competing in a strength/power sport, and how it can be planned and periodized in training during the micro-, meso- and macro-cycles if an athlete wants to emphasize muscle gain and performance? Support your answer with reference to relevant scientific literature. (20 p)

