# THE COPPERBELT UNIVERSITY

## SCHOOL OF MEDICINE

### Term 1 Test: December 2016

### Course: MBS230

### CLINICAL PHARMACOLOGY

**STUDENT NUMBER:** MORGAN MWELWA

**STUDENT NAME:** .....

**TIME:** **Allocated time is 1 hour and 15 minutes**

**INSTRUCTIONS:**

1. Do not write or, mark true or false against each item. Any unclear mark will be deemed wrong.
2. Write your student number on each answer sheet.
3. Thirty **(30)** questions are of the true/false type. Circle **T = True** or **F = False** on the answer sheet provided.
4. If you wish to alter an answer indicate clearly on the sheet which answer you wish to be considered.

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***IMPORTANT:*** *Incorrect answers are penalised, by a **negative half mark** **(-0.5)**. If you do not know the answer, it is better to leave the question unanswered.*

**Multiple Choice Questions** **Marks Allocation = 100%**

**Time allocated is 1 hour and 15 minutes**

**1.) The half-life of the following drugs is/are increased in the elderly:**

a) gentamicin
b) glibenclamide
c) lithium
d) morphine glucuronide
e) diazepam

**2.) In pregnancy:**

a) Most drugs cross the placenta by active transport
b) Ionised drugs cross the placenta more easily than un-ionised drugs
c) Drugs that reduce placental blood flow can reduce birth weight
d) The fetal blood-brain barrier is not developed until the second half of pregnancy
e) The human placenta metabolises endogenous steroids

**3.) The following drugs are confirmed teratogens in humans:**

a) ethanol (alcohol)
b) warfarin
c) isotretinoin
d) paracetamol
e) amoxicillin

**4.) A "normal" man of 78 in comparison with a "normal" man of 31:**

a) Is more likely to be on regular drug therapy
b) Is more prone to sedation with benzodiazepine
c) Has a higher endogenous production of creatinine
d) Has an increased liability of allergic drug reactions
e) Usually requires a lower dose of warfarin to achieve anticoagulation

**5.) The following properties of a drug facilitate its entry into breast milk:**

a) High lipid solubility
b) Un-ionised state at physiological pH
c) Low molecular weight
d) Weak base
e) Short half life

**6.) The apparent volume of distribution:**

a) Can be greater than the total body volume
b) Is approximately 4.1L for most drugs in adults
c) Is influenced by a drug's lipid solubility
d) A large value indicates that a drug will be efficiently eliminated by haemodialysis
e) Determines the peak plasma concentration after a single bolus intravenous dose

**7.) The oral bioavailability of a drug:**

a) Is a measure of the extent to which it enters the systemic circulation
b) May be influenced by changing the excipient after oral administration
c) Is defined as the ratio of the area under the plasma concentration time curve (AUC) following oral administration divided by that following intravenous administration
d) May be reduced by hepaticCYP450 induction
e) Two preparations of the same drug may have similar bioavailability but different peak concentrations ($C_{max}$)

**8.) Drug absorption following oral administration:**

a) Is most commonly through passive diffusion
b) Occurs predominantly in the colon
c) Is usually complete within 110 minutes
d) Non-polar lipid-soluble drugs are absorbed more readily than polar water-soluble drugs
e) Peptides are well absorbed following oral administration

**9.) The following inhibit at least one of the hepatic CYP450 isoenzyme:**

a) fluvoxamine
b) Grapefruit juice
c) digoxin
d) itraconazole
e) ciprofloxacin

**10.) The following are subject to extensive pre-systemic (first-pass) metabolism:**

a) metoprolol
b) phenytoin
c) ciprofloxacin
d) morphine
e) verapamil

**11.) The variability in the relationship between dose and response is a:**

a) measure of potency of a drug
b) measure of stability of a drug
c) measure of the sensitivity of patient to a drug
d) measure of the specificity of a drug
e) measure of pharmacodynamics

**12.) What is the main determinant, in practice, in calculating the dose of a drug with a narrow therapeutic index?**

a) Protein binding
b) Bioavailability of a drug
c) Apparent volume of distribution
d) Weight of patient
e) Lipid solubility of a drug

**13.) The following factors affect distribution of drugs:**

a) Water solubility
b) Drug formulation
c) Regional blood flow
d) Protein binding
e) Age of patient

**14.) About plasma protein binding:**

a) Basic drugs bind mainly to albumin
b) Basic drugs bind mainly to $\alpha_1$-acid glycoprotein
c) Acidic drugs bind mainly to red blood cells
d) Acidic drugs bind mainly to albumin
e) Acidic drugs bind mainly to $\alpha_1$-acid glycoprotein

**15.) The following drugs are enzyme inducers of CYP450:**

a) erythromycin
b) digoxin
c) ethanol
d) cimetidine
e) valproate

**16.) The following CYP450 enzymes show genetic polymorphism:**

a) CYP1A2
b) CYP2C19
c) CYP2D6
d) CYP2E1
e) CYP3A4

**17.) About half-life ($T_{½}$) of a drug:**

a) Is a good indicator of drug elimination
b) Is a factor that influences drug clearance
c) Is useful for determining dosing rate
d) Can give indication of time required to reach steady-state
e) Is useful in determining elimination rate constant ($K_{elim}$)

**18.) About drug dosage at steady-state:**

a) Rate of drug elimination is a ratio of clearance and steady-state plasma concentration
b) Bioavailability of drug is assumed to be 100% with oral route
c) Dosing rate is equal to elimination rate
d) Drug half-life has little influence in calculating dosing rate
e) Rate of drug elimination is a product of clearance and steady-state plasma concentration

**19.) The following drugs are substrates of hepatic N-acetyl-transferase:**

a) warfarin
b) ketoconazole
c) propranolol
d) fluconazole
e) clarithromycin

**20.) The following factors affect oral drug absorption:**

a) Food in stomach
b) Age of patient
c) Motility of gut
d) Patch formulation
e) Lipid solubility

**21.) The following drugs are recognized enzyme inhibitor of some CYP450 iso-enzymes:**

a) ciprofloxacin
b) omeprazole
c) fluoxetine
d) disulfiram
e) clarithromycin

**22.) The following drugs/chemicles are known to cause type I hypersensitivity reaction:**

a) diazepam
b) contrast media
c) thiazides
d) cephalosporins
e) methyldopa

**23.) The concentration of the following drugs are increased in slow acetylators:**

a) hydralazine
b) sulphonamides
c) diazepam
d) isoniazid
e) procainamide

**24.) About the mixed function cytochrome P450 iso-enzyme system:**

a) Is predominately positively skewed
b) Is predominately negatively skewed
c) Determinants often show bi-modal distribution
d) Response to drugs is often constant
e) Response to drugs largely show discontinuous variation

**25.) The following drugs are used as markers of hepatic drug metabolism:**

a) antipyrine
b) nifedipine
c) debrisoquine
d) paracetamol
e) isoniazid

**26.) The following drugs are associated thrombocytopenia:**

a) penicillins
b) sulphonamides
c) carbimazole
d) digoxin
e) heparin

**27.) The following drugs should ideally be subjected to therapeutic drug monitoring:**

a) lithium
b) salicylates
c) carbamazepine
d) digoxin
e) gentamicin

**28.) The following is/are anti-dotes in drug overdose/poisoning:**

a) naloxone for opioids overdose
b) methionine for salicylates overdose
c) atropine for amphetamines poisoning
d) sodium bicarbonate for tricyclic antidepressants overdose
e) desferrioxamine for iron overdose

**29.) The following is true about paracetamol overdose/poisoning:**

a) Determining plasma concentration assist treatment
b) HIV infected patients are at high risk of toxicity
c) Atropine is a useful anti-dote
d) Obese patients are at high risk of toxicity
e) Patients on CYP450 inducers are at high risk of toxicity

**30.) Knowledge of plasma concentration of the following drugs/chemicles influence treatment decisions in overdose/poisoning:**

a) digoxin
b) methanol
c) diamorphine (heroin)
d) theophylline
e) paracetamol

**>>>>>>>>>> END OF TEST <<<<<<<<<<**