



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

END OF SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF MEDICINE AND SURGERY**

COURSE CODE: MCS 408

**COURSE TITLE: CLINICAL PHARMACOLOGY AND
THERAPEUTICS**

END OF TERM 1 EXAMINATION

Instructions

Time 3 hours

Answer all questions

Section A comprises of 20 MCQs each of which is 1 mark

Section B comprises of 8 short answer questions carrying a total of 40 marks

Section C comprises of 2 long essay questions: 20 marks each

SECTION A: Multiple Choice Questions (MCQs)

1. The emergence of antibiotic drug resistance:
 - a. Requires the concurrent administration of multiple drugs
 - b. Is a direct result of the use of antibiotics in livestock
 - c. Is a problem that was overcome by the development of vancomycin
 - d. Is due in large part to the misuse of antibiotics in humans

2. A 76-year-old hospitalized patient with renal impairment has a bacterial infection sensitive to all of the drugs listed below. Which one would be the **MOST** suitable drug for this patient?
 - a. Erythromycin
 - b. Gentamicin
 - c. Imipenem-cilastatin
 - d. Vancomycin

3. Which one of the following is **NOT** an antimycobacterial drug?
 - a. Isoniazid
 - b. Pyrazinamide
 - c. Cycloserine
 - d. Cefotaxime

4. Which one of the following antibiotics would **NOT** be suitable for a patient known to have a congenital deficiency of glucose-6-phosphate dehydrogenase?
 - a. ciprofloxacin
 - b. amoxicillin
 - c. doxycycline
 - d. sulfamethoxazole

5. Which one of the following drugs is the most appropriate for the management of pseudomembranous colitis in a patient who has an established hypersensitivity to metronidazole?
 - a. ampicillin
 - b. clindamycin
 - c. doxycycline
 - d. vancomycin

6. Mr. Allison is taking gentamicin for a severe Gram - negative infection. Which one of the following signs of neurotoxicity should be monitored?
- anorexia and abdominal pain
 - decreased urinary output and dark, concentrated urine
 - muscle twitching and numbness
 - nausea, headache and vomiting
7. A patient taking an antacid product is prescribed moxifloxacin. Moxifloxacin should be administered:
- once daily PO, 4 hours before the antacid
 - twice daily PO, immediately following the antacid
 - once daily IM without regard to the administration of the antacid
 - every 12 hours IV without regard to the administration of the antacid
8. Third-generation cephalosporins are common drugs of choice in the treatment of bacterial meningitis. However, in neonatal meningitis they would not provide coverage if the infection was due to:
- Meningococci
 - L. monocytogenes*
 - Pneumococci
 - Group B streptococci
9. Gentamicin would be an ineffective drug for which of the following organisms?
- E. coli*
 - B. fragilis*
 - Pseudomonas*
 - Listeria*, if the Gentamycin is combined with ampicillin
10. Despite being an old generation antibacterial drug, penicillin G remains the drug of choice in the treatment of infections caused by which one of the following microorganisms?
- B. fragilis*
 - T. pallidum*
 - H. influenza*
 - E. coli*

11. Which one of the following is a possible significant side effect associated with the use of triamterene as a diuretic?
- It can cause sodium depletion in the body
 - It can cause potassium deletion in the body
 - It can cause hyperkalemia
 - It can cause hypercalcemia
12. X is a vasopressin receptor antagonist. When administered to an individual, which one of the following effects do you expect to occur?
- Increased water retention in the body
 - Increased potassium retention in the body
 - Increased sodium loss in urine
 - Increased water loss in urine
13. Following administration of a statin to a patient in the treatment of dyslipidemia, which one of the following liver enzymes could have its plasma levels raised above normal in the patient?
- Alkaline phosphatase
 - Aspartate transaminase
 - Gamma – Glutamyl transferase
 - All of the above
14. Which one of the following best describes the action of the drug Ezetimibe?
- It inhibits hepatic cholesterol synthesis
 - It causes increased absorption of fat- soluble vitamins
 - It promotes hepatic LDL synthesis
 - It inhibits cholesterol absorption from dietary materials in the duodenum
15. Why is metoprolol used in the treatment of hypertension?
- Because it is an Angiotensin II receptor antagonist
 - Because it is a β_2 - adrenoceptor agonist
 - Because it is a β_1 - adrenoceptor antagonist
 - Because it is an α_2 - adrenoceptor agonist
16. Which one of the following antihypertensives causes hirsutism as a side effect?
- Losartan
 - α - Methyl dopa
 - Enalapril
 - Minoxidil

17. Why is there a slow onset of the antihypertensive action of Phenoxybenzamine following its administration to a patient?
- Because its absorption from the gastrointestinal tract into systemic circulation is slow
 - Because it is an α - adrenoceptor blocker drug
 - Because it is a pro- drug
 - Because it is a β_1 - adrenoceptor blocker drug
18. Which one of the following drugs is used in the treatment of refractory angina pectoris?
- Nifedipine
 - Glyceryl trinitrate
 - Isosorbide dinitrate
 - Nicorandil
19. Why is the drug α - Methyl tyrosine clinically useful?
- Because it is used as a diuretic
 - Because it is used in the treatment of angina pectoris
 - Because it is used in the treatment of pheochromocytoma
 - Because it is used in the treatment of dyslipidemia
20. Which one of the following diuretics remains effective even when renal function is severely impaired?
- Chlorthalidone
 - Hydrochlorothiazide
 - Indapamide
 - Metolazone

SECTION B: SAQs: 40 marks; Answer all

- Discuss the clinical use and side effects of hydralazine. **(10 marks)**
- Briefly discuss the pharmacology of the following classes of drugs:
 - High efficacy diuretics **(4 marks)**
 - Moderate efficacy diuretics **(3 marks)**
 - Low efficacy diuretics **(3 marks)**
- Differentiate between empirical and definitive antibiotic treatments **(2marks)**
- Explain why probenecid and fluid hydration are co- administered with cidofovir in the treatment of cytomegalovirus infection. **(4marks)**

5. Describe the mechanism of action (MOA) of the following drugs
 - a. Amoxicillin (1mark)
 - b. Ciprofloxacin (1mark)
 - c. Amikacin (1 mark)
 - d. Erythromycin (1mark)

6. A HIV/AIDS patient taking: azidothymidine, lamivudine, indinavir, ketoconazole, and Trimethoprim-Sulphamethoxazole (TMP- SMX), develops the following: breast hypertrophy, central adiposity, hyperlipidemia, insulin resistance, and nephrolithiasis.
 - a. Identify the drug that is most likely to be the cause of the observed unwanted effects (2 marks)
 - b. Describe the mechanism of action of the identified drug (2 marks)

7. Name four factors, which influence the choice of an antimicrobial drug. (2marks)

8. Mr. X is receiving amikacin (Amikin), administered intravenously (IV), for the treatment of a bacterial septicemia.
 - a. To which class of antibacterials does Amikacin belong? (1mark)
 - b. Describe the daily assessments performed on Mr. X to detect early signs and symptoms of drug class - specific adverse drug effects. (3marks)

SECTION C: LAQs: Answer (40 marks)

1. An 8-year-old girl is brought to your clinic with complaints of pharyngitis and fever of 2 days duration. Laboratory results reveal small, translucent beta-hemolytic colonies sensitive in vitro to bacitracin. Past history includes a severe allergic reaction to amoxicillin in the girl when used for treatment of a lung infection. The drugs available in your clinic are cefaclor, doxycycline, azithromycin, lamivudine, ketoconazole, penicillin G and rifampicin.
 - a) Prescribe the most suitable drug and explain the rationale for prescribing that particular drug and not the other drugs available in your clinic. (8 marks)
 - b) Classify the drug you have prescribed and describe the clinical pharmacology of its class of antimicrobial agents. (12 marks)

2. a). Discuss the use of β - adrenergic receptor antagonists in the treatment of hypertension. (10 marks)
- b). Discuss the use of Tyrosine Hydroxylase inhibitors in the treatment of pheochromocytoma. (10 marks)