UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

School of Health sciences

WRITTEN EXAMINATION

Course: Patophysiology and pharmacology

Examination: Written exam 2

Course code: BM544G

Credits for written examination: 3.5

Date: 2024-06-07

Examination time: 8:15-12:30

Examination responsible: Anna Benrick

Teachers concerned: Cathal O'Hare and Katarina Skogfält

Aid at the exam/appendices: No aids allowed

Other: **Write your answers directly in the exam. Use the back of the papers if you need more space.**

Instructions

- ☐ Take a new sheet of paper for each teacher.
- ☐ Take a new sheet of paper when starting a new question.
- ☐ Write only on one side of the paper.
- ☒ Write your name and personal ID No. on all pages you hand in.
- ☒ Use page numbering.
- ☒ Don´t use a red pen.
- ☒ Mark answered questions with a cross on the cover sheet.

Grade points: E ≥ 60%, D ≥ 68%, C ≥ 76%, B ≥ 84%, A ≥ 92%

Examination results should be made public within 18 working days

Good luck!

Total number of pages

UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

Patophysiology

1. Hypothyroidism can result from insufficient production of thyroid hormones due to a variety of molecular mechanisms. Describe the pathophysiology behind Hashimoto´s thyroiditis. (1.5p)

2. You want to examine blood samples from patients with Hashimoto's disease in the lab. You decide to analyze the presence of the specific antibodies usually found present in the disease. Which antibodies do you screen for? (0.5p)

3. Goiter can be seen both in hypo- and hyperthyroidism. Name three underlying causes of goiter and describe the pathophysiological background mechanism. (3p)

UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

4. Describe two factors that can trigger myxedema coma and two symptoms that can be seen. (2p)

5. Hyperthyroidism might lead to symptoms in many organs. Tachycardia can be one of these symptoms. A) Why is that? B) Define which type of arrhythmia tachycardia increases the risk of developing. (1p)

6. Regarding Type 1 Diabetes, describe the pathophysiological condition concerning beta cells, insulin secretion, the insulin receptor, sensitivity for insulin, and the glucose uptake by the cells. Answer with a minimum of one sentence for each question. (5p)

UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

7. Regarding Type 2 Diabetes, describe the pathophysiological condition concerning beta cells, insulin secretion, the insulin receptor, sensitivity for insulin, and the glucose uptake by the cells. Answer with a minimum of one sentence for each question. (5p)

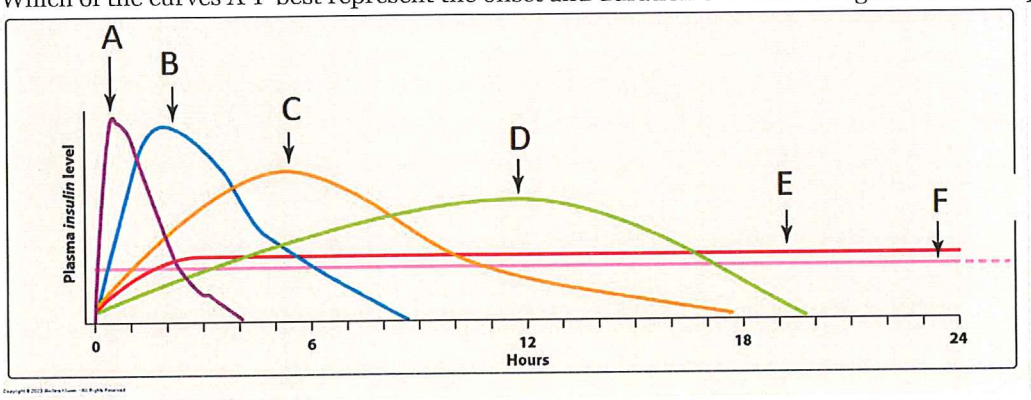
UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

Pharmacology

8. Which of the curves A-F best represent the onset and duration of action of regular insulin? 1p



9. How is insulin modified to produce analogues with varying durations of action? 1p

10. Describe the mechanism of action of sulfonylureas. 3p

UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

11. Describe the mechanism of action of sodium–glucose cotransporter 2 inhibitors (SGLT2) and explain how they can lower blood pressure? 3p

12. What type of infections are a common side effect of sodium–glucose cotransporter 2 inhibitors (SGLT2) due to their mechanism of action? 1p

13. State a therapeutic use of levothyroxine. 1p

14. State two reasons for why levothyroxine (T4) is preferred over liothyronine (T3) in clinical practice. 2p

UNIVERSITY
OF SKÖVDE

Name:_____

Personal ID. No:_____

15. Thiazolidinediones act as agonists at which receptor? 1p

16. Describe the mechanism of action of DPP-4 inhibitors. 2p

17. Why do α-glucosidase inhibitors not cause hypoglycemia when used as monotherapy? Give two reasons. 2p

18. Which two of the following are not common side effects of levothyroxine? Put a cross in the box beside the correct answers. 1p

Nervousness	
Tachycardia	
Cardiac arrhythmias	
Oropharyngeal candidiasis	
Heat intolerance	
Unexplained weight gain	