

**COPPERBELT UNIVERSITY**  
**MICHEAL CHILUFYA SATA SCHOOL OF MEDICINE**  
**DEPARTMENT OF BASIC SCIENCES**  
**MBchB/BDS/CM**  
**YEAR OF STUDY: 2<sup>ND</sup> YEAR**  
**2021-2022 ACADEMIC YEAR**  
**END OF TERM 2 TEST**

**COURSE: THERAPEUTICS – MBS 230**

**DATE: FRIDAY – 10<sup>TH</sup> JUNE, 2022**

**TIME ALLOCATED: 2 HOURS**

**INSTRUCTIONS:**

1. The paper contains **THREE (03) PARTS**, section A. B and section C
2. Section A has **FORTY (40)** questions each carrying **0.5 mark** and you are supposed to pick one best option for each question.
3. Section B has **Ten (10)** short answer questions each containing **2 Marks** all of which should be answered.
4. Section C has **Three (03)** questions which should all be answered.
5. **Section A** should be answered using the **answer grid provided**
6. In case you decide to change the answer, cross out the first choice, sign against it and then tick your newer choice

## SECTION A – MULTIPLE CHOICE QUESTIONS (ANSWER ALL QUESTIONS)

Each question has 0.5 Marks

1. Long term ACE inhibitor therapy may retard the progression of:
  - a. Diabetic nephropathy
  - b. Diabetic retinopathy
  - c. Hypertensive nephropathy
  - d. All of the above
2. Which of the following blocks the angiotensin receptors?
  - a. Ramipril
  - b. Lovastatin
  - c. Candesartan
  - d. Sumatriptan
3. An elderly hypertensive was treated with hydrochlorothiazide 50 mg daily. Even after a month, his BP was not reduced to the desired level and another antihypertensive was added. After 2 hours of taking the other drug his BP fell precipitously. Which of the following is most likely the other drug given to him?
  - a. Atenolol
  - b. Captopril
  - c. Methyldopa
  - d. Amlodipine
4. Mr Kamau has been a diabetic patient who comes for review complaining of headaches, dizziness. The BP checked is found to be 204/105 mm/Hg. When asked further, he mentions he has been checking at home and his BP fluctuating but mostly in that range for the past 2 weeks. You therefore decide to commence antihypertensive drugs. Which of the following drugs should be avoided in the regimen to be considered?
  - a. Propranolol
  - b. Nifedipine
  - c. Enalapril
  - d. Methyldopa
5. Kabwali is a known patient with known sulfa hypersensitivity. As a doctor, which of the following drugs would you avoid prescribing for him?
  - a. Ethacrynic acid
  - b. Bendroflumethiazide
  - c. Bumetanide
  - d. Telmisartan



- a. Which of the following combinations can precipitate renal failure?
  - a. Losartan + Diclofenac + Frusemide
  - b. Enalapril + Frusemide + Amloride
  - c. Amlodipine + Frusemide + Diclofenac
  - d. Lisinopril + Nifedipine + Frusemide
7. Which one of the following falls within the first line of hypertension treatment?
  - a. Hydrochlorothiazide
  - b. Atenolol
  - c. Frusemide
  - d. Captopril
8. Which of the following cause hyperkalaemia?
  - a. Bumetanide
  - b. Bendroflumethiazide
  - c. Spironolactone
  - d. Terazosin

Question 9 and 10 on the following SCENARIO

Mr P is a known active Tennis player. Recently he has been experiencing pain in the chest which sometimes spreads the arm, the back and jaw. He says this is strange as it is causing him to not maintain his training in that this pain is mostly severe during training sessions

9. Which of the following is the likely problem Mr P is facing?
  - a. Variant angina
  - b. Unstable angina
  - c. Non Prinzmetal angina
  - d. Stable angina
10. Based on the answer in the above question, which drug would be ideal for Mr P
  - a. Glyceryl trinitrate
  - b. Isorsobide dinitrate
  - c. Nitric oxide
  - d. Ceasation of exercise alone
11. Patient K whose symptoms worsen when sleeping at night is likely to benefit from which of the following drugs
  - a. Once weekly i.v administration of Glyceryl trinitrate
  - b. Isorsobide mononitrate
  - c. Glyceryl trinitrate ointment
  - d. Sublingual Isorsobide dinitrate

12. Mr Abambo, a 58-year-old man has a long standing case of angina and has been using Isorsobide dinitrate. He recently walks into the urology clinic with complaining of erectile dysfunction which he says has caused anxiety and hence coming to have this condition corrected.

What step would you take for his condition?

- a. Counsel Mr Abambo on the need to adhere to treatment and prescribe Sildenafil
- b. Counsel Mr Abambo on the need to adhere to treatment and, advise that physician reduces Isorsobide dinitrate while you prescribe Sildenafil
- c. Counsel Mr Abambo to adhere to treatment while advising him to abstain from sex
- d. Advise the physician to increase the dose for isorsobide dinitrate even as you prescribe sildenafil

13. Which of the following is an example of an anti-tussive?

- a. Menthol
- b. Carbocisteine
- c. Dextromethophan
- d. Guaefenesin

14. A Mrs. J presents to you with a complaint of coughing of which she says, she has been producing sputum, no chest pain and no fever. Which of the following will be ideal prescription for Mrs. J?

- a. Ammonium chloride
- b. Pholcodeine
- c. Diphenhydramine
- d. Promethazine

15. JJ has had an irritating cough which he describes as presenting with some sputum but in some instances he tends to have a feeling of something clogging up the airway. Which of the following will be the best additional ingredient in the remedy?

- a. Simple linctus
- b. Bromhexine
- c. Codeine
- d. Phenylephrine

6. Which one is a notable side effect of the anti-tussives?

- a. Nausea and vomiting
- b. Hypersensitivity
- c. Constipation
- d. Getting into Coma



17. Which of the following should be avoided in children?
- Pseudoephedrine
  - Dextromethopphan
  - Diphenhydramine
  - Simple linctus
  - Ammonium chloride
18. Regarding metabolism, the following statement is true
- Sulfation and glucuronidation are equally developed in different age groups
  - Acetaminophen is primarily dependent on glucuronate conjugation for its metabolism in neonates
  - In geriatrics, biotransformation via oxidative reaction declines more than biotransformation via drug conjugation
  - The Sulfate conjugation is not fully developed in neonates
  - The rate of biotransformation of most drugs is not usually lower in neonates and infants than it is in adults
19. The following are at risk of significant drug interactions except
- Elderly patients
  - Seriously ill patients
  - Patients with hepatic or renal disease
  - Patient with one prescribing doctor
  - Patients on long term therapy for chronic disease (AIDS, epilepsy, diabetes)
20. Regarding medicine related problem and known causes, the following is a non-preventable drug related problem
- Error in diagnosing
  - Prescription of wrong dose of the right drug
  - Prescription of the wrong drug
  - Polypharmacy
  - Age of the patient
21. The following drugs should not be used in pregnancy except
- ACE inhibitors
  - Isotretinoin
  - Sodium valproate
  - Metronidazole
  - Erythromycin

22. The drug Doxylamine belongs to the following category of drugs according to the safety of drugs in pregnancy
- Category A
  - Category C
  - Category X
  - Category B
  - Category D
23. Differentiation between myasthenia crisis and cholinergic crisis can be enhanced by administering the following drug
- Neostigmine
  - Donepezil
  - Physostigmine
  - Edrophonium
  - Pyridostigmine
24. Establishing the diagnosis of vasospastic angina can be enhanced by administering the following drug
- Edrophonium
  - Acetylcholine
  - Bethanechol
  - Muscarine
  - Hyoscyamine
25. The following has the shortest duration of action
- Cisatracurium
  - Pancuronium
  - Succinyl choline
  - Atracurium
  - Voruconium
26. Pilocarpine is indicated in all the following except
- Xerostomia
  - Chronic angle glaucoma
  - Acute closed glaucoma
  - Excessive salivation
  - C and D

27. Physostigmine is used in the following conditions EXCEPT
- Reversal of muscle relaxation post-surgery
  - As an antidote to atropine
  - Myasthenia gravis
  - Urinary incontinence
  - Myasthenia crisis
28. Carbachol can be used in the following except
- Open angle glaucoma
  - Cataract surgery
  - Iridectomy
  - Urinary retention
  - Ophthalmic surgery
29. The following only activates muscarinic receptors
- Bethanechol
  - Acetylcholine
  - Carbachol
  - Muscarine
  - Pancuronium
30. Physostigmine is used in the following conditions EXCEPT
- Reversal of muscle relaxation post-surgery
  - As an antidote to atropine
  - Myasthenia gravis
  - Urinary incontinence
  - Myasthenia crisis
31. Muscarinic side effects occurring after administration of cholinesterase inhibitors in the treatment of myasthenia gravis can be treated using
- Scopolamine
  - Oxybutinine
  - Glycopyrolate
  - Voruconium
  - Hyoscyamine
32. Patients with overactive bladder can be treated with the following group of drugs
- Cholinesterase inhibitors
  - Cholinergic antagonists
  - 5 - phosphodiesterase inhibitors
  - Cholinergic agonists
  - Neuromuscular blockers



33. Which of the following is true about Atropine?

- a. Causes bradycardia
- b. Facilitate the ophthalmoscopic examination of the retina
- c. May result in bronchoconstriction
- d. Enhances salivation
- e. Lowers blood pressure

34. A 16-year-old girl walks into your consulting room complaining of severe intestinal spasms which tends to be worse when having menses. She says she has taken most of the common pain killers on the market but seem not to give her the optimal relief. Which of the following drug would help in her problem?

- a. Hyoscyanine
- b. Oxybutinin
- c. Pirenzepine
- d. Scopolamine
- e. Nicotine

35. Broncho secretions in asthma can best be managed using the following drug

- a. Scopolamine
- b. Ipratropium bromide
- c. Glycopyrrolate
- d. Hyocyanine
- e. Atropine

36. Atropine can be used for all the following EXCEPT

- a. Sinus tachycardia
- b. Ophthalmoscopic examination
- c. Muscarinic effects caused by cholinesterase inhibitors in patients with myasthenia gravis
- d. Urinary bladder spasms
- e. Organophosphate poisoning

37. For cessation of smoking, the following drug has more superior properties

- a. Nicotine
- b. Varenicline
- c. Muscarine
- d. Clonidine
- e. Phentolamine



38. The following drug can be used to increase muscle tone postoperatively or post-partumly in patients with non-obstructive neurogenic urinary retention
- Nicotine
  - Bethanechol
  - Carbachol
  - Pilocarpine
  - Acetylcholine
39. Patients with overactive bladder can be treated with following group of drugs
- Cholinesterase inhibitors
  - Cholinergic antagonists
  - 5 - phosphodiesterase inhibitors
  - Cholinergic agonists
  - Quasi cholinergic agonists
40. Acetylcholine causes all the following EXCEPT
- Miosis
  - Bradycardia
  - Brochial muscle contraction
  - Urine retention
  - Vasodilation

**SECTION B – ANSWER ALL QUESTIONS BY GIVING BRIEF AND STRAIGHT TO THE POINT EXPLANATIONS**

- List down the aims of treatment of hypertension [2 Marks]
- Highlight on which group of drugs are known to cause postural hypotension, also stating examples and how to prevent this [2 Marks]
- What are the aims of angina pectoris treatment? [2 Marks]
- Briefly describe the management of cyanide poisoning by naming the drugs and mechanism by which it works [2 Marks]
- Highlight on the mucolytic agent and state examples [2 Marks]
- What role does diphenhydramine play in most medicinal formulations? [2 Marks]
- What drug is varenicline and what advantages does it have over the other drugs indicated for the same conditions for which it is also used? [2 Marks]

8. Dry mouth is one notable side effect in patients undergoing radiotherapy of the head and neck, mention one drug proved to be useful in this condition, its class and route of administration [2 Marks]

Questions 9 and 10 are based on the SCENARIO below

A family of 3 is admitted to the emergency room with the history of having consumed mushroom suspected to be poisonous.

9. What classical features would you look for to conclude that it is really mushroom poisoning? [2 Marks]

Afterwards you indeed conclude that it is mushroom poisoning

10. What medication would you choose and what monitoring parameters would you focus on? [2 Marks]

**SECTION C – ANSWER ALL QUESTIONS BY GIVING BRIEF AND STRAIGHT TO THE POINT EXPLANATIONS**

1. Briefly describe the following
  - a. The treatment of myasthenia gravis [1 Mark]
  - b. Elucidate the difference between myasthenia crisis and cholinergic crisis [2 Marks]
  - c. How can this difference be established? [2 Marks]
2. A patient walks into your consulting room and explains that the drug is not working for him in that the angina pain is persistent despite taking the medication. Probing further you discover the patient was taking Isosorbide dinitrate three times daily.
  - a. What do you think is the problem here? [1 Mark]
  - b. How does the problem cited above come about? [2 Marks]
  - c. How can this be controlled? [2 Marks]
3. A man walks into the room where you are gathered as health professionals and he is directed to you. He comes and presents a pack of medicine which he says was given to him by his friend. When you read the one on the pack, you discover it is labeled Tadalafil 20mg.
  - a. What do you think is the problem with the man which in a layman's point of view prompted the friend to suggest such a drug? [1 Mark]
  - b. In what class does this drug fall and what is its mechanism of action and what other conditions is it indicated for? [2 Marks]



broken by acetylcholinesterase

c. List the notable side effects of this drug (2 Marks)

4. Follow the table below and fill in the blank box spaces based on one lead given in any of the boxes (15 Marks - Each space contains 0.5 Mark)

No	Class of drugs	Example	Indication	Side effects & Interaction
1	Potassium sparing diuretic			
2		Edrophonium		
3			Antidote to atropine	
4	Nicotinic receptor antagonist			
5		Pseudoephedrine		
6		Amiloride		
7	Anti-tussive			
8				Hyperkalemia
9		Verapamil		
10			Hyperactive bladder	