



UNIVERSITY  
OF SKÖVDE

Personal ID number: \_\_\_\_\_

School of Health sciences

## WRITTEN EXAMINATION

Course: Pathophysiology and pharmacology

Examination: Written exam 1

Course code: BM544G

Credits for written examination: 4.5

Date: 2025-01-13

Examination time: 14:15-18:30

Examination responsible: Anna Benrick

Teachers concerned: Cathal O'Hare and Katarina Skogfält

Aid at the exam/appendices: No aids allowed

Other

### 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  $E \geq 60\%$ ,  $D \geq 68\%$ ,  $C \geq 76\%$ ,  $B \geq 84\%$ ,  $A \geq 92\%$

**Examination results should be made public within 18 working days**

*Good luck!*

Total number of pages



## Pathophysiology

1. Describe the role of low-density lipoprotein (LDL) and high-density lipoprotein (HDL) in the development of hyperlipidemia. How do these lipoproteins affect cardiovascular risk? (4p)
2. Explain the pathophysiological mechanisms of ischemic stroke, focusing on reduced cerebral blood flow and neuronal injury. How do these contribute to neurological symptoms? Also, describe two different types of plaque and what is the pathophysiological outcome between these two. (5p)

[illegible]



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6. Which of the following is a symptom associated with hyperlipidemia? (0.5p)

**Options:**

- a) Shortness of breath
- b) Typically asymptomatic
- c) Frequent headaches
- d) Joint pain

7. What is a common symptom of asthma? (0.5p)

**Options:**

- a) Persistent dry cough without breathing issues
- b) Wheezing, shortness of breath, and chest tightness, especially during or after physical activity
- c) Painful urination
- d) Swelling in the legs

8. Which of the following methods is primarily used to diagnose hypertension? (0.5p)

**Options:**

- a) Blood pressure measurement
- b) Lipid panel
- c) Serum creatinine
- d) Echocardiogram

9. Which test is most useful in diagnosing hyperlipidemia? (0.5p)

**Options:**

- a) Liver function test
- b) Lipid panel
- c) Chest X-ray
- d) Complete blood count (CBC)



10. True or False: Ischemic stroke is primarily caused by a rupture of a blood vessel in the brain, leading to bleeding and swelling. (0.25p)
  
11. True or False: Atherosclerosis occurs when fatty plaques accumulate inside blood vessels, leading to narrowed arteries and potentially causing heart attacks or strokes. (0.25p)
  
12. True or False: Myocardial infarction occurs when there is a complete blockage of a coronary artery, leading to irreversible damage to the heart muscle. (0.25p)
  
13. True or False: In asthma, T-helper 2 (Th2) cells mediate the inflammatory response, leading to the release of cytokines like IL-4 and IL-5, which promote eosinophil recruitment and IgE production. (0.25p)



## Pharmacology

14. Describe the mechanism of action of P2Y<sub>12</sub> receptor antagonists. 3p
15. Explain how genetic polymorphism of CYP2C19 can affect the clinical response of patients taking the P2Y<sub>12</sub> antagonist clopidogrel. 2p
16. Why do anticholinergics (antimuscarinics) have little or no action at skeletal neuromuscular junctions (NMJs) or autonomic ganglia? 1p
17. Corticosteroids inhibit the release of arachidonic acid through inhibition of which enzyme? 1p



18. Why should patients be instructed to rinse their mouth in a “swish-and-spit” method with water following use of the inhaled corticosteroids? 2p
19. What property of aspirin leads to the suppression of platelet aggregation for the life of the platelet? 1p
20. How do dihydropyridine and non-dihydropyridine calcium channel blockers differ in terms of their affinity for vascular and cardiac calcium channels? 2p
21. Describe the mechanism of action of bile acid sequestrants. 3p



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22. Why should certain drugs such as warfarin be taken at least 1 to 2 hours before, or 4 to 6 hours after, bile acid sequestrants? 2p

23. Describe the mechanism of action of ACE inhibitors. 3p

24. Elevated liver enzymes, myalgia and myopathy are commonly reported side effects of which of the following groups of drugs? Put a cross beside the correct answer. 1p

HMG CoA reductase inhibitors	
Fibrates	
Bile acid sequestrants	
Coumarins (warfarin)	
Angiotensin II receptor blockers	





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25. Dizziness, headache, peripheral edema and flushing are commonly reported side effects of which of the following groups of drugs? Put a cross beside the correct answer. 1p

Angiotensin II receptor blockers	<input type="checkbox"/>
ACE inhibitors	<input type="checkbox"/>
Thiazide diuretics	<input type="checkbox"/>
$\beta$ -Blockers	<input type="checkbox"/>
Calcium channel blockers	<input type="checkbox"/>

26. State a therapeutic use for warfarin (coumarins). 1p