NUT2601

May/June 2017

NUTRITIONAL CARE

Duration 2 Hours

100 Marks

EXAMINERS
FIRST   MISS B SWANEPOEL
SECOND   MR F RAMASUNGA

Use of a non-programmable pocket calculator is permissible

Closed book examination

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue

Answer all the questions in the answer book provided

This examination question paper consists of five (5) pages

Answer ALL the questions in the answer book provided

Start **each question** on a **new page**, that is, QUESTION 1 QUESTION 2 and QUESTION 3 should each start on a new page in the answer book provided

Where applicable, give all answers using the metric system or SI units No marks will be awarded for answers with non-metric units of measurement

[TURN OVER]

QUESTION 1 [37]

1 1   Name **and** discuss the 6 physiological processes involved in the utilisation of food   (12X½=6)

1 2   Complete the following table of the digestive secretions and their major actions Number your answers 1 2 1 to 1 2 8   (8)

Organ or Gland	Target organ	Secretion	Action
Salivary glands	1 2.1	Saliva	Salivary enzyme breaks down some carbohydrate
Gastric glands	Stomach	1.2.2	1.2.3
1.2.4	Small intestines	1.2.5	Pancreatic enzymes break down carbohydrates, fats and proteins
Liver	1.2.6	Bile	Bile is sorted until needed
Gallbladder	Small intestine	Bile	1.2 7
1.2.8	Small intestine	Intestinal juice	Intestinal enzymes break down carbohydrates, fat and protein

1 3   The gastrointestinal tract is designed in a specific way to enhance and maximise absorption of nutrients Match the correct specialised anatomic structure/mechanism of the absorptive system in column A with its specific function/action in column B Write the correct letter next to the number in column A   (5)

Column A: anatomic structure/ mechanism	Column B: Function/ Action
1 3 1 Crypts	A Uses energy for the transport of molecules against the concentration gradient
1 3 2 Microvilli	B Secretes intestinal juices into the small intestine
1 3 3 Simple diffusion	C Trap nutrient particles and transport them into the cells
1 3 4 Active diffusion	D Assemble many of the products of fat digestion into larger molecules
1 3 5 Intestinal cells	E Passive transport

1 4   Indicate through which transport mechanism each of the different monosaccharides (glucose, galactose and fructose) are absorbed?   (3)

1 5   Explain why the body finds it difficult to digest and absorb fat?   (3)

1 6   Indicate whether the following statements are true or false For each **FALSE** answer please explain why the statement is incorrect   (6)

1 6 1 The products of carbohydrate digestion is ultimately monosaccharides, which include glucose fructose and lactose

1 6 2 Glucose makes use of active transport in the absorption process

1 6 3 Polysaccharides are absorbed by means of facilitated diffusion

1 6 4 Smaller lipids, such as glycerol, small chain fatty acids and medium chain fatty acids are absorbed directly into the blood stream

1 7   Discuss the two types of feedback mechanisms involved in the regulation of the gastrointestinal processes **AND** give an example of each   (6)

QUESTION 2 [34]

Mr van Dyk is a 42-year-old male He is a construction worker, and is physically active in the day and often gets hungry He weighs 106kg and his height is 1 74m He has recently been diagnosed with diabetes mellitus Study the 24-hour recall conducted This diet history is representative of a typical day for Mr van Dyk Answer the following questions

		24-Hour recall	
Time	**Amount**	**Food**	**Preparation**
Breakfast	2 cups	Mieliepap/ Maize meal porridge	Cooked
	1 cup	Full cream milk	
	3 tsp	Sugar over porridge	
	1 cup	Coffee	
	3 tsp	Sugar in coffee	
	3 tsp	Cremora in coffee	
Midmorning	1 cup	Coffee	
	3 tsp	Sugar in coffee	
	3 tsp	Cremora in coffee	
Lunch	6 slices	White bread	
	3 tbs	Hard block margarine on bread	
	3 tbs	Apricot Jam on bread	
	90g	Cheddar cheese	
	340 ml	Fanta	
Mid afternoon snack	1 small packet (40g)	Simba Chips	
Supper	180g	Hake with the skin	Fried
	100g	Potato	Baked
	1½ cup	Soft mieliepap/maize meal porridge	Cooked
	½ cup	Tomato and onion gravy over mieliepap/ maize meal porridge	Cooked
	1 tbs	Sunflower oil used to fry the fish	
	2 tbs	Mayonnaise (dressing for the potato)	
	1 cup	Oros or similar concentrated drink, mixed with water	
Late night snack	1 cup	Coffee	
	3 tsp	Sugar in coffee	
	3 tsp	Cremora in coffee	
	4	Biscuits	

2 1 Make use of the *revised* **Food Based Dietary Guidelines** (FBDGs) to **evaluate** the recorded 24-hour recall presented above which is representative of Mr van Dyk typical diet for every day Make sure to provide the exact wording for each of the FBDGs (20 x ½ = 10)

2 2 Motivate to Mr van Dyk why it would be beneficial for the management of his diabetes to follow a diet rich in fibre (4)

2 3 Foods are divided into six exchange lists according to their basic composition Name the six exchange lists and give **one** main **micro**nutrients for each (12 x ½ = 6)

2 4 You inform Mr van Dyk about the 'exchange system' as a way to manage his intake Complete the following table in order to determine the macronutrient and energy content of what he is consuming during his lunch time meal Re-draw this table and make sure to fill in the grey blocks (10)

Food	Size	Exchanges	CHO (g)	Prot (g)	Fat (g)	Energy (kJ)
6 slices of white bread	180g	6			-	
Margarine	45g		-	-	45	
Apricot jam	45g	3		-		765
Cheddar cheese	90g		-	21		

2 5 Nutrition assessment is the process of collecting nutritional information relating to health Name and describe the four processes involved in nutrition assessment (8 x ½ = 4)

QUESTION 3 [29]

You have conducted some of the processes of nutrition assessment on Mrs Nienaber Her results were as follows
Answer the following questions

Date:	22 October 2016
Surname, initials·	Nienaber C
Gender	Female
Age.	38 years
Weight:	78kg
Height:	1 59m
Waist circumference:	96cm
Hip circumference:	107cm
Current medical problems·	Hypertensive (diagnosed January 2014, on chronic medication)
	Experience heartburn frequently
Activity level:	Sedentary
Change in weight in the past 3 months:	Lost about 6kg

Answer the following questions

3 1 Calculate and interpret Mrs Nienaber's body mass index (BMI) Also interpret the implications of her waist circumference measurement (3)

3 2 Calculate and interpret Mrs Nienaber's waist-to-height ratio (WHtR) (2)

3 3 Calculate and interpret Mrs Nienaber's percentage weight loss (2)

3 4 Calculate Mrs Nienaber's ideal body weight and indicate how much body weight she still needs to loose (2)

You take a diet history from Mrs Nienaber and this shows that her diet is currently providing **10456kJ** and is made up of **410g carbohydrates, 80g protein and 130g fat**

3 5 Calculate the energy distribution of Mrs Nienaber's diet and show all calculations 6 X ½ = (3)

3 6   Based on your answer from question 3 5, interpret the macronutrient distribution by comparing each nutrient's energy distribution to the Acceptable Macronutrient Distribution Ranges (AMDR) and then make <u>practical</u> recommendations to Mrs Nienaber accordingly   (6)

3 7   Give the RDA/AI for Mrs Nienaber for the following nutrients   (3)

   3 7 1   Vitamin C
   3 7 2   Vitamin B_{12}
   3 7 3   Calcium

3 8   Indicate whether the following statements are true or false For each answer of **FALSE**, you need to explain **why** the statement is incorrect   (8)

   3 8 1   The DRIs only consist of three reference values, including EAR, RDA and AI
   3 8 2   DRIs are used to set the standards for menu planning for old-age homes
   3 8 3   DRIs are ideal for direct use by the consumer
   3 8 4   DRIs are used to set guidelines for the formulation of new food products
   3 8 5   The DRI for folate if a woman is pregnant is 400mcg/day

TOTAL 100 MARKS