



HØGSKOLEN I SØR-TRØNDELAG

AVDELING FOR MAT- OG MEDISINSK TEKNOLOGI

Kandidatnr:						
Eksamensdato:	5. oktober 2004					
Varighet:	5t					
Fagnummer:	LO210H					
Fagnavn:	Laboratoriemedisin					
Klasse(r):	3					
Studiepoeng:	12					
Faglærer(e):	Kari S. Torbergesen					
Hjelpemidler:						
Oppgavesettet består av:						
Vedlegg består av:						
Merknad:						
Lykke til!						

Jens, 67 years old

Jens is a 67 years old widower. He leads a calm life, sometimes smokes one or two cigarettes, and he is slightly overweight. He has been a diabetic for 30 years. In the beginning the disease was adequately controlled with dietetic measures, but for the last fifteen years he has used insulin.

For many years he has periodically had ulcers in his feet, taking a long time to heal. Since last winter he has been increasingly suffering from pains in the right foot. Late in the spring the big toe and the one next to it became extremely painful and gradually took on a dark discoloration. He spent a long period in hospital, and eventually the doctors came to the conclusion that there was no other choice than to amputate his right leg just below the knee. He was very upset when he received the message, although he was not totally unprepared that this might be the outcome.

After the operation he has gradually accustomed to the use of prosthesis, and step by step he has learned to master the activities of daily life.

Yesterday Jens was sent to the hospital in a hurry. He was in a state of deep mental confusion, and it was hardly possible to obtain contact with him. His respiration was deep and frequent, and there was a strange smell of his breath.

At his arrival in the hospital, a urine sample was found to contain sugar and ketones, and his blood-glucose was elevated. The concentration of kreatinin was $140 \mu\text{mol/l}$, which is over the upper limit of the reference interval.

Treatment was started with administration of insulin and intravenous infusion of saline.

Problem 1

- a) How is the secretion of insulin regulated under normal circumstances?
- b) What are the metabolic consequences of an insufficient production of insulin?

Problem 2

- a) Explain the pathogenesis of
 - oedema
 - shock
- b) Many type II diabetics show a tendency to develop ulcers in their legs and feet. How can this be explained?

Problem 3

- a) Explain the pathological tissue changes that take place in Jens' leg before the amputation.
- b) What risks would Jens run if he did not have his leg amputated?

Continues next page

Problem 4

- a) How can you explain the finding of ketone bodies in the urine sample?
- b) Why is there no accumulation of ketone bodies in the body under normal circumstances?
- c) Why was Jens breathing so rapidly and deeply at his arrival in the hospital?