TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

BMLS

APM 4301 : CLINICAL PHARMACOLOGY

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt ALL questions.

Circle the correct answer in section A.

Section A

1. If 3 g of a drug are added and distributed throughout a tank and the resulting concentration is 0.15 g/L, calculate the volume of the tank.

A. 10 L

B. 20 L

C. 30 L

D. 200 L

E. 2000 L

2. What are adverse drug reactions (ADRs)?

a) The synergistic effects that are seen when some drugs are administered concurrently.

b) Responses to increased drug doses required to achieve the same physiological outcome.

c) Unintended alternative physiological responses caused by the drug that cause harm to the patient.

d) Harmful chemical interactions between two drugs that are used to treat the same clinical symptoms.

e) Reactions of people towards large tablets

3. In pharmacokinetics what does the acronym ADME stand for?

a) Absorption, Distribution, Metabolism, and Excretion

b) Administration, Differentiation, Metabolism, and Excretion

c) Absorption, Disintegration, Metabolism, and Efficacy

d) Administration, Distribution, Metabolism, and Efficacy

e) Absorption, Distinction, Metabolism and Efficiency

4. Which of the following are treatments offered by residential rehabilitation centres?

a) Group work

b) Psychological interventions

c) Social skills training

d) All of the above

e) None of the above

5. Detoxification is a process of systematic and supervised withdrawal from substance use that is either managed in a residential setting or on an outpatient basis. Drug use during detoxification can take which of the following forms?

a) Help reduce withdrawal symptoms

b) Prevent relapse

c) To wean a user onto a weaker substance

d) All of the above

e) None of the above

6. A hydrophilic medicinal agent has the following property:

a) Low ability to penetrate through the cell membrane lipids

b) Penetrate through membranes by means of endocytosis

c) Easy permeation through the blood-brain barrier

d) High reabsorption in renal tubules

e) Can penetrate the skin easily

7. What is implied by «active transport»?

a) Transport of drugs trough a membrane by means of diffusion

b) Transport without energy consumption

c) Engulf of drug by a cell membrane with a new vesicle formation

d) Transport against concentration gradient

e) Physical penetration of viruses in cells

8. What does the term “bioavailability” mean?

a) Plasma protein binding degree of substance

b) Permeability through the brain-blood barrier

c) Fraction of an uncharged drug reaching the systemic circulation following any route administration

d) Amount of a substance in urine relative to the initial dose

e) Available medicines in a hospital

9. The term “biotransformation” includes the following:

a) Accumulation of substances in a fat tissue

b) Binding of substances with plasma proteins

c) Accumulation of substances in a tissue

d) Process of physicochemical and biochemical alteration of a drug in the body

e) Blood transfusion

10. Biotransformation of the drugs is to render them:

a) Less ionized

b) More pharmacologically active

c) More lipid soluble

d) Less lipid soluble

e) Greater in volume

11. A person who has a strong desire to repeatedly use a drug for reasons other than pain relief has developed

a) psychological dependence.

b) cross-tolerance.

c) pharmacodynamic tolerance.

d) disposition tolerance.

e) a disease

12. Parasympathomimetic drugs cause:

a) Bronchodilation

b) Mydriasis

c) Bradycardia

d) Constipation

e) tachycardia

13. Sympathetic stimulation is mediated by:

a) Release of norepinephrine from nerve terminals

b) Activation of adrenoreceptors on postsynaptic sites

c) Release of epinephrine from the adrenal medulla

d) All of the above

e) None of the above

14. The term psychological dependence is used when:

a) It is clear that the individual has changed their life to ensure continued use of the drug

b) Their activities are centred on the drug and its use

c) Leads to neglect of other important activities such as work, social and family commitments

d) All of the above

e) None of the above

15. The dosage needed to produce a desired effect is called

a) maximum dose.

b) threshold dose.

c) dose-response outcome.

d) effective dose.

e) Single dose

16. To select an appropriate drug and dose for the individual patient is done in order to

a) achieve optimal therapeutic response

b) maximize profits while competing with other medical professionals

c) avoid therapeutic failure

d) minimize side effects and toxicity

e) Confirm a diagnosis

17. ADR most common in the following EXCEPT

a) Patients taking more than one drug

b) Women

c) Elderly (>60 y old)

d) Very young (1-4 y)

e) Athletes

18. Which of the following is a characteristic of Type A Adverse Drug Reactions

a) unrelated to pharmacological action of drug

b) unpredictable

c) uncommon

d) Dose-dependent

e) Fast and fatal

19. What is characteristic of the oral route?

a) Fast onset of effect

b) Absorption depends on GI tract secretion and motor function

c) A drug reaches the blood passing the liver

d) The sterilization of medicinal forms is obligatory

e) It is not effective

20. Tick the feature of the sublingual route:

a) Pretty fast absorption

b) A drug is exposed to gastric secretion

c) A drug is exposed more prominent liver metabolism

d) A drug can be administrated in a variety of doses

e) Must be in water

21. Pick out the parenteral route of medicinal agent administration:

a) Rectal

b) Oral

c) Sublingual

d) Inhalation

e) dermal

22. Parenteral administration:

a) Cannot be used with unconsciousness patients

b) Generally results in a less accurate dosage than oral administration

c) Usually produces a more rapid response than oral administration

d) Is too slow for emergency use

e) Is no longer useful

23. What is characteristic of the intramuscular route of drug administration?

a) Only water solutions can be injected

b) Oily solutions can be injected

c) Opportunity of hypertonic solution injections

d) The action develops slower, than at oral administration

e) One needs stiff needles

24. Correct statements listing characteristics of a particular route of drug administration include all of the following EXCEPT:

a) Intravenous administration provides a rapid response

b) Intramuscular administration requires a sterile technique

c) Inhalation provides slow access to the general circulation

d) Subcutaneous administration may cause local irritation

e) IV has 100% bioavalability

25. Biological barriers include all except:

a) Renal tubules

b) Cell membranes

c) Capillary walls

d) Placenta

e) Blood brain barriers

26. What is the reason of complicated penetration of some drugs through brain-blood barrier?

a) High lipid solubility of a drug

b) Meningitis

c) Absence of pores in the brain capillary endothelium

d) High endocytosis degree in a brain capillary

e) Thinking interferes with absorption

27. The volume of distribution (Vd) relates:

a) Single to a daily dose of an administrated drug

b) An administrated dose to a body weight

c) An uncharged drug reaching the systemic circulation

d) The amount of a drug in the body to the concentration of a drug in plasma

e) Volume of blood in males

28. For the calculation of the volume of distribution (Vd) one must take into account:

a) Concentration of a substance in plasma

b) Concentration of substance in urine

c) Therapeutical width of drug action

d) A daily dose of drug

e) Age

29. The term “biotransformation” includes the following:

a) Accumulation of substances in a fat tissue

b) Binding of substances with plasma proteins

c) Accumulation of substances in a tissue

d) Process of physicochemical and biochemical alteration of a drug in the body

e) Crushing of medicines using a mortar and pestle

30. Biotransformation of the drugs is to render them:

a) Less ionized

b) More pharmacologically active

c) More lipid soluble

d) Less lipid soluble

e) Potent

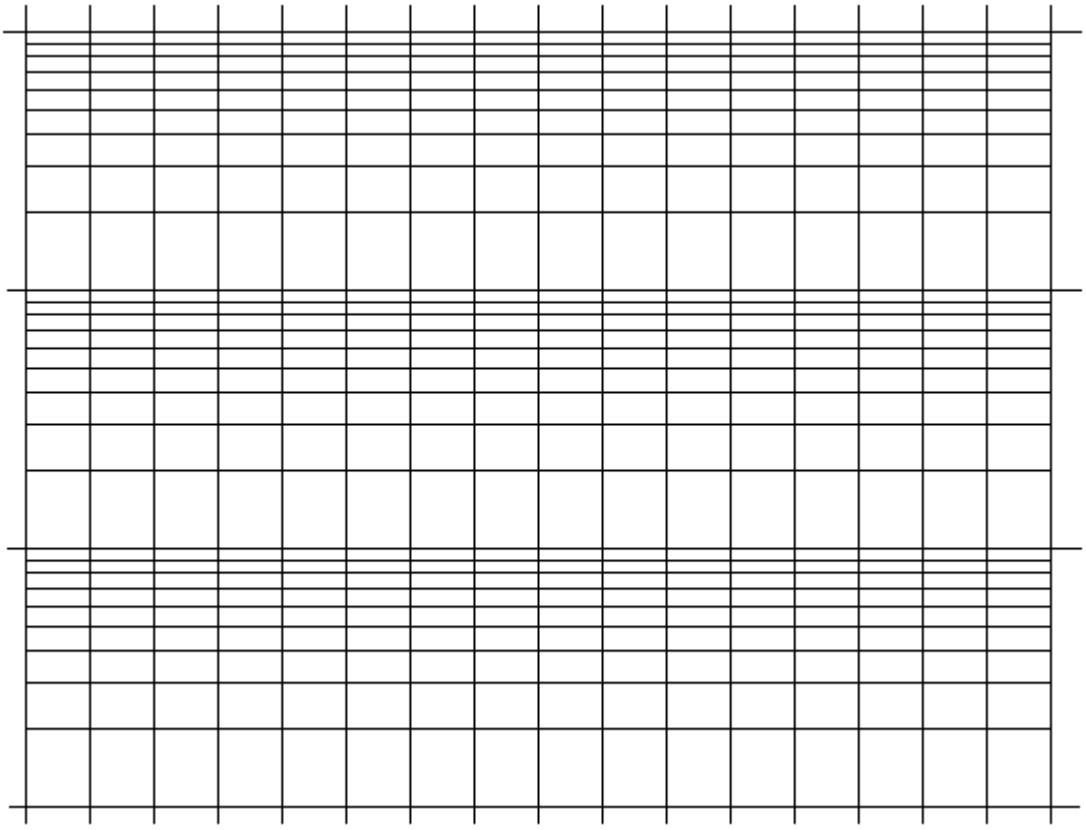
Section B

31. a) Outline 5 causes of variability in response to drugs (10 Marks)

b) Define pharmacogenomics and list 4 factors that make it difficult to employ it in developing countries (10 Marks)

32. The pharmacokinetics of a herbal medicine, KITIBA were studied following oral administration of 500 mg. The following table lists the resultant plasma concentrations in one subject.

Time (hr)	0.2	0.5	1	1.5	2	3	4	6	10	14	18
Cp (mg/L)	0.2	0.5	3	4.2	4.3	3.8	3.1	2.2	1.1	0.56	0.3



a) Draw a graph on the semi-log graph provided above (10 marks)

b) Calculate the half-life of the drug (10 marks)