

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

SELECTION EXAMINATION IN MD (PSYCHIATRY) – MAY/JUNE 2025

Date:- 27th June 2025

Time:- 9.00 a.m. – 12.00 noon

STRUCTURED ESSAY QUESTION PAPER

Answer all ten (10) questions.

Answer each question in a separate book.

1. A 58-year-old woman presents to the emergency department with a high-grade fever lasting for two days, right-sided abdominal pain, vomiting, and confusion. She has a history of poorly controlled type 2 diabetes mellitus for five years and recurrent urinary tract infections. Three months ago, she was treated for a culture-positive urinary tract infection. Currently, she is taking metformin, empagliflozin, gliclazide, and atorvastatin. On examination, she is febrile, and her GCS is 14/15. Her heart rate is 110 beats/minute, blood pressure is 100/80 mmHg, and oxygen saturation in room air is 97%. Her abdominal examination reveals tenderness in the right renal angle, and the rest of the physical examination is unremarkable. Her random blood sugar on admission is 260 mg/dL.

1.1. What is the most likely diagnosis? (10 marks)

1.2. List five (05) investigations that you would perform in the initial evaluation of this patient. (10 marks)

1.3. State the most important information you will retrieve from her records regarding initial therapy. Give reasons for your answer. (10 marks)

1.4. Briefly outline the steps in the initial management of this patient. (30 marks)

On the second hospital day, the patient becomes drowsy and confused. Her capillary blood glucose is found to be 42 mg/dL.

1.5. List two (02) possible causes of hypoglycaemia in this patient. (10 marks)

1.6. List two (02) neuropsychiatric manifestations of hypoglycaemia. (10 marks)

1.7. Briefly outline the acute management of hypoglycaemia in this patient. (20 marks)

Contd...../2-

2.

2.1. Describe the physiology of the human sexual response. (40 marks)

2.2. Briefly describe how the following factors contribute to low sexual desire:

2.2.1. Psychological (30 marks)

2.2.2. Physical (30 marks)

3. State three (03) possible psychopathological phenomena in the following scenarios:

3.1. A 29-year-old woman reports repetitive, unpredictable episodes lasting 1-2 minutes, often accompanied by distressing abdominal sensations. She shouts, describing that she is trapped in a burning forest. She cannot recall the event entirely. However, her family members observed her being motionless initially, followed by displaying repetitive gestures resembling extinguishing flames. (40 marks)

3.2. A 32-year-old man presents with the fixed belief that he possesses two left hands; one authentic and the other an artificial one implanted by a covert agency. He is convinced the implanted hand transmits his thoughts to external operatives. (30 marks)

3.3. On being asked 'where are you going?' The patient replies, "I was going to the canteen to buy rice, which reminds me – did you know? the traffic is very heavy these days during our ancient king's time? My son studied physics and he grew manioc in the home garden." (30 marks)

4. Briefly describe the following:

4.1. Dissociative fugue (30 marks)

4.2. Flashbulb memories (30 marks)

4.3. Illusions (40 marks)

5. Write notes on the following:

5.1. "Net pharmacological actions" of quetiapine. (40 marks)

5.2. Pharmacological basis of the side effects of clozapine. (30 marks)

5.3. Pharmacokinetic differences of paliperidone from risperidone. (30 marks)

6. Explain the physiological basis of the following:

- 6.1. A person exhibited features of opioid toxicity after he consumed the previously used amount of heroin following six months of abstinence. (30 marks)
- 6.2. The rate of elimination of alcohol from blood does not depend on blood alcohol concentration. (20 marks)
- 6.3. A person with alcohol dependence syndrome was treated with intravenous dextrose infusion due to hypoglycaemia. He developed ataxia, ophthalmoplegia and confusion the following morning. (20 marks)
- 6.4. Use of benzodiazepines in the treatment of alcohol withdrawal symptoms. (30 marks)

7. Discuss the psychological processes involved in the following examples:

- 7.1. The Middle East conflict expands beyond the initial two countries, leading to the involvement of additional states. (40 marks)
- 7.2. A minority political group has continued to work hard with determination over many years despite repeated persecution. (20 marks)
- 7.3. A student shows a strong preference for music while avoiding other subjects. She attends school only on the days when she has music and complains of some illness to skip other days. Later, she forced herself to develop an interest in the other subjects where she achieves high marks. (40 marks)

8.

- 8.1. State the neuroanatomical structures of the limbic system and its connecting pathways. (50 marks)
- 8.2. Briefly discuss the role of the limbic system in the following:
 - 8.2.1. Fear and threat response (25 marks)
 - 8.2.2. Memory formation (25 marks)

9. Briefly describe the psychopharmacological basis of the following:

9.1. Atomoxetine to treat attention deficit hyperactivity disorder. (30 marks)

9.2. Memantine reduces cognitive decline in Alzheimer's disease but has no effect on the memory of normal individuals. (30 marks)

9.3. Nicotine causes dependence. (40 marks)

10.

10.1. Ketamine is an anaesthetic agent now marketed as a fast-acting antidepressant with a novel mode of action. In a study to examine the efficacy of ketamine, 40 adult patients with major depressive disorder who were scheduled for routine surgery were randomized to a single infusion of ketamine (0.5 mg/kg – 1 mg/kg) or placebo (saline) during usual surgical anaesthesia.

All participants, investigators and direct-patient-care staff were masked to treatment allocation. The primary outcome was depression severity at 1, 2 and 3 days' post-infusion. After all follow-up visits there was no evidence of effect of treatment assignment on the primary outcome (-5.82, 95% confidence interval -13.3 to 1.64, $P = 0.13$). Both groups when questioned post intervention failed to guess the treatment they had received correctly. No patients were on opioid antagonist or partial agonist therapy at the time.

10.1.1. Give two (02) possible reasons for the above observation. (20 marks)

10.1.2. Explain modifications needed in the trial design to detect true antidepressant effects of ketamine. (50 marks)

10.2. Explain the advantages and disadvantages of "efficacy trials" and "effectiveness trials." (30 marks)