



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. Metabolic transformation (phase 1) is:

- a) Acetylation and methylation of substances
- b) Transformation of substances due to oxidation, reduction or hydrolysis

c) Glucuronide formation

d) Binding to plasma proteins

e) Swallowing tablets

2. Biotransformation of a medicinal substance results in:

a) Faster urinary excretion

b) Slower urinary excretion

c) Easier distribution in organism

d) Higher binding to membranes

e) Greater volumes

3. Pick out the right statement:

a) Microsomal oxidation always results in inactivation of a compound

b) Microsomal oxidation results in a decrease of compound toxicity

c) Microsomal oxidation results in an increase of ionization and water solubility of a drug

d) Microsomal oxidation results in an increase of lipid solubility of a drug thus its excretion from the organism is facilitated

e) Microsomal oxidation can destroy livers

4. Stimulation of liver microsomal enzymes can:

a) Require the dose increase of some drugs

b) Require the dose decrease of some drugs

c) Prolong the duration of the action of a drug

d) Intensify the unwanted reaction of a drug

e) Cause cancer

5. Metabolic transformation (phase 1) is:

a) Acetylation and methylation of substances

b) Transformation of substances due to oxidation, reduction or hydrolysis

c) Glucuronide formation

d) Binding to plasma proteins

e) Faster than excretion

6. Biotransformation of a medicinal substance results in:

- a) Faster urinary excretion
- b) Slower urinary excretion
- c) Easier distribution in organism
- d) Higher binding to membranes
- e) Diarrhea

7. Conjugation is:

- a) Process of drug reduction by special enzymes
- b) Process of drug oxidation by special oxidases
- c) Coupling of a drug with an endogenous substrate
- d) Solubilization in lipids
- e) Combining two different drugs

8. Which of the following processes proceeds in the second phase of biotransformation?

- a) Acetylation
- b) Reduction
- c) Oxidation
- d) Hydrolysis
- e) Clicking

9. Conjugation of a drug includes the following EXCEPT:

- a) Glucuronidation
- b) Sulfate formation
- c) Hydrolysis
- d) Methylation
- e) Acetylation

10. Half life ($t_{1/2}$) is the time required to:

- a) Change the amount of a drug in plasma by half during elimination
- b) Metabolize a half of an introduced drug into the active metabolite
- c) Absorb a half of an introduced drug
- d) Bind a half of an introduced drug to plasma proteins
- e) Swallow half a prescription

11. Half life ($t_{1/2}$) doesn't depend on:

- a) Biotransformation
- b) Time of drug absorption
- c) Concentration of a drug in plasma
- d) Rate of drug elimination
- e) Rate of Excretion

12. Elimination is expressed as follows:

- a) Rate of renal tubular reabsorption
- b) Clearance speed of some volume of blood from substance
- c) Time required to decrease the amount of drug in plasma by one-half
- d) Clearance of an organism from a drug
- e) Use of reagents in the Lab

13. Pick out the answer which is the most appropriate to the term "receptor"

- a) All types of ion channels modulated by a drug
- b) Enzymes of oxidizing-reducing reactions activated by a drug
- c) Active macromolecular components of a cell or an organism which a drug molecule has to combine with in order to elicit its specific effect
- d) Carriers activated by a drug
- e) The receptionist in the hospital

14. What does "affinity" mean?

- a) A measure of how tightly a drug binds to plasma proteins
- b) A measure of how tightly a drug binds to a receptor
- c) A measure of inhibiting potency of a drug
- d) A measure of bioavailability of a drug
- e) Half life

15. A competitive antagonist is a substance that:

- a) Interacts with receptors and produces submaximal effect
- b) Binds to the same receptor site and progressively inhibits the agonist response
- c) Binds to the nonspecific sites of tissue

d) Binds to one receptor subtype as an agonist and to another as an antagonist

e) Is always present in pharmacies like paracetamol

16. Irreversible interaction of an antagonist with a receptor is due to:

a) Ionic bonds

b) Hydrogen bonds

c) Covalent bonds

d) All of the above

e) None of the above

17. Therapeutic index (TI) is:

a) A ratio used to evaluate the safety and usefulness of a drug for indication

b) A ratio used to evaluate the effectiveness of a drug

c) A ratio used to evaluate the bioavailability of a drug

d) A ratio used to evaluate the elimination of a drug

e) Drug index

18. What does the term “antibiotics” mean:

a) Non-organic or synthetic substances that selectively kill or inhibit the growth of other microorganisms

b) Substances produced by some microorganisms and their synthetic analogues that selectively kill or inhibit the growth of another microorganisms

c) Substances produced by some microorganisms and their synthetic analogues that inhibit the growth of organism cells

d) Synthetic analogues of natural substances that kill protozoa and helminthes

e) Antibodies produced in response to disease

19. General principles of anti-infective therapy are:

a) Clinical judgment of microbiological factors

b) Definitive identification of a bacterial infection and the microorganism’s susceptibility

c) Optimal route of administration, dose, dosing frequency and duration of treatment

d) All of the above

e) None of the above

20. Rational anti-microbial combination is used to:

- a) Provide synergism when microorganisms are not effectively eradicated with a single agent alone
- b) Provide broad coverage
- c) Prevent the emergence of resistance
- d) All of the above
- e) None of the above

21. Mechanisms of bacterial resistance to anti-microbial agents are the following, EXCEPT:

- a) Active transport out of a microorganism or/and hydrolysis of an agent via enzymes produced by a microorganism
- b) Enlarged uptake of the drug by a microorganism
- c) Modification of a drug's target
- d) Reduced uptake by a microorganism
- e) Reduced binding

22. Bactericidal effect is:

- a) Inhibition of bacterial cell division
- b) Inhibition of young bacterial cell growth
- c) Destroying of bacterial cells
- d) Formation of bacterial L-form
- e) Consumption of drug by bacteria

23. Bacteristatic effect is:

- a) Inhibition of bacterial cell division
- b) Inhibition of young bacterial cells growth
- c) Destroying of bacterial cells
- d) Formation of bacterial L-form
- e) Consumption of drug by bacteria

24. Which of the following is FALSE about pharmacogenetics

- a) it can be used interchangeably with the term pharmacogenomics
- b) it discusses how cancer starts
- c) it investigates the role of acquired and inherited genetic differences in relation to drug response and drug behavior

d) it systematically examines genes and gene products

e) It is important medically

25. The Human Genome Project was initiated by

a) NIH and DOE

b) NIH and EBI

c) NIH and DDJB

d) DOE and DDJB

e) WHO and UN

26. The prime objective of the HGP was

a) To find out the exact functions of proteins in humans

b) To sequence the entire base pairs that makes up the 23 chromosomes

c) To sequence the entire base pairs that makes up the 24 chromosomes

d) To find out the active genes in human genome

e) Reduce human populations

27. According to HGP, human genome consists of approximately

a) 1000,000 genes

b) 50,000 genes

c) 30,000 genes

d) 20,000 genes

e) 10,000 genes

28. Which of the following vectors was widely used in the HGP?

a) plasmid and cosmid

b) lambda phage and M13 vectors

c) phagemid and shuttle vectors

d) BAC and YAC

e) YCC and GFR

29. Genetic similarity between humans according to the HGP is

- a) 90%
- b) 95%
- c) 99.9%
- d) 99.5%
- e) 92%

30. The largest gene in humans is

- a) titin
- b) dystrophin
- c) insulin
- d) phosphofructokinase
- e) Acetylcholine

Section B

31. Define the following with examples (20 Marks)

- a) Adverse Drug Reaction
- b) Benefit/Risk analysis
- c) Medicinal product
- d) Side effect
- e) Herbal drug

32. Outline 10 key interventions that the WHO advocates to promote more rational use of medicines (20 Marks)