

Q.P. Code: 211001

Reg. no.:

**Second Professional MBBS Degree Regular/Supplementary Examinations
December 2024****Pharmacology - Paper I**

(General Pharmacology, ANS, CNS, CVS, Blood, Diuretics, Autacoids, Respiratory System)

Time: 3 Hours

Total Marks: 100

- Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together • Leave sufficient space between answers
- Draw table/diagrams/flow charts wherever necessary

1. Multiple Choice Questions**(1x20=20)****The Answers to MCQ questions (Q.No. i to Q.No. xx) shall be written continuously on the first two writing sheets (ie Page No. 3 & 4) only****Question Numbers (i) – (v) are Single Response Type**

- Norepinephrine lacks the following action:
 - Bronchodilatation
 - Intestinal relaxation
 - Reduced blood flow to kidney
 - Rise in blood pressure
- The ability of a drug to cause fetal abnormalities when administered to a pregnant lady is referred to as:
 - Iatrogenicity
 - Idiosyncrasy
 - Pharmacogenetics
 - Teratogenicity
- Heparin overdosage is treated with:
 - Phytonadione
 - Epsilon aminocaproic acid
 - Protamine sulfate
 - Tranexamic acid
- The factor which does not govern the volume of distribution of a drug is:
 - Lipid: water partition coefficient ratio
 - First pass metabolism
 - Congestive cardiac failure
 - Plasma protein binding
- The following opioid is contraindicated in myocardial infarction as an analgesic due to its sympathomimetic properties:
 - Morphine
 - Pethidine
 - Fentanyl
 - Pentazocine

Question Numbers (vi) – (x) are Multiple Response Type. Read the statements and mark the answers appropriately.

- The following are the examples of idiosyncrasy:
 - Chloramphenicol producing aplastic anemia
 - Aspirin producing gastric irritation
 - INH producing hepatotoxicity
 - Atypical pseudocholinesterase resulting in succinylcholine apnea
 - 1 & 3
 - 2 & 4
 - 1 & 4
 - 2 & 3
- Toxicities of atropine include the following:
 - Bradycardia
 - Dry mouth
 - Miosis
 - Psychotic behavior
 - 1 & 2
 - 2 & 3
 - 1 & 3
 - 2 & 4
- The following statements about spironolactone are true:
 - It is a potassium sparing diuretic
 - It can cause gynecomastia and impotence
 - It acts on the thick ascending limb of Loop of Henle
 - It is combined with lisinopril to counteract hypokalemia
 - 1 & 2
 - 1 & 4
 - 2 & 4
 - 1 & 3
- The following statements concerning the use of lithium in the management of bipolar affective disorder is TRUE:
 - Excessive intake of sodium chloride enhances the toxicity of lithium
 - Lithium alleviates the manic phase of bipolar disorder in 24 hours
 - Lithium dosage may need to be reduced in patients taking diuretics
 - Lithium has narrow margin of safety and requires therapeutic drug monitoring
 - 1 & 3
 - 2 & 3
 - 3 & 4
 - 2 & 4

(PTO)

x. Select the CORRECT statement regarding protein binding of drugs:

1. Protein bound drug is not available for action.
2. Highly plasma protein bound drugs tend to have high volume of distribution.
3. Highly protein bound drugs are generally long acting.
4. Basic drugs are generally bound to albumin.
- a) 1 & 2 b) 2 & 3 c) 3 & 4 d) 1 & 3

Question Numbers (xi) – (xv) are based on case scenarios. Read the statements and mark the answers appropriately.

A 35-year-old woman with a history of heavy menstrual periods presents with fatigue and dizziness. Blood tests confirm iron deficiency anemia.

- xi. The following statements about iron kinetics is FALSE:
 - a) Ferric form of iron is better absorbed than ferrous form
 - b) Ascorbic acid increases iron absorption
 - c) Excess iron is stored as ferritin
 - d) Iron is transported with the help of transferrin
- xii. All of the following are adverse effects of oral iron therapy EXCEPT:
 - a) Nausea and vomiting b) Constipation c) Diarrhoea d) Acute kidney injury
- xiii. Due to her intolerance, the physician decides to initiate parenteral iron therapy to restore her iron levels effectively. The following iron preparation may be used in her by intravenous route:
 - a) Ferrous gluconate b) Ferrous fumarate
 - c) Ferric ammonium citrate d) Ferric carboxymaltose
- xiv. The guide for calculating the dose of parenteral iron is:
 - a) Physician's assessment based on amount of the blood lost
 - b) Using the formula based on body weight and haemoglobin deficit
 - c) Based on the time available for the restoration of haemoglobin levels
 - d) Start with a low dose and titrate upwards over two weeks
- xv. Suppose this lady develops acute iron poisoning, the therapy which can be given is:
 - a) Fresh frozen plasma b) Erythropoietin c) Desferrioxamine d) Folinic acid

Question numbers (xvi) – (xx) consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate options given below.

- xvi. Assertion (A): Nitroglycerine is administered by sublingual route in acute attack of angina pectoris.
Reason (R): Nitroglycerine has high oral bioavailability
a) Both A and R are true, and R is the correct explanation of A
b) Both A and R are true, and R is not the correct explanation of A
c) A is true, but R is false
d) A is false, but R is true
- xvii. Assertion (A): Neostigmine and its congeners are the first line drugs used to restore muscle strength in myasthenia gravis.
Reason (R): They improve muscle contraction by allowing acetylcholine released from prejunctional endings to accumulate and act on the nicotinic receptors over a wider area.
a) Both A and R are true, and R is the correct explanation of A
b) Both A and R are true, and R is not the correct explanation of A
c) A is true, but R is false
d) A is false, but R is true
- xviii. Assertion (A): Lignocaine is one of the preferred drugs in paroxysmal supraventricular tachycardia.
Reason (R): Lignocaine is a blocker of inactivated Na^+ channels more than that of open state. It is relatively selective for partially depolarized cells and those with longer action potential duration.
a) Both A and R are true, and R is the correct explanation of A
b) Both A and R are true, and R is not the correct explanation of A
c) A is true, but R is false
d) A is false, but R is true

xix. Assertion (A): Levodopa is combined with carbidopa

Reason (R): Levodopa-carbidopa combination reduces involuntary movements and postural hypotension.

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, and R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

xx. Assertion (A): Codeine is the preferred antitussive in asthmatics and patients with diminished respiratory reserve.

Reason (R): Codeine is an opium alkaloid and suppresses cough center.

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, and R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

Long Essays:

(2x10=20)

2. A 62-year-old male presents with exertional dyspnea and pedal edema. There is no significant medical or family history. Physical examination showed the presence of elevated jugular venous pulse and mild hepatomegaly. Echocardiography showed an ejection fraction of 35% (normal >50%), suggestive of heart failure.

- a) Name two drug groups, with two examples for each, which are likely to slow down the disease progression in this patient.
- b) Explain their mechanism of action in heart failure.
- c) Which drug would be suitable to relieve the congestive symptoms in this patient. Explain.
- d) Explain the role of phosphodiesterase 3 inhibitors in heart failure. (2+4+2+2)

3. A 60-year-old male with a history of hypertension and diabetes presents to the emergency department with crushing chest pain radiating to his left arm, suggestive of acute myocardial infarction (AMI). He is anxious, and his pain is rated as 9/10. The patient is stabilized with oxygen and other supportive measures but his chest pain persists.

- a) Mention the analgesic of choice in this patient with route of administration and pharmacological basis for the same.
- b) Mention two adverse effects of the same along with the involved receptor.
- c) Enumerate two other uses of the preferred analgesic.
- d) Mention two antagonists that can be used in case the patient encounters overdose with route of administration. (4+2+2+2)

Short Essays:

(6x6=36)

- 4. Define bioavailability. What are the factors that affect bioavailability of drugs (1+5)
- 5. Enumerate three drug groups with two examples each for treating chronic simple glaucoma. Write the mechanism of action of all three groups. (3+3)
- 6. Name three drug groups with two examples each used in treatment of Rheumatoid arthritis. Briefly describe DMARD (3+3)
- 7. Mention two low molecular weight heparins. Explain their mechanism of action. What are the differences between unfractionated heparin and low molecular weight heparins. (1+2+3)
- 8. Compare and contrast: chlorpromazine and risperidone. (3+3)
- 9. Mention four groups of antiasthmatic drugs giving two examples each. How will you treat a case of acute severe exacerbation of bronchial asthma. (4+2)

Short Answers:

(6x4=24)

- 10. Enumerate four factors that modify drug action giving suitable examples for each.
- 11. Mention four atropine substitutes with respective clinical indications for the same.
- 12. Explain the pharmacological basis for using diuretics in hypertension with an example. Mention two antihypertensives used in pregnancy. (3+1)
- 13. Mention four prostaglandin analogs and their respective clinical indications.
- 14. Enumerate four objectives of preanesthetic medications along with the drugs used for achieving the same.
- 15. Describe the role of autonomy, beneficence and justice as guiding principles in patient care.
