FACULTY	Faculty of Health Sciences and Veterinary Medicine		
SCHOOL	ALLIED HEALTH SCIENCES		
DEPARTMENT	PHYSICAL AND SPORT SCIENCES		
MODULE	**FOUNDATIONS OF HUMAN NUTRITION**		
MODULE CODE	AC3512E		
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DURATION	**3 hours**	**MARKS**	**100**

FIRST OPPORTUNITY EXAMINATION

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Moderator: Ms. H Uushona

This question paper consists of **six (6)** pages, excluding the cover page.

Instructions

1. Work in an orderly way and present your work as neatly as possible.
2. While most of the marks will be awarded for content, candidates must bear in mind the importance of presentation, i.e. insight and critical thinking.
3. Number your questions correctly and clearly.
4. The use of calculators is permitted
5. **ONE** Appendix with the necessary formulas is provided
6. **ANSWER ALL QUESTIONS IN SECTION A**
7. **ANSWER ALL QUESTIONS IN SECTION B**
8. **ANSWER ONE QUESTION IN SECTION C**

UNIVERSITY OF NAMIBIA EXAMINATIONS

SECTION A

ANSWER ALL QUESTIONS

Question 1

Define the following concepts:

1.1. Malnutrition;
1.2. Resistant starch, and
1.3. Xerophthalmia. [10]

SECTION B

ANSWER ALL QUESTIONS

QUESTION 2

2.1. Identify nutrient/s usually yielding energy during its metabolism under conditions of overnutrition?

a. Fat
b. Proteins
c. Carbohydrates
d. Protein and Carbohydrates
e. All listed (1)

2.2. When cholesterol is part of _____, it is being transported from the cells to the liver.

a. Chylomicrons
b. Triglycerides
c. High density lipoproteins
d. Low density lipoproteins (1)

2.3. Which of the following foods contain cholesterol?

a) Peanut butter
b) Margarine
c) Gouda cheese
d) Oil and vinegar salad dressing
e) Soybeans (1)

2.4. Health professionals recommend the following lipid intake to protect your health.

a. Stabilise your total fat intake, include only 500mg of cholesterol, exclude trans fatty acids, increase essential fatty acids and reduce animal fats
b. Reduce your fat intake, include only 250mg of cholesterol, exclude trans fatty acids, increase essential fatty acids and reduce animal fats
c. Reduce your fat intake, include only 250mg of cholesterol, increase trans fatty acids, increase essential fatty acids and reduce animal fats
d. Reduce your fat intake, include only 250mg of cholesterol, exclude trans fatty acids, decrease essential fatty acids and reduce animal fats (2)

2.5. Your grandmother is struggling with iron deficiency anaemia (IDA). What could be the reason for this problem?

a. Inclusion of "Five Roses" tea in her diet
b. Inclusion of 60 mg of bran in her diet
c. The exclusion of oranges from her diet
d. All of the included (2)

2.6. An essential nutrient can be defined as:

a. a nutrient the body needs and can produce and be supplied by the human diet;
b. a nutrient the body needs and cannot produce;
c. a nutrient the body does not need and can produce
d. a nutrient the body needs and cannot produce and can be supplied by the human diet (1)

2.7. Food sources of ascorbic acid include:

a. oranges, lemons, grapefruit and limes
b. broccoli, cabbage, Brussel sprouts and cauliflower
c. potatoes, tomatoes, strawberries and cantaloupe
d. All mentioned (1)

2.8. Niacin deficiency (pellagra) is most common in people who:

a. work long days in sun, expending much energy
b. eat too little red meat
c. depend on milled, unenriched maize for their carbohydrate and protein
d. are very poor and cannot afford vegetables and fruits (1)

2.9. Which of the following nutrients, if taken in excess during pregnancy, can cause birth defects?

a. Vitamin A
b. Vitamin B
c. Vitamin C
d. Vitamin D

(1)

2.10. Foods high in beta- carotene can provide a nutrient which has the function of:

a. remodeling bones in growth
b. maintaining healthy epithelial cells
c. preventing xeropthalmia
d. act as an antioxidant

(1)

2.11. Table salt increase the blood pressure of:

a) All people is affected
b) Only people that is salt sensitive is affected
c) No person is affected

(1)

2.12. Corn syrup on the label of preserved food refer to:

a. Glucose
b. Sucrose
c. Fructose
d. Lactose

(1)

2.13. Match nutrient in column A with the **function/ characteristic/ deficiency of the nutrient** in column B. Just write down the correct alphabet letter/s. (10)

Column A	Column B
2.13.1. Protein	A. Mainly found in animal food sources
2.13.2. Omega-3 fatty acid	B. Supports vision and assists in the brain development of children.
2.13.3. Zinc	C. It prevents dementia, dermatitis and diarrhea from developing in human beings.
2.13.4. Vitamin C	D. They are mainly produced in the colon of a human being.
2.13.5. Thiamin	E. A deficiency of which will lead to a shorter concentration span in the classroom
2.13.6. Calcium	F. A lack of this nutrient causes alcohol misuse and Wernicke-Korsakoff Syndrome.
2.13.7. Iron	G. It prevents osteoporosis in postmenopausal women.
2.13.8. Vitamin K	H. Assists in wound healing and the making of genetic material as well as protein.
2.13.9. Vitamin A	I. Plays a crucial role in fluid-electrolyte balance in the body of human beings.
2.13.10. Niacin	J. Supports your immune system as an antioxidant.

[24]

SECTION C

ANSWER ALL QUESTIONS

Question 3

Read the case study below and answer the questions that follow:

Peter is 26 years of age, 1,75 m tall and weighs 107 kg. He is a very active person who does weight training three times a week and he also jogs five times a week. He is very health conscience and drinks 2 liter of water and other healthy fluids a day.

Tina is 36 years of age, 1,6 m tall and weighs 75 kg. She does not like to participate in physical activities. She likes to spend her leisure time reading and watching TV. She has experienced a slight fever during the day because of flu. She consumed 1,2 litre of water during the day.

Note you need to show your calculations. In the Appendix you will find some formulas you need to calculate the energy needs.

3.1. Provided the information on the previous page, calculate the following;

a. The BMI of Peter. (2)

b. The energy needs of both Peter and Tina. (6)

c. The water needs of Tina. (2)

d. The protein needs of Peter. (2)

3.2. Evaluate Peter's calculated BMI (in question 3.**1. a**) with reference to the standard norms and explain the consequence of this on her BMI as well as health and wellness status. (4)

3.3. Discuss the factors that could impact on the BMR of Peter and Tina. (4)

3.4. Comment on the water intake (in question 3.**1. c**) of Tina. (2)

Question 4

4.1. The breakfast Alice had this morning included two slices of whole wheat bread, a portion of oats porridge and a Granny Smith apple. In your opinion will these items provide fibre to her diet and what will the effect of the fibres be on her health? (4)

4.2. *"Fructose has now been declared as the number one enemy in the fight against overweight and obesity."*

Do you agree or disagree with the statement above? Motivate your answer. (3)

4.3. Describe why dark skinned individuals have to spend a longer period of time to produce enough Vitamin D. (2)

4.4. Discuss the conservative method of cooking food that contains high levels of Vitamin C will assist in retaining Vitamin C. (4)

4.5. Discuss the relationship between IDD and mental retardation as well as regulations Namibia has put in place to minimize this nutritional problem. (4)

4.6. From the following list below identify who will be the most vulnerable to develop iron deficiency anemia during their life cycle. Motivate your answer.

a. A 75 year old female,

b. A 16 year old female, or

c. A 50 year old female. (3)

[51]

SECTION D

ANSWER ONE QUESTION

Question 6

6.1. Compare and contrast **essential fatty acids, trans fatty acids and cholesterol** in the human diet. In your response, refer to their effect on the health of humans. [15]

Or

6.2. Health data show that 45% of Namibian women of childbearing age are iron deficient. Against this background, discuss how the **specific food sources of iron** and other factors could impact iron absorption. The factors should include **those that will enhance and those that will inhibit iron absorption in the diet**. (15)

Total **[100]**

APPENDIX

EQUATIONS TO ESTIMATE BMR FROM BODY WEIGHT (WT)

Age (years)	Equations to estimating BMR from body weight (wt in kg)(energy in kJ)	Age (years)	Equations to estimating BMR from body weight (wt in kg)(energy in kJ)
Males		**Females**	
0-3	(255.8 x wt) - 227	**0-3**	(256.2 x wt) – 214
3-10	(95.3 x wt) + 2079	**3-10**	(94.5 x wt) + 2096
10-18	(73.5 x wt) + 2734	**10-18**	(51.2 x wt) + 3133
18-30	(64.3 x wt) + 2852	**18-30**	(61.7 x wt) + 2083
30-60	(48.7 x wt) + 3692	**30-60**	(36.5 x wt) + 3482
>60	(56.7 x wt) + 2045	**>60**	(44.1 x wt) + 2503

Physical Activity Levels (PAL)

PAL	Type of activity	Male	Female
Very light	Seated and standing activities, driving, laboratory work, typing, cooking, sewing, ironing, playing a musical instrument, office work and studying.	1.3	1.3
Light	Walking on a level surface at a slow speed, assisting in shops, waiting tables, house cleaning, child care, playing golf, practicing a trade like carpentry	1.6	1.5
Moderate	Walking at a fast speed, weeding, hoeing, carrying a load, cycling, playing tennis and dancing.	1.7	1.6
Heavy	Walking with a load uphill, tree felling, heavy manual digging, climbing and playing soccer.	2.1	1.9
Very heavy	Athletes training for professional and world class events.	2.4	2.2