

**UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF AGRICULTURAL SCIENCES & AGRIBUSINESS
DISCIPLINE OF DIETETICS & HUMAN NUTRITION
EXAMINATION: NOVEMBER 2011
SUBJECT, COURSE & CODE: DIET 237 - P2
WEIGHT, DIABETES, HEART DISEASE**

**External Examiner: Miss C Biggs
Internal Examiner: Mrs S Ogilvie**

DURATION: 3 HOURS

TOTAL MARKS: 150

**NOTE THIS PAPER CONSISTS OF SEVEN (7) PAGES AND APPENDIX A ONE (1) PAGE AND APPENDIX B ONE (1) PAGE
PLEASE CHECK THAT YOU HAVE THEM ALL.
PLEASE WRITE LEGIBLY AND ANSWER ALL QUESTIONS IN INK. ANSWERS WRITTEN IN PENCIL WILL NOT BE MARKED**

QUESTION 1 IS COMPULSORY, YOU MAY ANSWER ANY TWO (2) OF THE OTHER THREE (3) QUESTIONS.

QUESTION 1 – COMPULSORY

Dave Foster, a 37 year old businessman has been a known Type 2 diabetic for 6 years. His general practitioner has referred him to you for dietary guidance as his blood sugar control is poor despite being on maximum doses of oral hypoglycaemic agents. His medications include: Glucophage, Glycomin, simvastatin, aspirin and two anti-hypertensive medications. He also takes 1 capsule of omega 3 daily. He does not enjoy doing exercise. He decided to stop the simvastatin as it made him feel tired, especially his legs. He has his own glucometer, but seldom tests his blood glucose levels.

You get the following additional information:-

- HbA1c 8.6 %
- LDL 2.9 mmol/l
- HDL 1.3 mmol/l
- Triglycerides 4.6 mmol/l
- Height 171 cm
- Weight 87.8 Kg

From his diet history a typical day's food intake is as follows.

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6 am	1 Cup Milo (4 tsp Milo powder, hot water) + 50 ml full cream milk
Breakfast	2 boiled eggs 1 slice white toast 1 tsp regular margarine
10 am	1 apple, small 1 can Coke zero
Lunch	120 g roast chicken (dark meat with skin) 4 tsp oil for frying 1 cup mixed green salad 4 tsp regular mayonnaise Water
3 pm	Coffee + 50 ml full cream milk + 2 level tsp sugar
Supper	150 g rump steak, grilled 200 g baked potato 1 cup baked butternut ½ cup boiled green beans 3 tsp butter for potato
10 pm	1 slice white bread 1 tsp regular margarine 1 Tbs jam Tea + 25 ml full cream milk + 1 tsp sugar

- 1.1 Calculate his BMI and classify. (1)
- 1.2 Calculate his ideal body weight. (1)
- 1.3 What percent overweight is he? (1)
- 1.4 Calculate his current energy and macronutrient requirements using the Schofield equation. Make suitable adjustments for weight loss if required. (5)

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- 1.5 Analyse his diet history using exchanges.
Fill your answer in on the table Appendix A1. (6)
- 1.6 Explain to him what changes he needs to make to ensure a healthier eating plan. (12x ½ = 6)
- 1.7 His wife has told him he should be taking 5 g fish oil daily. Discuss the beneficial effects of fish oil with him and tell him if this is the correct dose (5)
- 1.8 Explain to him when he should be testing his blood glucose? (8x ½ = 4)
- 1.9 Do you feel he should be started on insulin? Justify your answer. (2)
- 1.10 List the side effects of statins. (6x ½ = 3)
- 1.11 Explain what the HbA1c test is, why it is important and interpret his most recent result. (7)
- 1.12 What risk factors for CHD does Mr Foster have? (8x ½ = 4)
- 1.13 What target would you suggest for his blood pressure readings? (1)
- 1.14 List the conditions that are a major risk if blood pressure is elevated. (8x ½ = 4)

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QUESTION 2

A 57- year-old Asian man is referred to you for dietary counseling. He consulted his doctor as over the last week he had severe thirst, polyuria, blurred vision and weight loss. From his records you get the following information. He is inactive and smokes 20 cigarettes per day. His mother and grandfather had type 2 diabetes.

Height	170 cm
Weight, current	92.5 kg
Blood pressure	170/110 mmHg
Blood glucose, post prandial	13.6 mmol/l
HbA1c	9.5 %
Total cholesterol	6.8 mmol/l
LDL	3.5 mmol/l
HDL	0.7 mmol/l
Triglycerides	3.2 mmol/l
Microalbuminuria	positive

- 2.1 What medication do you expect the doctor to prescribe initially to control his blood glucose? Explain how this medication will help lower his blood sugars and what the major side effects are likely to be. (8)
- 2.2 List what other medications you feel should be prescribed and why they are indicated. (6)
- 2.3 What risk factors for developing diabetes does he have? (8)
- 2.4 Discuss his blood results with him and explain what values he should aim for. (6)
- 2.5 Explain to him what microalbuminuria is and why it is important to him to monitor it annually. (3)
- 2.6 What non dietary lifestyle changes would you recommend to him? (2 x ½ = 1)

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- 2.7 Name the seven members of the diabetic team a new diabetic should ideally see. (7)
- 2.8 He is concerned about his feet as he often has a sensation of pins and needles and his mother had a below knee amputation. Discuss peripheral neuropathy in detail. (9)
- 2.9 What are the two most important factors to prevent neuropathy developing? (2)

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QUESTION 3

- 3.1 Jessica Jones is very concerned about her health as she often feels shaky, tired and dizzy. She craves sweets, chocolates and cake. Her 5 year old niece Amy has recently been diagnosed with type 1 diabetes after being admitted to hospital with DKA. Jessica is worried she may also have diabetes so consults her doctor who suspects reactive hypoglycaemia and sends her to the laboratories for a test.
- 3.1.1 What test would be done to diagnose reactive hypoglycaemia? (1)
- 3.1.2 The test confirms she does have functional reactive hypoglycaemia. What dietary information would you give her to enable her to control the hypoglycaemia? (13)
- 3.1.3 Explain the treatment her niece would have received in hospital for DKA. (10)
- 3.1.4 Describe to her when Amy should be tested for ketones. (3)

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3.1.5 The doctor is considering starting Amy on an insulin pump and the family will need intensive education. You need to explain the following:-

- a) Carbohydrate counting (3)
- b) Insulin: CHO ratios (3)
- c) Insulin sensitivity factor (2)

3.2 The symptoms of congestive heart failure can vary with the degree of congestion. What are the signs and symptoms? (15)

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QUESTION 4

4.1 Premie Naidu (24 years old) is a pregestational diabetic. She was diagnosed at 2 years of age as a type 1 diabetic. Her teenager years were a time of poor control. She has decided to get her act together, to get better blood sugar control, as she now wants to start a family. She is 8 weeks pregnant with her first child. Her current weight is 59 kg and height is 164 cm.

4.1.1 What pre and post prandial blood sugar levels would you need to aim for? (4)

4.1.2 What benefits (if any) would good blood sugar control offer her during her pregnancy? (4)

4.1.3 Work out her BMI. Compare this to the normal BMI range. (1)

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- 4.1.4 She feels guilty about not controlling her blood sugar levels during her teenage years and is concerned that as a consequence her child will be born diabetic. How would you respond to this question? Justify your answer. (1)
- 4.1.5 Her friend who became a diabetic during her pregnancy refused to control her blood sugar levels for the rest of the pregnancy. Discuss the complications that her friend's baby may experience. (5)
- 4.1.6 At what stage during pregnancy should women be screened for GDM? (1)
- 4.1.7 Define GDM (1)
- 4.1.8 What is considered the cause of GDM? (1)
- 4.2 Mr Thirsty is a type 1 diabetic who loves to 'drink with the boys' after work on a Friday evening. This has been causing him a lot of problems controlling his BG levels. He would like you to explain the effect of alcohol on BG levels and give practical advice that he may follow regarding his drinking habits. (20)
- 4.3 The glycaemic index is a very interesting concept, although the ADA state it should not be used as a primary nutrition therapy strategy.
- 4.3.1 Explain how the GI value of a food is calculated. (10)
- 4.3.2 What is the second meal effect? (2)

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