



**UNIVERSITI KUALA LUMPUR  
ROYAL COLLEGE OF MEDICINE PERAK**

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**FINAL EXAMINATION  
JULY 2025 SEMESTER**

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**COURSE CODE** : RPD21803  
**COURSE NAME** : AUTONOMIC PHARMACOLOGY  
**PROGRAMME NAME** : DIPLOMA IN PHARMACY  
**DATE** : 17 SEPTEMBER 2025  
**TIME** : 02:00 PM – 04:00 PM  
**DURATION** : 2 HOURS

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**INSTRUCTIONS TO CANDIDATES**

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1. Please **CAREFULLY** read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of **TWO (2)** sections; Section A and Section B.
4. Answer **ALL** questions in Section A. For Section B, answer **THREE (3)** questions where Question 1 and Question 2 are **COMPULSORY**, answer either Question 3 or Question 4.
5. Please write your answers on the OMR answer script and answer booklet provided.
6. Answer all questions in English language **ONLY**.

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**THERE ARE 13 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.**

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## SECTION A (Total: 25 marks)

**INSTRUCTION: Answer ALL questions.**

**Please use the objective answer sheet provided.**

1. Select the **CORRECT** statement that describes insomnia.
  - A. A condition characterized by irregular breathing patterns during sleep.
  - B. A disorder involving difficulty initiating or maintaining sleep.
  - C. A neurological condition marked by vivid dreams and nightmares.
  - D. A behavioral disorder that causes excessive movement during sleep.
  
2. A patient avoids social situations due to fear of embarrassment. This may indicate \_\_\_\_\_.
  - A. Obsessive-compulsive disorder
  - B. Post-traumatic stress disorder
  - C. Social anxiety disorder
  - D. Specific phobia
  
3. Which neurotransmitter is most associated with anxiety disorders?
  - A. Acetylcholine
  - B. Noradrenaline
  - C. Glutamate
  - D. GABA
  
4. Choose the primary function of the fallopian tubes.
  - A. To produce hormones
  - B. To transport eggs from the ovaries to the uterus
  - C. To nourish the developing fetus
  - D. To serve as a passageway for menstrual flow
  
5. What is hypothyroidism?
  - A. Overactivity of the adrenal gland
  - B. Underproduction of thyroid hormones
  - C. Overproduction of thyroid hormones
  - D. Enlargement of the parathyroid gland

6. A false belief held despite clear evidence to the contrary is known as \_\_\_\_.
- A. hallucination
  - B. delusion
  - C. extrapyramidal side effects
  - D. metabolic abnormalities
7. Which of the following is a genetic risk factor for schizophrenia?
- A. Having a close relative with the disorder
  - B. Highly polluted environment
  - C. Inadequate prenatal care
  - D. High-stress environment
8. Which neurotransmitter is most associated with the positive symptoms of schizophrenia?
- A. Serotonin
  - B. Dopamine
  - C. Glutamate
  - D. GABA
9. Choose the **CORRECT** modifiable risk factor for schizophrenia.
- A. Family history of schizophrenia
  - B. Drugs misuse
  - C. Being male
  - D. Advancing age
10. Which autoimmune condition is a common cause of hypothyroidism?
- A. Addison's disease
  - B. Hashimoto's disease
  - C. Graves' disease
  - D. Cushing's syndrome
11. The metabolic rate in hyperthyroidism is usually \_\_\_\_.
- A. decreased
  - B. increased
  - C. normal
  - D. unaffected

12. Which population is at higher risk of developing Type 2 diabetes?
- A. Caucasians
  - B. East Asians
  - C. South Asians
  - D. Scandinavians
13. A random venous plasma glucose of  $\geq 11.1$  mmol/L with symptoms suggests \_\_\_\_\_.
- A. normal glucose metabolism
  - B. impaired fasting glucose
  - C. diabetes mellitus
  - D. hypoglycemia
14. A classic symptom of uncontrolled diabetes includes \_\_\_\_\_.
- A. bradycardia
  - B. constipation
  - C. polyuria
  - D. photosensitivity
15. Which of the following best describes an absence seizure?
- A. Rhythmic jerking of limbs
  - B. Sudden scream followed by confusion
  - C. Brief loss of awareness
  - D. Prolonged muscle stiffness
16. Which type of seizure involves muscle rigidity?
- A. Clonic
  - B. Myoclonic
  - C. Tonic
  - D. Atonic

17. Which of the following can be considered a provoked seizure?
- A. Genetic epilepsy
  - B. Seizure due to high fever
  - C. Absence seizure
  - D. Juvenile myoclonic epilepsy
18. What is the opposite mood phase to depression in bipolar disorder?
- A. Happiness
  - B. Mania
  - C. Sadness
  - D. Anxiety
19. Which neurotransmitter is most related to depression?
- A. Acetylcholine
  - B. Dopamine
  - C. Serotonin
  - D. Glutamate
20. Which stage of anesthesia involves the patient being unconscious but still having some reflexes and possible excitement?
- A. Stage 1
  - B. Stage 2
  - C. Stage 3
  - D. Stage 4
21. What is the primary neurotransmitter deficiency in Parkinson's disease.
- A. Serotonin
  - B. Acetylcholine
  - C. Dopamine
  - D. Noradrenaline

Question 22 to 25 requires the following answer.

A	B	C	D
I and III	II and IV	I, II and III	II, III and IV

22. Select the **CORRECT** pathophysiology of Alzheimer's.
- Abnormal build-up of amyloid
  - Abnormal build-up of p-tau proteins
  - Cholinergic degeneration
  - Increased acetylcholine production
23. Which of the following are the **CORRECT** statements about ovum?
- It is released during menstruation
  - It is the largest cell in the human body
  - It carries only X chromosomes
  - It can live up to 24 hours after ovulation
24. Choose the **CORRECT** symptoms of Type 2 diabetes.
- Sudden weight gain
  - Wounds that won't heal
  - Frequent urination
  - Always hungry
25. Which of the following are common features of migraine headache?
- Unilateral head pain
  - Throbbing pain
  - Pain worsened by physical activity
  - High-grade fever

## SECTION B (Total: 75 marks)

**INSTRUCTION:** This section consists of **FOUR (4)** modified essay questions (MEQ).

You are required to answer **THREE** questions in the answer booklet provided.

**Question 1 and Question 2 are COMPULSORY.**

**Answer either Question 3 OR Question 4.**

**Question 1**

- (a) Mr. Rizal, a 45-year-old man with schizophrenia, was started on Haloperidol to manage his hallucinations and aggressive behavior. While his condition showed some improvement, his psychiatrist felt that additional support was needed to address his remaining symptoms and overall functioning. Quetiapine was added to his treatment plan, and since then, Mr. Rizal has become more stable, calmer, and more engaged during his regular follow-up visits.
- Differentiate between Haloperidol and Quetiapine in terms of their type of antipsychotic and side effect profiles.  
(4 marks)
  - List **TWO (2)** common side effects Mr. Rizal should be monitored for when taking Quetiapine.  
(2 marks)
- (b) Mr. Afif, a 28-year-old office worker, has been experiencing frequent distressing thoughts that he finds difficult to control. To cope, he engages in repeated handwashing throughout the day, which disrupts his work and personal routine. He also reports feeling tired and having trouble sleeping lately. After several sessions of behavioural therapy, he started on Clomipramine. Over the next few weeks, he showed improvement in his daily functioning and was able to concentrate better at work.
- Based on Mr. Afif behaviour, predict the health condition that he is experiencing. Justify your answer.  
(2 marks)
  - Explain how Clomipramine works in managing Mr. Afif's health condition.  
(2 marks)

- iii. Clomipramine is also known to block muscarinic receptors. Identify **TWO (2)** side effects that result from this action. (2 marks)
- (c) Amir, a 21-year-old university student with newly diagnosed epilepsy, experiences occasional myoclonic jerks in the morning. He is currently being treated and takes Simvastatin for familial hypercholesterolemia.
- i. Epilepsy is a chronic neurological disorder characterized by recurrent, unprovoked seizures. State **TWO (2)** risk factors associated with the development of epilepsy. (2 marks)
- ii. Based on the above scenario, identify **TWO (2)** antiepileptic medication that may not be suitable for Amir. Justify your answer. (4 marks)
- iii. Amir is worried about living a normal life with epilepsy. Suggest **TWO (2)** practical lifestyle adjustments he can make. (2 marks)
- (d) Differentiate between Propofol and Novocaine in terms of:
- The area of body affected
  - Level of consciousness
- (4 marks)
- (e) State **ONE (1)** side effect of general anesthetics. (1 mark)

## Question 2

- (a) Mr. Daniel, a 40-year-old engineer, has been feeling restless, overwhelmed, and has trouble concentrating at work. He reports frequent episodes of palpitations and sweating before meetings. After being assessed, he was diagnosed with generalized anxiety disorder and was started on Alprazolam to help manage his symptoms.
- i. Name the pharmacological classification of Alprazolam.  
(1 mark)
  - ii. State how Alprazolam affects neurotransmitters in managing anxiety.  
(1 mark)
  - iii. Explain **TWO (2)** reasons why the use of drugs like Alprazolam should be avoided in elderly patients whenever possible.  
(4 marks)
- (b) Puan Mariam, a 75-year-old woman, was diagnosed with moderate Alzheimer's disease. She had previously tried Donepezil but experienced some side effects. Her doctor switched her to Rivastigmine transdermal patch which she applies every morning. Her son observes that she is now more focused during conversations and has fewer mood swings.
- i. Explain the mechanism of action of Rivastigmine in Alzheimer's disease.  
(2 marks)
  - ii. State **TWO (2)** common side effects of Rivastigmine that caregivers should monitor.  
(2 marks)
  - iii. Besides Rivastigmine, name another class of drugs that can be used in Alzheimer's disease and explain when it is indicated.  
(2 marks)

- (c) Encik Rahim, a 54-year-old man newly diagnosed with Parkinson's disease, was started on Pramipexole. A few weeks later, his wife reported that he had become increasingly drowsy during the day, had vivid dreams, and showed signs of impulsive behavior such as excessive online shopping. The doctor identified these as possible side effects of Pramipexole and decided to reduce the dose and monitor closely.
- i. Identify when drugs like Pramipexole is usually indicated in Parkinson's disease treatment. Justify your answers.  
(4 marks)
  - ii. Name **TWO (2)** drugs used to treat Parkinson's disease, other than Pramipexole.  
(2 marks)
- (d) Mr. Michael, a 45-year-old office worker, comes to the pharmacy complaining of severe headaches that he has been experiencing twice a month. Mr. Michael mentions that his doctor diagnosed him with migraine and that he used to take Sumatriptan and Naproxen to manage them. However, he stopped taking these medications a few months ago and is now looking for advice on how to manage his symptoms.
- i. Compare Sumatriptan and Naproxen in the treatment of migraine in terms of their:
    - Pharmacological classification
    - Timing of administration  
(4 marks)
  - ii. Explain how Sumatriptan works in treating migraines.  
(3 marks)

Answer either Question 3 OR Question 4

**Question 3**

- (a) List **TWO (2)** non-hormonal methods of contraception. (2 marks)
- (b) Explain the mechanism of action of Levonorgestrel. (2 marks)
- (c) State the time window for effective use of Levonorgestrel as emergency contraception. (1 mark)
- (d) Mr. Kahar, a 58-year-old man with Type 2 diabetes, has been taking medication X twice a day. The doctor explains that the medication works by reducing glucose production in the liver and helps his body use insulin more effectively. Mr. Kahar also mentions that he experiences occasional nausea and stomach discomfort.
- i. Identify medication X and state **ONE (1)** way to manage the above side effects. (2 marks)
  - ii. Explain why medication X is contraindicated in severe renal impairment. (2 marks)
  - iii. A few months later, Mr. Kahar returns to his doctor for a follow-up. Despite his efforts with medication X, his blood sugar levels are still not well-controlled. The doctor decides to prescribe Empagliflozin to help better manage his diabetes. List **TWO (2)** side effects of Empagliflozin and provide counselling on how to manage them. (4 marks)

- (e) Ms. Lina, a 42-year-old schoolteacher, visits the clinic complaining of fatigue, weight gain despite decreased appetite, and feeling cold even when others are comfortable. Her past medical history includes Type 1 diabetes mellitus and Rheumatoid Arthritis (RA). She does not smoke or consume alcohol and has never had neck surgery or radiation exposure. She recently started a low-carb diet and has been under work-related stress due to a tight exam schedule.
- i. Based on the above scenario, identify **TWO (2)** risk factors that may contribute to Ms. Lina's thyroid disease.  
(2 marks)
- ii. Identify the primary drug used in the treatment of the above thyroid disease and explain how patients should be counseled on its use to optimize its effectiveness.  
(4 marks)
- (f) List **TWO (2)** different routes of corticosteroid administration and provide an example condition treated via each route.  
(4 marks)
- (g) Define anabolic steroids.  
(2 marks)

## Question 4

- (a) State **TWO (2)** ways combined oral contraceptives (COCs) prevent pregnancy. (2 marks)
- (b) A patient misses one tablet of Yasmin®. Provide **TWO (2)** actions should she take. (2 marks)
- (c) List **ONE (1)** common side effect of COCs. (1 mark)
- (d) Ms. Aida, a 45-year-old woman with Type 2 diabetes and a BMI of 35, was recently prescribed injection Y to help manage both her blood sugar and weight. Since starting the medication, she has noticed a reduced appetite and has already lost 3 kg over the past month.
- Based on the scenario above, identify **TWO (2)** possible medications that Ms. Aida could be using. (2 marks)
  - Explain how medication Y works in reducing body weight. (2 marks)
  - Predict **TWO (2)** common side effects of medication Y and explain how to manage or counsel patients on them. (4 marks)
- (e) Ms. Cassy, a 35-year-old administrative officer, visits the clinic with complaints of rapid heartbeat, unintentional weight loss despite increased appetite, difficulty sleeping, and frequent bowel movements. Her medical history reveals that she had undergone a thyroidectomy five years ago. Her father has a history of the same thyroid condition. She does not smoke but occasionally consumes caffeinated drinks. Ms. Cassy has also been under significant emotional stress due to recent work transitions.
- Based on the above scenario, identify **TWO (2)** risk factors that may contribute to Ms. Cassy's thyroid disease. (2 marks)
  - Explain **TWO (2)** common drug regimens that are being used in the treatment of the above thyroid disease. (4 marks)

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(f) Explain the importance of gradually reducing corticosteroid doses rather than stopping them abruptly, especially after prolonged use.

(4 marks)

(g) List **TWO (2)** medical uses of anabolic steroids.

(2 marks)

END OF EXAMINATION PAPER