

# Question Paper

Exam Date & Time: 10-01-2022 (10:20 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION SECOND MBBS DEGREE (CBME) EXAMINATION – JANUARY 2022 SUBJECT: PHARMACOLOGY - PAPER I

Marks: 80

Duration: 160 mins.

**All questions are compulsory.**

**Illustrate your answers with neatly drawn and labelled diagram wherever necessary.**

- 1A) Explain the steps in cholinergic transmission using a diagram. (4)
  - 1B) Enumerate the cholinergic receptors. (3)
  - 1C) Is acetylcholine used clinically? Explain with reasoning. (1)
  - 1D) Classify anticholinesterases with suitable examples. (2)
2. A 27-year-old lady was prescribed oral iron therapy for iron deficiency anemia. After one month her haemoglobin had not improved. On detailed enquiry she revealed that she had severe heartburn, anorexia and nausea after she started taking the iron tablets, so she was taking antacids daily to relieve heartburn.
- 2A) Why was there no improvement in haemoglobin level despite iron therapy? (2)
  - 2B) Were the symptoms she developed related to iron therapy? Explain. (1)
  - 2C) What should be the next step to treat her anemia? (1)
  - 2D) Mention two oral and two parenteral iron preparations. (2)
  - 2E) What are the indications of parenteral iron therapy? (4)
3. Answer the following:
- 3A) Giving suitable examples explain how pH and presence of other drugs affect absorption of drugs. (4)
  - 3B) Name one short acting and one long acting  $\beta$  agonist. Explain with pharmacological basis the indications of both the drugs in bronchial asthma and enumerate their adverse effects.(4)
  - 3C) A 44-year-old man develops acute swelling and pain in the metatarsophalangeal joint. He has had three such episodes earlier in the month, each of which subsided after taking oral diclofenac sodium for 2-3 doses. His doctor finds his serum uric acid levels high and so advises prophylactic therapy. Mention two drugs which may be prescribed to this patient and explain the mechanism of action of both.(4)
  - 3D) A 65-year-old male patient with heart failure was started on furosemide and digoxin. After giving the oral loading dose of digoxin, the patient was on a maintenance dose of 0.25 mg daily. On the third day, the patient complained of vomiting and ECG showed ventricular ectopics. Why was a loading dose of digoxin given? Why did the patient develop ventricular ectopics? Could this have been precipitated by furosemide? Explain. (1+1+2 = 4 marks)

- 3E) Compare and contrast the cardiovascular effects of adrenaline and noradrenaline. (4)
- 3F) Which phase of clinical trial is done after a drug is marketed? Why are such studies necessary? (4)
- 3G) Name two drugs contraindicated in pregnancy. Explain how drugs can affect the foetus at 3 stages of its development. (4)
- 3H) A 21-year-old lady presents with complaints of episodes of unilateral pulsatile headache for the past two years. Headache is preceded by anorexia, nausea and vomiting. The headache is relieved by paracetamol but recently it has become more severe and frequent, recurring almost every week. Enumerate four drugs that the patient may be advised to take regularly to prevent the episodes. Explain the contraindications to the use of sumatriptan.(4)
- 3I) What are the important differences between verapamil and nifedipine? Explain one use for each. (4)
- 3J) Explain one treatment regimen (with dose and duration) for H. pylori infection. Explain the rationale for combining the drugs (4)
- 3K) Explain microsomal enzyme induction and its clinical implications giving suitable examples.(4)
- 3L) Explain the mechanism of action and adverse effects of nitrates. (4)
- 3M) A 5-year-old boy was brought to the casualty with sudden onset torticollis. The head was tilted to one side and neck was rigid. The teeth were clenched, and he was not speaking. The parents inform that he had vomited twice in the morning for which the local doctor had given an injection, two hours after which the boy had developed these symptoms. Mention the drug which plausibly caused this effect and explain its mechanisms of anti-emetic action. Why did this adverse effect occur? (4)
- 3N) A 48-year-old male patient, a known case of hypertension on hydrochlorothiazide 25mg for the past two years came to the out-patient department for a routine follow up. On examination his blood pressure was 140/88 mm of Hg. On investigations, his two-hour post prandial blood glucose was 198mg/dL. It was decided that he would be advised lifestyle modification for his diabetes. Which antihypertensive drug(s) should be preferred in this patient? Justify with reasons. Can hydrochlorothiazide be continued in this patient? Explain. (4)
- 3O) A 2-year-old child who developed diarrhoea was taken to the hospital, where the paediatrician advised oral rehydration and explained how to administer it. The mother was also explained when it would be necessary to re-visit the hospital. Explain how oral rehydration would benefit. Was the paediatrician right in not prescribing any other antidiarrhoeal? Justify.(4)

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# Question Paper

Exam Date & Time: 11-01-2022 (10:20 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION SECOND MBBS DEGREE (CBME) EXAMINATION – JANUARY 2022 SUBJECT: PHARMACOLOGY - PAPER II

Marks: 80

Duration: 160 mins.

**All questions are compulsory.**

1. Ravi, aged 20 years, is a type 1 diabetes mellitus patient. He has been on basal bolus insulin regimen following which his blood glucose level has been well maintained. He develops a severe respiratory tract infection. With the onset of infection, his appetite was poor and he stopped taking insulin. Later, he presented to the emergency department with nausea, vomiting and abdominal pain. On examination, he is dehydrated and has tachycardia. Laboratory investigation shows a blood glucose level of 500 mg/dL, arterial pH 7.1 and urine positive for ketone bodies.
  - 1A) List four commonly prescribed insulins. (2)
  - 1B) Explain basal bolus insulin regimen. (2)
  - 1C) How do you manage this case? (4)
  - 1D) Name two oral antidiabetic drugs belonging to different groups and explain the mechanism of action of any one of them.(2)
  
2. A 40-year-old male presents with fever, chills and rigor. He gives a history of travel to an area endemic for malaria. Peripheral blood smear reveals P vivax .
  - 2A) Mention various stages of life cycle of P vivax with an example of a drug acting at each stage. (4)
  - 2B) Write the treatment for this patient. (3)
  - 2C) Mention one example of artemisinin based combination therapy (ACT) with basis for the combination.(3)
  
3. Answer the following:
  - 3A) Comment on the following combinations with an indication for their use: (4)
    - i) Levodopa with carbidopa.
    - ii) Lignocaine with adrenaline.
  - 3B) A 10-year-old child is brought to the pediatrician. The mother complains that the child suddenly stops his activity, gives a blank stare for about 10 seconds and then resumes his activities. The episodes have increased over the past two months. EEG reveals generalized 3-Hertz spike and wave discharges when the child is asked to hyperventilate. (4)
    - i) Mention two drugs effective for the treatment of this patient and explain their mechanism of action.
    - ii) What precaution should be taken when changing antiepileptic drug in a patient?

- 3C) Define preanesthetic medication. Mention three objectives of preanesthetic medication with a drug used for each. (4)
- 3D) A patient is prescribed tramadol for postoperative pain following exploratory laparotomy: (4)
- Explain the mechanism of analgesia produced by tramadol.
  - Explain two contraindications for opioids.
- 3E) Name two selective serotonin reuptake inhibitors. Mention their advantages over tricyclic antidepressants. (4)
- 3F) A 27-year-old male visits the doctor with complaint of difficulty in falling asleep at night and frequent awakenings. As a result, he feels drowsy and tired throughout the day. He is prescribed zolpidem. (4)
- Write the mechanism of action of zolpidem. Mention two other drugs belonging to the same group.
  - Mention four differences between zolpidem and diazepam.
- 3G) Following treatment with prednisolone for systemic lupus erythematosus, 25-year-old Rima had elevated blood glucose levels and she complained of increased thirst and urination. She has no history of diabetes. (4)
- Explain how prednisolone produced the above effects.
  - Name two long acting glucocorticoids.
  - Mention two measures to minimize HPA axis suppression on long term use of glucocorticoids.
- 3H) Name two bisphosphonates and explain their mechanism of action. What instructions should be given to the patient while prescribing oral bisphosphonates?(4)
- 3I) Explain the mechanism of action and adverse effects of combined oral contraceptive pills. (4)
- 3J) A patient recently diagnosed with drug sensitive tuberculosis has been receiving antitubercular drugs. After few months of treatment, he complains of numbness in the extremities. (4)
- List the drugs used for treatment of tuberculosis in this patient.
  - Mention the drug which caused the above symptom with mechanism for it.
- 3K) Explain 'suprainfection' and 'chemoprophylaxis' with suitable examples. (4)
- 3L) A HIV positive patient develops *Pneumocystis jiroveci* pneumonia. He is prescribed cotrimoxazole. (4)
- What is cotrimoxazole? Explain sequential blockade by cotrimoxazole.
  - Mention the first line antiretroviral drugs for treatment of this patient.
- 3M) Mention four differences between tetracycline and doxycycline. Explain why tetracyclines are contraindicated in pregnant women and young children. (4)
- 3N) Mention the preferred drug for treatment of neurocysticercosis with basis for its use. (4)
- 3O) Mention two tissue and two luminal amebicides. Explain the interaction between alcohol and a tissue amebicide. (4)

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