

# Question Paper

Exam Date & Time: 14-Dec-2022 (10:00 AM - 01:00 PM)

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**SECOND PROFESSIONAL YEAR MBBS DEGREE EXAMINATION - DECEMBER 2022**  
**SUBJECT: PHARMACOLOGY - PAPER I**  
**(CBME BATCH)**

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

**Answer all the questions.**

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

- 1) A 68-year-old woman has symptoms of angina when she climbs stairs or engages in strenuous activity. She is prescribed nitroglycerine to take prophylactically before she engages in any activity that might cause angina symptoms. She is advised to place the nitroglycerine tablet under her tongue a couple of minutes before strenuous activity to prevent angina.
  - 1A) Why is this route of administration used for this drug? (2 marks)
  - 1B) Explain the factors that affect absorption of drugs. (5 marks)
  - 1C) Explain the terms bioavailability and bioequivalence. (3 marks)
  
- 2) A 45-year-old lady presents with pain and stiffness of the smaller joints of the hand especially in the morning. Physical examination reveals symmetric polyarthritis of hands. Radiologically there is narrowing of the joint space and erosions. Anti-CCP antibodies and rheumatoid factor, an IgM antibody directed against the Fc region of IgG, are positive.
  - 2A) Classify the drugs that can be used in this patient with suitable examples. (4 marks)
  - 2B) Which drug will you start in this patient initially? Mention its mechanism of action and the regimen. (2 marks)
  - 2C) Suppose she does not respond after few months and worsens, what is the alternate drug? Explain the pharmacological basis for the same. (2 marks)
  - 2D) Enumerate the adverse effects of any two agents used in this condition. (2 marks)
  
- 3) **Answer the following:** (15 X 4 marks = 60 marks)
  - 3A) What are the advantages and disadvantages of intravenous over oral route of drug administration?
  - 3B) How is the causality assessment of adverse drug reactions done? Which practices can minimize the occurrence of adverse drug reactions?
  - 3C) A 55-year-old patient presents to the casualty in a state of shock. His BP is 80/50 mm Hg. Between epinephrine and norepinephrine, which would you select in this patient and why? What are the other uses of epinephrine?
  - 3D) A lady aged 55 years was brought at night to the hospital emergency with severe breathlessness and wheezing. Chest auscultation revealed marked bronchoconstriction. She was administered an anticholinergic drug by inhalational route. Identify the drug. What are its advantages over atropine? Mention two other atropine substitutes with their clinical indications.
  - 3E) A 62-year-old male was on warfarin for stroke prevention in atrial fibrillation. During routine monitoring, he was found to have an INR of 10.5 without bleeding. How will you treat this

patient? Explain the mechanism of action of warfarin. Mention other anticoagulants effective orally.

- 3F) A 60-year-old man presents to the casualty with crushing chest pain. An ECG shows ST segment elevation. She was diagnosed to be suffering from acute myocardial infarction. Enumerate the fibrinolytics which may be administered in this patient along with pharmacological basis. Her symptoms resolve, but later she begins to vomit up blood. What is the drug to be administered now? How does it act?
- 3G) List the cholinergic receptors. Explain the muscarinic actions of acetylcholine.
- 3H) A 10-year-old girl has severe asthma, which required four hospitalizations in the last year. Physician has put her on some prophylactic therapy that has greatly reduced the frequency of these severe attacks. Enumerate the drugs with route of administration which might have been useful in this girl. Explain the mechanism of action of any one.
- 3I) Compare and contrast loperamide and racecadotril.
- 3J) A 30-year-old male complains of bloody diarrhea, lower abdominal cramps and fecal urgency. Stool study is negative for pathogens. Sigmoidoscopy shows mucosal edema, friability, mucopus, and erosions. A diagnosis of ulcerative colitis is established. Enumerate the drugs that are useful in this patient. Write the mechanism of action and adverse effects of any one of them.
- 3K) A 28-year-old patient complains of epigastric pain which gets relieved by food or antacids. Upper GI endoscopy shows ulcers in the duodenum. He is negative for H. pylori. Mention the drugs that inhibit acid secretion that can be prescribed to him. Explain the mechanism of two classes of gastric acid secretion inhibitors.
- 3L) A 50-year-old patient has exertional dyspnea, orthopnea and elevation of jugular venous pulse. The left ventricular ejection fraction is 40%. He is diagnosed to be having heart failure. Enumerate the drugs which arrest disease progression and prolongation of survival. Explain the mechanism of action of any two such groups of drugs.
- 3M) Explain the mechanism of action and adverse effects of mannitol.
- 3N) Classify drugs used in cardiac arrhythmias giving suitable examples.
- 3O) An obstetrician prescribes methyldopa to a pregnant lady for hypertension. How does methyldopa lower blood pressure? What are its adverse effects? Enumerate three alternative drugs for the treatment of pregnancy-induced hypertension?

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# Question Paper

Exam Date & Time: 16-Dec-2022 (10:00 AM - 01:00 PM)

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**SECOND PROFESSIONAL YEAR MBBS DEGREE EXAMINATION - DECEMBER 2022**  
**SUBJECT: PHARMACOLOGY - PAPER II**  
**(CBME BATCH)**

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

**Answer all the questions.**

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

- 1) A 40 year old man presented with two accidentally self-inflicted wounds on the left arm caused by the mishandling of work tools a week prior. He was prescribed a seven-day course of amoxicillin/clavulanate and discharged. The next day he came back with excruciating pain in the entire arm, persistent fever, and extension of oedema. An ultrasound scan showed soft tissue oedema of the left arm without signs of thrombosis. He was then referred to an infectious disease consultant who suspected necrotizing fasciitis.
- 1A) Explain the rationale for combining amoxicillin with clavulanate. (2 marks)
- 1B) Mention two drugs which can be prescribed for necrotizing fasciitis if antimicrobial culture revealed anaerobic microorganisms. Explain the mechanism of action and enumerate two specific adverse effects of any one drug. (1+2+1 = 4 marks)
- 1C) Explain four patient-related factors governing the choice of an antimicrobial drug. (4 marks)
- 2) A 65 year old patient with symptoms of rigidity, weakness, difficulty in maintaining balance during walking and resting tremors was diagnosed with Parkinson's disease. He was started with a combination of levodopa and carbidopa
- 2A) Explain the advantages and disadvantages of combining levodopa with carbidopa. (4 marks)
- 2B) Mention two drugs which can cause parkinsonism. Mention one drug used in the treatment of druginduced parkinsonism with rationale. (1+1 = 2 marks)
- 2C) Mention two other drugs belonging to different groups which can be used in Parkinson's disease other than this combination. Explain the mechanism of action and enumerate two specific adverse effects of any one drug. (1+2+1 = 4 marks)
- 3) **Answer the following:** (15 X 4 marks = 60 marks)
- 3A) Compare and contrast: fluoxetine and imipramine
- 3B) An 8 year old boy with complaints of decreased rate of speech and frequent onset of staring spells with periods of forgetfulness was diagnosed with absence seizures. Mention two drugs which can be prescribed in this patient. Explain the mechanism of action and adverse effects of any one.
- 3C) A foreign sailor visiting India accidentally caused himself severe methanol intoxication by drinking unregistered illegally bought industrial alcohol. Explain the management of this patient with rationale.
- 3D) A patient posted for abdominal hysterectomy was administered spinal anesthesia. Briefly outline the technique, advantages and complications of spinal anesthesia.

- 3E) A 25-year-old patient with 2-day history of chest tightness and shortness of breath was admitted to the intensive care unit due to worsening dyspnea over 6 hours. He was diagnosed with community acquired *Pseudomonas aeruginosa* pneumonia based on bronchoalveolar lavage culture. Mention a suitable antimicrobial agent, explain its mechanism of action and enumerate its adverse effects.
- 3F) Explain the rationale for multidrug treatment for tuberculosis. Which among the antitubercular drugs is most likely to cause peripheral neuritis? How could it be prevented? Mention two second line drugs used in multidrug resistant tuberculosis.
- 3G) Explain the mechanism of action of amphotericin B. Enumerate the advantages of liposomal amphotericin B over the conventional preparation.
- 3H) A drug used in the treatment of MRSA infection caused nephrotoxicity. Identify the likely drug. Explain its mechanism of action and mention another use and adverse effect of the drug.
- 3I) A 35 year old woman with complaints of burning micturition, urinary urgency and lower abdominal pain was diagnosed with acute pyelonephritis. Name two antimicrobial drugs belonging to different groups effective in this condition. Explain their mechanism of action.
- 3J) Classify oral antidiabetic drugs with suitable examples.
- 3K) A 43 year old female patient presented with symptoms of palpitation, fatigue and hand tremors since one year. Thyroid function tests were suggestive of hyperthyroidism. Mention two drugs belonging to different groups which can be prescribed to this patient. Explain the advantages and disadvantages of any one.
- 3L) Explain four indications for the use of corticosteroids with pharmacological basis.
- 3M) A 66-year-old woman was brought to the emergency department after she slipped in the shower. On X-ray, no fractures were noted, however signs of osteoporosis in her hip were reported. She is on calcium and vitamin D supplements since a month. Mention two drugs that can be added to treat her osteoporosis and prevent fractures. Explain the mechanism of action and enumerate two adverse effects of any one.
- 3N) A 21 year old woman who was on hormonal oral contraceptives missed taking her tablets for consecutive 2 days. What would you advise her? Explain the mechanism of action of oral contraceptives.
- 3O) Write briefly on post-exposure prophylaxis of rabies.

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