

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

DURATION: 3 HOURS

TOTAL MARKS: 165

External Examiner: Ms C Biggs

Internal Examiner: Dr K Pillay

NOTE: THIS EXAM PAPER CONSISTS OF SIX (6) PAGES PLUS A MULTIPLE CHOICE QUESTIONNAIRE (MCQ) ANSWER BOOKLET (8 PAGES), WHICH MUST BE HANDED IN. PLEASE MAKE SURE THAT YOU HAVE ALL PAGES.

PLEASE ANSWER SECTIONS A, B AND C.

PLEASE WRITE LEGIBLY AND ANSWER ALL QUESTIONS IN INK.

ANSWERS WRITTEN IN PENCIL WILL NOT BE MARKED.

SECTION A	QUESTION 1 – MULTIPLE CHOICE QUESTIONS	
	See separate booklet	(30 MARKS)
SECTION B	SHORT QUESTIONS	(100 MARKS)
SECTION C	CASE STUDY	(35 MARKS)

PLEASE ANSWER ALL OF THE QUESTIONS BELOW.

START EACH QUESTION ON A NEW PAGE

SECTION B

QUESTION 2

- 2.1 Your friend has a severe case of facial acne. She heard that the oral drug Roaccutane, which is used to treat acne, contains vitamin A.
- 2.1.1 Your friend asks if consuming foods that are good sources of vitamin A will help to improve her acne. Give a response to the question. [3]

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

- 2.1.2 Explain why contraceptive measures have to be maintained for four weeks before treatment starts, during the course of treatment and four weeks after treatment has stopped. [4]
- 2.1.3 Your friend also wants to know how the drug works. Give a response. [3]
- 2.2 List five (5) functions of phosphorus. [1X5=5]
- 2.3 Explain why the elderly are especially at risk for magnesium toxicity. [5]

TOTAL = 20 MARKS

QUESTION 3

- 3.1 Outline the biochemical findings of the South African National Nutrition Survey Study (SANNSS) of 1995. [6]
- 3.2 List five (5) strengths of using the food frequency questionnaire as a method of dietary assessment. [1 X 5 =5]
- 3.3 Give the body site where the mid-upper arm circumference is measured. [2]
- 3.4 List any two (2) field methods used to estimate body composition. [1 X 2 =2]
- 3.5 Explain how food intake can be measured using a household survey. [3]
- 3.6 Explain the difference between the 24 hour recall and the diet history as methods of dietary assessment. [2]

TOTAL = 20 MARKS

QUESTION 4

- 4.1 Discuss the role of calcitriol and calcitonin in regulating blood calcium levels. [8]
- 4.2 List the two (2) co-enzyme forms of vitamin B12. [2 X 1 = 2]

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

- 4.3 You have been asked to do a talk to a group of students who require nutritional advice for the upcoming exams. The students are very concerned about getting flu and being unable to write all their exams. The students have read that taking a megadose of vitamin C can help to prevent flu.
- 4.3.1 Is there any benefit to taking a megadose of vitamin C? [1]
Justify your answer. [3]
- 4.3.2 List two (2) side effects that may be seen with this level of intake of vitamin C and explain how they occur. [6]

TOTAL = 20 MARKS

QUESTION 5

- 5.1 Explain what is meant by “nutritional assessment”. [2]
- 5.2 Give the name of one (1) possible disorder or nutrient deficiency associated with each of the following clinical signs listed below. [$\frac{1}{2} \times 8 = 4$]
- Pale conjunctiva
 - Corneal xerosis
 - Angular cheilosis
 - Mottled tooth enamel
 - Receding gums
 - Thyroid enlargement
 - Xanthelasma
 - Magenta tongue
- 5.3 Define the “Scientific Method of Enquiry” and outline the steps involved in the correct sequence. [7]
- 5.4 List three (3) advantages of using biochemical assessment when carrying out nutritional assessment. [1 X 3 = 3]

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

5.5 Explain the difference between a single-blind study and a double-blind study. [4]

TOTAL = 20 MARKS

QUESTION 6

6.1 You are at a party at which salty snacks are served. After having a few snacks you start to feel thirsty. You decide to drink water to quench your thirst.

6.1.1 Explain why the body signals thirst in this case. [3]

6.1.2 List four (4) snacks that may be served at the party that are high in sodium chloride that you should avoid, to prevent further thirst. [4 X ½ = 2]

6.2 Explain why the side effects of the anti-cancer drug methotrexate are similar to those of a folate deficiency. [5]

6.3 Mr A was diagnosed with a condition called haemochromatosis. He has been advised to make dietary changes in order to manage his condition.

6.3.1 What is haemochromatosis? [2]

6.3.2 Explain what dietary changes would have to be made and explain why. [4]

6.3.3 Mr A was advised to donate blood frequently. Explain why he was given this advice. [2]

6.3.4 List the medical conditions that could result from not treating haemochromatosis.
[4 X ½ = 2]

TOTAL = 20 MARKS

END OF SECTION B

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

SECTION C

35 MARKS

QUESTION 7

Miss O is a 75 year old white female who has been admitted to hospital with a fractured hip after falling at home due to fatigue and weakness. Prior to falling she was mobilising minimally with a walking aid and was unable to go outdoors. She is a pensioner and receives a government old age pension on a monthly basis.

Her anthropometric measurements on admission are as follows:

Weight = 45 kg Height = 1.52 m

According to Mrs X's medical file, she had a recorded weight of 52 kg 6 months prior to admission.

Her biochemical tests have revealed the following:

Haemoglobin (Hb)	9.5 g/dl	(12.3-17 g/dl)
Haematocrit (Hct)	33%	(36-50%)
Red Blood Cells (RBC)	$2.8 \times 10^{12}/L$	$(4-5.7 \times 10^{12}/L)$

Clinically she appears pale and has poor dentition.

A dietary assessment has found that she is having irregular meals with a low energy intake.

The doctor has made a diagnosis of osteoporosis and iron deficiency anaemia.

- 7.1 Calculate and interpret her percentage weight loss. [3]
- 7.2 Miss O was diagnosed with Type 2 osteoporosis. Explain the difference between Type 1 and Type 2 osteoporosis. [3]
- 7.3 Miss O was told by a friend that she should “stop eating meat as it can prevent osteoporosis”.
 - 7.3.1 Is there any truth to this statement? [1]

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

7.3.2 Explain your answer. [3]

7.4 Identify and list all the nutritional risk factors in this case. [5]

7.5 Which two (2) micronutrients should be prescribed and in what dose in order to minimise further bone loss. [4]

7.6 Miss O has been on an anti-inflammatory drug, Prednisone for the past 5 years in order to treat her arthritis.

Could this drug treatment have had any effect on the osteoporosis? [1]

Justify your answer. [3]

7.7 Complete a diet plan for Miss O using the dietary prescription given below. [12]

Total energy = 5350 kJ

Carbohydrate = 55% of total energy (TE)

Fat = 30% of TE

Protein = 15% of TE

Please make use of all of the following exchanges:

- Low fat milk
- Vegetables
- Fruit
- Starch
- Lean meat
- Medium fat meat
- Fat
- Sugar

END OF SECTION C

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

STUDENT NUMBER: _____

SECTION A:
MULTIPLE CHOICE QUESTIONS (8 Pages) (1 X 30 = 30 MARKS)

QUESTION 1

Indicate your answer to each question by placing a circle over the appropriate letter.

Mark allocation as follows:

0 marks if no answer is given

1 mark for each correct answer

- ½ mark for each incorrect answer

Vitamins (1 X 10)

1. A lack of hydrochloric acid is most likely to affect the absorption of ___?
 - A. Vitamin C
 - B. Niacin
 - C. Vitamin B6
 - D. Vitamin B12

2. Absorption of folate in the monoglutamate form occurs with the help of ___ enzymes.
 - A. Conjugase
 - B. Dioxygenase
 - C. Catalase
 - D. Carboxylase

3. 60 IU of vitamin D is equal to _____ µg of cholecalciferol.
 - A. 0.025
 - B. 1
 - C. 1.5
 - D. 0.017

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

4. Wernicke-Korsakoff Syndrome occurs in alcoholics as a result of a _____ deficiency?
- A. Niacin
 - B. Riboflavin
 - C. Thiamin
 - D. Folate
5. Para-aminobenzoic acid is a chemical constituent of _____?
- A. Folate
 - B. Vitamin B6
 - C. Vitamin B12
 - D. Pantothenic Acid
6. Which of the following shows the correct chemical reaction that takes place when vitamin K facilitates the conversion of prethrombin to thrombin?
- A. Carbon dioxide is added to Glutamic Acid to produce Gamma-Glutamic Acid
 - B. Carbon dioxide is added to Carboxyl Acid to produce Gamma-Carboxyl Glutamic Acid
 - C. Carbon dioxide is added to Glutamic Acid to produce Glutamic-Carboxyl Acid
 - D. Carbon dioxide is added to Glutamic Acid to produce Gamma-Carboxyl Glutamic Acid
7. Which of the following is not a function of Vitamin C?
- A. Oxidises non-haem iron
 - B. Synthesis of bile acids and steroid hormones
 - C. Conversion of tryptophan to serotonin
 - D. Synthesis of carnitine

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

8. Which of the following requires phosphorus in order to form the active co-enzyme form?
- A. Vitamin B12
 - B. Folate
 - C. Pantothenic acid
 - D. Vitamin B6
9. Which of the vitamins below is most likely to be associated with toxicity when consumed as a supplement?
- A. Vitamin A
 - B. Vitamin D
 - C. Vitamin E
 - D. Vitamin K
10. Which of the following is not a function of vitamin B6?
- A. Participates in the conversion of tryptophan to niacin
 - B. Facilitates the conversion of linolenic acid to arachidonic acid
 - C. Required for the production of hydrochloric acid
 - D. Synthesis of key neurotransmitters

Water & Minerals (1 X 10)

11. Which of the following is seen when there is a loss of 4% body weight due to dehydration?
- A. Thirst and fatigue
 - B. Weakness
 - C. Loss of muscle strength
 - D. Coma

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

12. According to the 2001 Census data what percentage of people had access to water from a tap?
- A. 79.8%
 - B. 84.5%
 - C. 71.3%
 - D. 89.5%
13. Which of the following is the correct treatment of water intoxication?
- A. Restrict water and administer a hypertonic solution
 - B. Administer water that contains electrolytes
 - C. Restrict water and administer a hypotonic solution
 - D. Administer water that contains no electrolytes
14. Identify the correct statement:
- A. Minerals from plants are absorbed better compared to minerals from animals
 - B. The physiological need for a mineral does not influence the absorption of that mineral
 - C. Long-term consumption of leavened bread can reduce the bioavailability of some minerals found in the bread
 - D. Magnesium is found in greater amounts in plant foods compared to animal foods
15. Which of the following contributes the most to sodium intake?
- A. Sodium chloride added by the manufacturer during food processing
 - B. Sodium chloride added during cooking
 - C. Sodium found naturally in food
 - D. Sodium obtained from beverages

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

16. The greatest amount of insensible losses of water takes place via the ____?
- A. Faeces
 - B. Urine
 - C. Lungs
 - D. Skin
17. Which of the following is a function of zinc?
- A. Important for the storage, release and function of insulin
 - B. Part of enzymes that synthesise norepinephrine and dopamine
 - C. Needed for the formation and maintenance of myelin
 - D. Important for blood clotting and bone development
18. Which of the following is not involved in retaining fluid in the body?
- A. Renin
 - B. Parathyroid hormone
 - C. Aldosterone
 - D. Antidiuretic hormone
19. Which of the following statements on temperature regulation is correct?
- A. Water has a low specific heat or heat capacity
 - B. Evaporation of perspiration occurs more readily when humidity is low
 - C. Each 1 litre of perspiration evaporated from the skin represents 600 kJ of energy
 - D. Energy requirements are reduced during fever

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

20. How much chloride is found in 5 g of sodium chloride?
- A. 2000 mg
 - B. 400 mg
 - C. 3000 mg
 - D. 600 mg

Nutritional assessment (1 X 5)

21. A child with wasting would have the following:
- A. A low weight for age
 - B. A low height for age
 - C. A low weight for height
 - D. A low height for weight
22. Which of the following statements is correct?
- A. Fat distribution is not an overall indicator of disease risk
 - B. A person with gynoid obesity has a larger waist circumference compared to their hip circumference
 - C. Total fat is more important than fat distribution as an indicator of disease risk
 - D. A person with android obesity has a larger waist circumference compared to their hip circumference
23. Which of the following components of nutritional assessment is the least subjective?
- A. Anthropometry
 - B. Biochemical assessment
 - C. Clinical assessment
 - D. Dietary assessment

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

24. Identify the correct statement on the food record or food diary.
- A. Accuracy with recording usually decreases as the number of days in the reporting period increases
 - B. May be recorded over 2, 4, 6 or 8 days
 - C. Only the quantity of food or drink that was consumed needs to be recorded
 - D. The weight of all foods eaten must be recorded
25. What would be your advice to a female, aged 30 years with a BMI of 27?
- A. Should increase her BMI
 - B. Maintain her BMI
 - C. Decrease her weight
 - D. Increase her weight

Nutrition in South Africa (1 X 5)

26. Which of the following statements on breastfeeding from the South African Vitamin A Consultative Group (SAVACG) study of 1994 is false?
- A. Rural children were breastfed less than urban children
 - B. An average of 88% of children aged 3 years were breastfed for varying periods of time
 - C. Rural children were breastfed for a longer period of time
 - D. There was a tendency to breastfeed for a shorter period by urban, well educated mothers
27. According to the South African National Nutrition Survey Study (SANNSS) of 1995, which statement on macronutrient intake in Black South African adults is false?
- A. Rural Blacks obtained two thirds of their protein from plant sources
 - B. Rural Blacks had the highest intake of carbohydrates
 - C. Rural Blacks had the highest intake of sugar
 - D. Rural Blacks had a fat intake of < 30%

UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF DIETETICS AND HUMAN NUTRITION
EXAMINATION: JUNE 2012
SUBJECT, COURSE & CODE: NUTR 224 – NUTRITIONAL ASSESSMENT, SA

28. Which method was used to assess dietary intake in the National Food Consumption Survey (NFCS) of 1999?
- A. Food records and 24 hour recall
 - B. Food diary and food frequency questionnaire
 - C. 24 hour recall and food frequency questionnaire
 - D. Food record and food frequency questionnaire
29. According to the NFCS Fortification Baseline 2005 the number of children with poor vitamin A status was:
- A. 1 in 3
 - B. 2 in 3
 - C. 1 in 4
 - D. 2 in 5
30. According to the NFCS Fortification Baseline 2005 the number of women with poor iron status was:
- A. 1 in 3
 - B. 1 in 10
 - C. 1 in 5
 - D. 1 in 4

END OF MULTIPLE CHOICE QUESTIONS