



**AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCE
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF SEPT-DECEMBER 2024 TRIMESTER EXAMINATIONS**

UNIT CODE: 323 UNIT NAME: Pharmacology in Physiotherapy (up grading)

DATE: Friday/ 5th/ December 2024

TIME: TWO HOURS

START: 6PM STOP : 8PM

INSTRUCTIONS (physical exams)

- 1. Do not write on this question paper**

(Marks and questions distribution as per program curriculum.)

INSTRUCTIONS (Online examinations)

1. This exam is marked out of 70 marks
2. This Examination comprises 3 Sections
3. This online exam shall take 2 Hours
4. Late submission of the answers will not be accepted
5. Ensure your web-camera is on at all times during the examination period
6. No movement is allowed during the examination
7. Idling of your machine for 5 min or more will lead to lock out from the exam
8. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
9. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
10. In case you have any questions call the invigilator for this exam on Tel. 0705833434 and or the Head of Department on Tel 0720491032
11. For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

1. NSAIDs, such as aspirin, exhibit all of the following effects EXCEPT

- A) the ability to decrease inflammation
- B) the ability to increase bronchodilation in conditions such as asthma
- C) the ability to relieve mild-to-moderate pain (analgesia)
- D) the ability to decrease the elevated body temperature associated with fever (antipyresis)

2. While attempting to control one type of arrhythmia, antiarrhythmic drugs can exert "proarrhythmic" effects, which are indicated by

- A) a delay of 4 to 6 weeks before these drugs become effective
- B) common musculoskeletal abnormalities such as skeletal muscle fasciculations
- C) their ability to aggravate or initiate other cardiac rhythm abnormalities
- D) their ability to aggravate the proton pump in the stomach, resulting in gastric ulcers

3. To minimize the muscle wasting, bone loss, and other serious side effects associated with anti-inflammatory steroids (glucocorticoids), it is preferred that these drugs be administered _____ to control airway inflammation in asthma and COPD.

- A) orally
- B) intramuscularly
- C) subcutaneously
- D) by inhalation

4. All of the following hormones are released from the anterior pituitary EXCEPT

- A) growth hormone
- B) luteinizing hormone
- C) follicle stimulating hormone
- D) antidiuretic hormone

5. Hormones released from the posterior pituitary are synthesized by neurons originating in the

- A) anterior pituitary
- B) intermediate lobe of the pituitary
- C) hypothalamus
- D) thalamus

6. Increased release of a specific hormone ultimately serves to inhibit its own release, thus preventing the amount of the released hormone from becoming excessive. The self-control of hormonal release that occurs commonly in the endocrine system is an example of

- A) autoregulation
- B) positive feedback
- C) negative feedback
- D) modulation of positive outcomes

7. From a physiotherapy perspective, the most important adverse effect impacting function seen in patients taking systemic glucocorticoid (anti-inflammatory steroid) drugs is

- A) hypertension
- B) aggravation of diabetes mellitus
- C) aggravation of stomach ulcers
- D) tissue catabolism (breakdown)

8. Glucocorticoids should be withdrawn slowly after several weeks or months of use, because the _____ needs time to resume normal function when these drugs are discontinued.

- A) liver
- B) kidneys
- C) adrenal gland
- D) thyroid gland

9. Mineralocorticoid antagonists such as spironolactone and eplerenone are used primarily

- A) as diuretics in treating hypertension and heart failure.
- B) as anti-inflammatory agents in treating rheumatoid arthritis
- C) as immunosuppressants in treating rheumatoid arthritis
- D) as replacement therapy for people with adrenocortical insufficiency (Addison disease)

10. In certain older men, small doses of testosterone (testosterone replacement) may produce beneficial effects on body composition, strength, bone mineralization, mood, and libido, but may also cause an increased risk of

- A) anemia
- B) osteoporosis
- C) prostate hypertrophy and cancer
- D) skin breakdown

11. In postmenopausal women, estrogen replacement may provide beneficial effects on _____, but may also increase the risk of _____.

- A) the heart; osteoporosis
- B) bone; cardiovascular disease
- C) the kidney; severe hypotension
- D) the liver; Alzheimer disease

12. Aspirin and other NSAIDs exert their primary therapeutic effects by interfering with the biosynthesis of

- A) leukotrienes
- B) catecholamines
- C) prostaglandins
- D) cyclic AMP

13. Selective estrogen receptor modulators (SERMs) such as tamoxifen and raloxifene may offer advantages in certain women because these drugs stimulate estrogen receptors on _____ while acting as estrogen antagonists (blockers) on _____.

- A) bone and vascular tissues; breast and uterine tissues
- B) breast and uterine tissues; skin
- C) skin; breast and uterine tissues
- D) breast and uterine tissues, bone and vascular tissues

14. All of the following symptoms are associated with hyperthyroidism EXCEPT

- A) weight loss
- B) bradycardia
- C) insomnia
- D) heat intolerance

15. Bisphosphonates such as alendronate (Fosamax) and pamidronate (Aredia) reduce bone resorption in osteoporosis and similar conditions by

- A) inhibiting osteoclast activity
- B) increasing calcium absorption for the GI tract
- C) decreasing calcium excretion by the kidneys
- D) providing a dietary source of calcium
- E) all the above are true

16. Insulin _____ the storage of glucose in skeletal muscle and other tissues, thereby _____ plasma glucose levels after a meal.

- A) increases; increasing
- B) increases; decreasing
- C) decreases; increasing
- D) decreases; decreasing

17. All of the following are characteristics of type I diabetes mellitus EXCEPT

- A) disease onset usually occurs in childhood
- B) body weight is usually at or below normal levels
- C) pancreatic insulin production is low or absent
- D) tissue sensitivity to insulin is low

18. Drugs that stimulate insulin secretion (e.g., sulfonylureas) or increase tissue sensitivity to insulin (e.g. metformin)

- A) are used to treat patients with poor glucagon production
- B) are effective in some patients with Type I diabetes.
- C) are effective in some patients with Type II diabetes.
- D) all the above are true

19. Beta-lactamase inhibitors such as clavulanate, sulbactam, and tazobactam are typically combined with a specific type of penicillin

- A) to increase the absorption of penicillin from the GI tract
- B) to enhance the penetration of penicillin into the bacterial cell
- C) to prevent the beta-lactamase enzyme from destroying the penicillin
- D) to prevent excessive excretion of the penicillin from the kidneys (i.e., more penicillin is retained in the body)

20. Certain anti-HIV drugs (e.g., zidovudine, didanosine, and zalcitabine) are known as reverse transcriptase inhibitors because they

- A) prevent adsorption/penetration of HIV into T4 lymphocytes
- B) inhibit transcription of viral RNA to viral DNA
- C) inhibit insertion of viral DNA into host-cell chromosomes
- D) all the above are true

21. Reverse transcriptase inhibitors such as zidovudine, didanosine, and lamivudine are especially important for physical therapists because they may cause side effects such as

- A) peripheral neuropathy
- B) myopathy
- C) joint pain
- D) all the above are true

22. Cutaneous and mucocutaneous infections such as tinea (ringworm) infections and candidiasis are typically treated with

- A) local or topical antibacterial drugs
- B) local or topical antifungal drugs
- C) systemic doses of antibacterial drugs
- D) systemic doses of antifungal drugs

23. High doses of acetaminophen (e.g., 15 g) can be especially toxic to the:

- A) heart
- B) liver
- C) kidneys
- D) stomach

24. Although several different drugs are available to treat malaria, many of these drugs are ineffective in certain parts of the world because

- A) malaria is difficult to diagnose accurately
- B) the organism that causes malaria has become resistant to these drugs
- C) antimalarial drugs must all be given by continuous intravenous infusion
- D) all the above are true

25. Many antifungal drugs selectively affect fungal cells rather than human cells by impairing the synthesis or function of specific sterols and polysaccharides that are located in the fungal cell

- A) membrane
- B) mitochondria
- C) smooth endoplasmic reticulum
- D) rough endoplasmic reticulum

26. Monoclonal antibodies may be especially effective in treating certain cancers because these drugs

- A) create a strong alkyl reaction with the DNA molecule
- B) directly inhibit the topoisomerase enzyme responsible for DNA synthesis
- C) are attracted directly to the cancer cell, without an appreciable affect on healthy tissues
- D) directly inhibit the mitotic apparatus that is responsible for controlling cell division (mitosis)

27. Most anticancer drugs exert severe and potentially toxic side effects because

- A) these drugs have a high therapeutic index (TI)
- B) most of these drugs are not approved by the FDA
- C) most of these drugs do not discriminate between healthy tissues and cancerous cells
- D) these drugs all have extremely long half-lives, and tend to accumulate in the body for an extended period of time

28. You are treating a 67y/o female for low back pain. She also has a history of a stage 2 bladder prolapse and hysterectomy. She notes urge and stress incontinence. Her medications include Bethanechol 10 mg (direct-acting parasympathetic stimulant) as prescribed by her gynecologist. What cardiovascular effect do you expect that may influence therapy?

- A) Increased blood pressure
- B) Decreased blood pressure
- C) Increased respiratory rate
- D) There is no cardiovascular side effect with parasympathetic stimulants

29. You are treating an individual with a history of stable angina. They take sublingual nitroglycerine to control their symptoms about 1 time a week and follow up regularly with their cardiologist. During their treatment session they suffer symptoms of angina. You immediately stop the activity and the patient takes their nitroglycerine. When would expect to see a reduction in their symptoms as an affect of the medication?

- A) 1 minute
- B) 10 minutes
- C) 20 minutes
- D) 60 minutes

30. An individual is taking a non- selective beta blocker for the treatment of recurrent angina. They are exercising on the treadmill and you are continuing to monitor their vital signs. Which of the following do you expect?

- A) Decreased tolerance to exercise due to decrease cardiac output with exercise

- B) Normal tolerance to exercise as long as angina symptoms do not occur
- C) Increased tolerance to exercise compared to the same aged individual without a cardiac history
- D) None of the above

31. You note that a patient you are performing an evaluation on has a rash along the L4 dermatome, which is the exact location of their complaint of symptoms. You contact the physician to note the possibility of shingles. What medication do you expect to be prescribed?

- A) Nucleoside antiviral agent
- B) Penicillin
- C) Tetracycline
- D) Carbapenem

32. An individual is on chemotherapy. He has a schedule with the oncology department to attend appointments for administration of the drug every Friday for 3 months. He notes his treatment scheduled in 2 days has been cancelled based on a blood test he had performed yesterday. What is the most probable cause of the suspension of treatment?

- A) Insurance did not cover the last treatment
- B) GI disturbance
- C) Nadir
- D) The patient is cured of his cancer

33. NSAIDs block all forms of COX including COX 1 resulting in which of the following side effects?

- A) GI upset and excessive blood clotting
- B) Constipation and gastric ulcers
- C) Headache and sweating
- D) Nausea and increase risk of bleeding

34. By producing analgesic and anti-inflammatory effects, which drugs are usually considered the first line of defense in treating rheumatoid arthritis?

- A) acetaminophen
- B) NSAIDs
- C) opioids
- D) leukotriene inhibitors

36. Which of the following is drug of choice for RA that would limit progression of the disease?

- A) Corticosteroids
- B) NSAID
- C) Selective COX 2 inhibitors
- D) D-MARDS

37. Potentiation is a drug interaction that results in

- A) Cancellation of the first drugs effect
- B) Limitation of the first drugs effect
- C) Exaggeration of the first drugs effect
- D) No change either drugs effect

38. The phrase “first pass elimination” refers to what?

- A) Passage of a drug directly through the digestive system into fecal matter
- B) Metabolism of the drug by the liver
- C) Filtration of a drug by the kidney
- D) None of the above

39. Sedative hypnotics can effect rehabilitation of an individual by

- A) Causing insomnia
- B) Increasing response time
- C) Inducing tremors
- D) Increasing anxiety

40. An individual is being seen in therapy for evaluation after tibial plateau fracture. He appears very agitated, demonstrates dilated pupils and is perspiring profusely. One explanation for the above symptoms could be

- A) Use of an opiate analgesic
- B) Use of an anxiolytic medication
- C) Opiate withdrawal
- D) Anxiolytic medication withdrawal

41. An 85 y/o male patient comes into therapy with the PT diagnosis of knee pain and decreased rom secondary to severe osteoarthritis. He ambulates into PT with a severe limp with minimal stance phase through the affected knee. His primary care physician suggested

that he take Tylenol (NSAID) 2 tablets (325 mg tablets) 4 times a day to assist with discomfort. Subjectively he reports no pain in sitting but pain at an 8 on a 1-10 scale with ambulation greater than 5 minutes. He is having difficulty with community ambulation due to pain. As you continue to question him about his pain levels, he notes he only takes Tylenol after community activity. He feels it is not helping. What is the most appropriate statement regarding his pain control

- A) Utilization of a NSAID is not effective for pain management with osteoarthritis
- B) His pain is not well controlled with the prescribed over the counter medication schedule
- C) His physical therapist should advocate on the patients behalf for Opiate medications
- D) Determination of success with the prescribed medication plan can only be determined after consistent used of the medication

42. You are evaluating an 87 y/o female patient that has recently been hospitalized following a car accident for evaluation of chest pain. She was released from the hospital and told that she had sternal discomfort due to inflammation of her ribs from where the seat belt pulled against her chest. Her PT prescription is for whiplash associated neck pain and costochondritis. She has been on Lortab 7.5/500 (Opiate and NSAID) for 8 years following a cervical fusion. Her physician refused to prescribe additional pain medications. She was given Soma (central acting muscle relaxant) by the hospitalist. She appears slightly confused and is not following directions given during the evaluation. Is her behavior consistent with the adverse drug reactions associated with her medications?

- A) Yes
- B) No

43. A patient status post total knee arthroplasty was given a prescription for Lortab 5/500 (opiate with NSAID) every 6 hours as needed for pain. Outpatient therapy was arranged in your clinic on Thursday at 9 am (4 days post op). At his outpatient visit he reports 8 out of 10 pain. He states it was much harder to move at home than he thought it would be. His flexion ROM was 60 degrees with a painful empty endfeel. He demonstrates limited weight bearing through the effected leg with an antalgic gait pattern. What information about his medications to assist you in determining pain control?

- A) If he is taking the medication as prescribed
- B) Timing of medication with treatment time
- C) Pain rating at its best and worst time
- D) all of the above

44. You are treating an individual for low back pain. She has a past medical history of Rheumatoid Arthritis and has been on a low dose of prednisone for several years (2.5mg/Day). She is also on Methotrexate (DMARD) 7.5 mg weekly. What is your concern for contraindications for this patient?

- A) Osteoporosis

- B) Hypotension
- C) Vertigo
- D) All of the above

49. You are treating several patients following total knee arthroplasty in an inpatient hospital setting. You are attempting to appropriately schedule patients for therapy based on their pain control status. Choose the most ideal time for your treatment for optimal pain control. The patient is using a morphine (opiate) pump with self-administered bolus injections (patient hits the button attached to the Intravenous (IV) pump).

- A) Immediately after bolus
- B) 10 minutes after bolus
- C) 30 minutes after bolus
- D) 1 hour after bolus

50. When treating an acute exacerbation of rheumatoid arthritis in a specific joint, anti-inflammatory steroids (glucocorticoids) can be injected directly into the joint, but the number of injections should be limited to how many per year.

- A) 2-3
- B) 5-6
- C) 8-10
- D) 12-15

51. You are treating several patients following total knee arthroplasty in an inpatient hospital setting. You are attempting to appropriately schedule patients for therapy based on their pain control status. Choose the most ideal time for your treatment for optimal pain control. The patient is taking Demerol (opiate) pills orally every 4 hours for pain control.

- A) Immediately after pill is taken
- B) 10 minutes after pill is taken
- C) 30 minutes after pill is taken
- D) d. 5 hours after pill is taken

52. Sympatholytic drugs such prazosin and doxazosin can directly decrease vascular resistance by

- A) stimulating alpha-1 receptors on the arteriole
- B) blocking alpha-1 receptors on the arteriole
- C) stimulating alpha-2 receptors on the arteriole
- D) blocking alpha-2 receptors on the arteriole

53. Calcium channel blockers can help reduce high blood pressure by

- A) stimulating the sinoatrial node in the heart
- B) stimulating the atrioventricular node in the heart
- C) inhibiting the vasomotor control center in the brainstem
- D) inhibiting vascular smooth muscle contraction

54. If they stand up suddenly, patients taking antihypertensive medications may be more susceptible to a sudden ____ in blood pressure known commonly as _____.

- A) decrease; orthostatic hypotension
- B) increase; orthostatic hypotension
- C) decrease; orthostatic hypertension
- D) increase; orthostatic hypertension

55. Nitroglycerin patches are typically used intermittently (e.g., 12 hours on, 12 hours off) to prevent

- A) skin irritation from the patch
- B) liver toxicity
- C) kidney damage
- D) tolerance to the drug

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