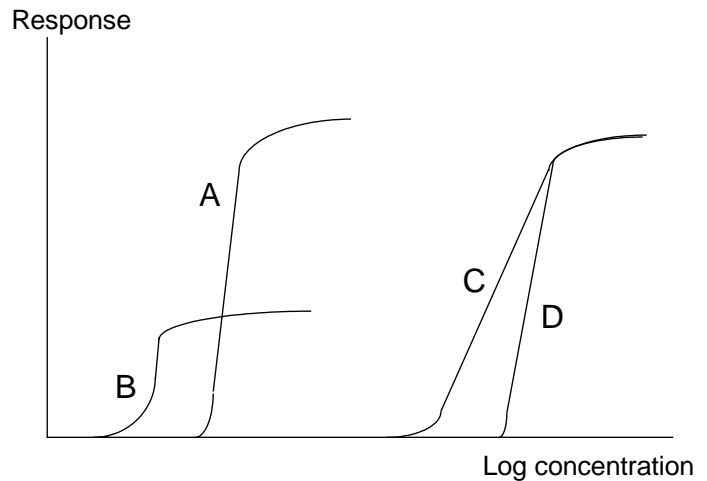


## PHARMACOLOGY

1. In the case of poisoning with the so-called heavy metals
  - A. Acute arsenic toxicity causes vomiting but not diarrhoea
  - B. Chronic lead poisoning causes flexor muscle weakness and sensory disturbance
  - C. Mercury intoxication can readily occur by ingestion of the pure liquid
  - D. Acute iron ingestion can be effectively treated with oral activated charcoal
  - E. Chronic lead poisoning may cause hypochromic microcytic anaemia

2. Referring to the below diagram

- A. Drugs C and D are more potent than Drugs A and B
- B. Drug A is less potent than Drug B
- C. Drug C has the greatest efficacy
- D. Drug B has the shortest half life
- E. Drug B has the greatest efficacy



3. Phase II drug biotransformation reactions
  - A. result in the conversion of the parent drug into its activated form
  - B. result in increased binding of metabolites to Albumin
  - C. are necessary for the excretion of drug into the urine
  - D. result in the degradation of drugs into non-toxic metabolites that are readily excreted into the urine
  - E. None of the above
4. Volume of distribution is
  - A. Generally larger than predicted for patients with ascites
  - B. Directly proportional to the drug concentration in plasma
  - C. High in drugs contained in plasma
  - D. Directly proportional to loading dose
  - E. Not affected by being obese
5. Suxamethonium
  - A. Has no effect on heart rate
  - B. May cause decreased intraocular pressure
  - C. Would be the muscle relaxant of choice in a patient severely burned two weeks prior
  - D. Has a short duration of action due to rapid hydrolysis by acetyl cholinesterase
  - E. Is antagonised by nondepolarising muscle relaxants
6. Adenosine
  - A. Is a synthetic nucleoside
  - B. Half life is 30 seconds
  - C. May be effective in broad complex tachycardia
  - D. Causes flushing in 50% of patients
  - E. has marked effect on sinoatrial nodal function
7. Regarding neuromuscular blocking agents
  - A. Rocuronium has longest duration of action
  - B. Nondepolarising agents paralyse larger muscles first
  - C. Aminoglycosides decrease neuromuscular blockade
  - D. Vecuronium has little effect on the cardiovascular system
  - E. Nondepolarising blockade isn't surmountable

8. All are effects of tricyclic antidepressant overdose EXCEPT

- A. Drowsiness
- B. Seizure
- C. Respiratory depression
- D. Increased GI motility
- E. Bladder paralysis

9. With regard to thrombolytic agents

- A. Streptokinase acts by binding to fibrin
- B. The half life of Streptokinase is 15 minutes
- C. Streptokinase is inactivated by amino protease
- D. Hypertension is a common side effect of streptokinase
- E. Acute pericarditis is a contraindication to streptokinase

10. Chloramphenicol

- A. Is an inhibitor of microbial metabolic function
- B. Is bactericidal
- C. Is clinically effective against Chlamydiae
- D. After absorption has a wide distribution including CNS
- E. Is poorly absorbed

11. In organophosphate poisoning

- A. Carbamates bind irreversibly to acetyl cholinesterase
- B. Parathion is poorly absorbed through the skin
- C. Anticholinergics are ineffective in treatment
- D. Carbamates have a longer duration of action than organophosphates
- E. Pralidoxime is most effective if administered early

12. Nifedipine

- A. Is useful as an antiarrhythmic agent
- B. Can be given via both IV and IM routes
- C. May cause peripheral oedema and constipation
- D. Is safely given in conjunction with Beta blockers
- E. Acts via potentiation of calcium influx

13. Angiotensin converting enzyme inhibitors

- A. Act only by inhibiting the conversion of angiotensin I to angiotensin II
- B. can only be safely used if renal function is monitored on a weekly basis for the duration of treatment
- C. Can precipitate acute hypotension perioperatively
- D. Cause neutropaenia that does not usually resolve with cessation of the drug
- E. Reduce bradykinin activity

14. Nitrates

- A. Act via cAMP
- B. when given orally have a bioavailability of 30%
- C. have metabolites that are clinically important
- D. are excreted mainly by the liver
- E. are not associated with problems of tolerance

15. In the Vaughan Williams classification

- A. Procainamide is in Class Ic
- B. Sotalol is in Class III
- C. Lignocaine is in Class Ia
- D. Bretylium is Class II
- E. Class IV drugs prolong action potential

16. A partial agonist
- A. Will produce a higher response at the same receptor occupancy rate when compared to a complete agonist
  - B. Will have no effect on an agonist producing maximal effect
  - C. May be used as a competitive antagonist
  - D. Will alter the plateau of the dose-response curve
  - E. May have the same maximal efficacy but a lower potency when compared to a complete agonist
17. All of the following about Noradrenaline are correct EXCEPT
- A. Is synthesised in nerve terminals
  - B. Can result in piloerection
  - C. Is metabolised by both COMT and MAO systems
  - D. Has a stronger affinity for beta adrenoceptors than Isoprenaline
  - E. Is synthesised from Tyrosine
18. Adverse effects of Suxamethonium include all of the following EXCEPT
- A. Bradycardia
  - B. Hypokalaemia
  - C. Myoglobinaemia
  - D. Malignant hyperpyrexia
  - E. Raised intraocular pressure
19. MAO inhibitors interact with all of the following EXCEPT
- A. Warfarin
  - B. Tricyclic antidepressants
  - C. Cheeses
  - D. Amphetamines
  - E. Guanethidine
20. Which of the following statements are correct
- A. Atenolol is water soluble
  - B. Propranolol is too large to cross the blood brain barrier
  - C. Timolol is useful as eyedrops because of its membrane stabilising activity
  - D. Sotolol is extensively metabolised in the liver
  - E. Labetolol is safe in asthmatics because of its intrinsic sympathomimetic activity
21. Lignocaine
- A. Is ineffective against arrhythmias originating in depolarised tissues
  - B. Hepatic clearance is equivalent to hepatic blood flow
  - C. Has no active metabolites
  - D. Is approximately 90% plasma protein bound
  - E. Lengthens the action potential
22. Quinidine
- A. Is a sodium channel blocker which shortens the action potential
  - B. Is ineffective for supraventricular arrhythmias
  - C. Is useful in the treatment of Torsades-de-Pointes
  - D. Has indirect (anticholinergic) actions on the heart
  - E. Has no interaction with Digoxin
23. Drug concentration is not a good indicator of response
- A. When acute tolerance develops (tachyphylaxis)
  - B. For drugs used at concentrations which give a maximal response
  - C. For drugs which have delayed distribution
  - D. All of the above
  - E. None of the above

24. Calcium channel blockers

- A. Dihydropyridines are less cardioselective and more vascularly active when compared to other groups
- B. Results in increased cardiac muscle contractility
- C. Are compatible for use with beta blockers
- D. are of no use in acute myocardial infarction
- E. Increase myocardial oxygen consumption

25. Concerning Digoxin

- A. It is metabolised in the liver
- B. It results in decreased intracellular potassium
- C. Antibiotics may decrease its bioavailability
- D. Toxicity is rarely associated with arrhythmias
- E. It has a clinically significant diuretic action

26. Atropine

- A. Is a tertiary amine and so does not cross the blood brain barrier
- B. Increases atrioventricular conduction time
- C. Increases blood pressure
- D. Diarrhoea is a feature of toxicity
- E. Competitively antagonises acetylcholine at muscarinic receptors

27. The toxic effects of Paracetamol

- A. Can be avoided using Cimetidine to inhibit the cytochrome P450 system
- B. Are always evident with doses of 150 mg/kg and greater
- C. In chronic overdose are less likely than in acute overdose
- D. Include neurotoxicity resulting in personality changes
- E. Occur because sulphation / glucuronidation pathways and metabolism are saturable

28. Clinical effect of antidepressants most closely correlates to

- A. Noradrenaline and Serotonin levels in neuronal synapses
- B. Drug concentrations in the cerebral circulation
- C. The number of tablets ingested
- D. Decrease in the number of post-synaptic beta receptors
- E. Changes in the patient's standard clinical measurements (HR, BP, Temp etc.)

29. Features of the malignant neuroleptic syndrome occasionally encountered with antipsychotic agents include all of the following EXCEPT

- A. Emotional lability
- B. Muscle rigidity
- C. Autonomic instability
- D. Leucocytosis
- E. Rhabdomyolysis

30. Chlorpromazine

- A. Blocks dopamine receptors
- B. Blocks histamine receptors
- C. Blocks alpha receptors
- D. None of the above
- E. All of the above

31. A woman aged 43 presents with a petechial rash on her legs and a platelet count of 8,000. She has recently been receiving treatment for an ear infection. Which of these agents is most likely to be the cause of her current problems.

- A. Penicillin
- B. Amoxicillin
- C. Cotrimoxazole
- D. Erythromycin
- E. Roxythromycin

32. A 70-year old patient undergoing antimicrobial therapy for acute cholecystitis complains of dizziness, headache and nausea on movement. Which antibiotic is most likely to have caused these symptoms.

- A. Amoxicillin
- B. Trimethoprim
- C. Gentamicin
- D. Ceftriaxone
- E. None of the above

33. Which of the following is not true for Norfloxacin

- A. It is poorly absorbed from the GIT
- B. It is effective in salmonella enteritis
- C. It inhibits DNA synthesis in susceptible microbes
- D. It can increase serum theophylline levels if administered concurrently
- E. It is mainly excreted by the kidney

34. With respect to hypersensitivity reactions to penicillins

- A. If a patient has had a previous reaction to Penicillin, the risk of allergic reaction is greater than 80%
- B. Small children are at higher risk of allergic reaction to penicillin
- C. Less than 1% of patients with a past history of having taken penicillin without reaction will have an allergic reaction
- D. the risk of sensitisation is not related to the amount of penicillin received in the past
- E. Ceftriaxone is a safe alternative for those with a past history of anaphylaxis to penicillin

35. A 25-year old woman being treated for pneumonia develops clinical jaundice. Her serum bilirubin level is 40 micromoles per litre (normal up to 17), with a conjugated bilirubin level of 30 micromoles per litre (normal up to 7). Which antibiotic is most likely to have caused this effect

- A. Vancomycin
- B. Ceftriaxone
- C. Penicillin
- D. Doxycycline
- E. Erythromycin

36. Naloxone

- A. has an increased half life in the presence of renal failure
- B. does not produce an abstinence syndrome after withdrawal subsequent to chronic administration
- C. is a weak opiate agonist/antagonist
- D. has a half life of 30 minutes
- E. binds specifically with Kappa receptors

37. Propofol

- A. is less painful when injected than thiopentone
- B. causes less hypotension than thiopentone
- C. is less likely to cause post operative vomiting than thiopentone
- D. causes cumulative effects when given as a continuous infusion
- E. is useful in long term sedation in ICU for periods 1-2 weeks

38. Heparin

- A. consists of a heterogeneous groups of glycoproteins
- B. acts by decreasing activity of blood coagulant factor VII
- C. is associated with osteomalacia
- D. increases the reaction rate of antithrombin III on clotting factors
- E. is consumed in anticoagulation activity

39. Regarding inhaled anaesthetics

- A. the concentration of an individual gas in a mixture of gases is inversely proportional to its partial pressure
- B. the blood gas partition co-efficient of nitrous oxide is about 0.5
- C. the rate of rise of anaesthetic gas tension in arterial blood does not depend on minute alveolar ventilation
- D. they have no effect on right atrial pressure or contractility of the heart
- E. nitrous oxide is probably the only inhaled anaesthetic that causes a decrease in tidal volume and an increase in respiratory rate

40. Neostigmine

- A. blocks acetylcholine receptors
- B. depolarises the end plate regions of muscle cells
- C. reverses the blockade produced by suxamethonium
- D. reverses the blockade produced by tubocurarine
- E. potentiates muscarinic but not nicotinic responses to acetylcholine

41. Ketamine

- A. is useful as an induction agent in head injured patients
- B. decreases salivation
- C. decreases heart rate and may cause bronchoconstriction
- D. must be given intramuscularly
- E. may cause unpleasant dreams in children

42. Your patient has abnormal LFT's, in particular an elevated AST. He tells you he is on medication for fits, but can't name it. Which is most likely to be his drug?

- A. phenytoin
- B. Diazepam
- C. Sodium valproate
- D. Clonazepam
- E. ethosuxamide

43. Regarding phenytoin

- A. it follows zero-order kinetics in clinical doses
- B. it follows zero-order kinetics only in excessive doses
- C. it follows first-order kinetics only in subclinical doses
- D. it is excreted mainly unchanged by the kidney
- E. its concentration is increased by co-administration of carbamazepine

44. A patient started on carbamazepine for episodes of partial seizures. After a month where she was seizure free, she started having further seizures. What is the MOST LIKELY cause

- A. patient developed a tolerance to carbamazepine
- B. carbamazepine is not the drug of choice for such seizures
- C. initially carbamazepine has a low systemic clearance, however over time the clearance increases requiring an increase in dose of carbamazepine
- D. she was not loaded with carbamazepine appropriately
- E. all of the above

45. Tricyclic antidepressants

- A. have a predictable bioavailability
- B. enhance amine reuptake pumps
- C. more commonly causes cardiac arrhythmias in patients with metabolic acidosis
- D. cause urinary frequency
- E. increase gastric emptying

46. Amiodarone

- A. is only effective in suppression of ventricular arrhythmias
- B. causes peripheral vasodilation via alpha-adrenergic effects
- C. commonly causes corneal opacification
- D. increases Warfarin clearance
- E. decreases the AV nodal refractory period

47. For a specific effect, drug A is more potent than drug B. It follows that

- A. drug B is a partial agonist acting at the same receptor as drug A
- B. drug A causes a greater maximal effect than drug B
- C. when present in identical concentrations, drug A causes a greater effect than drug B
- D. drug A has a lower ED50 than drug B
- E. drug B will have a steeper dose response curve than drug A

48. Frusemide

- A. causes dose-related ototoxicity that is characteristically irreversible
- B. decreases Na and water delivery to the distal nephron
- C. enhances renal H<sup>+</sup> secretion in the collecting tubule
- D. causes hypokalaemic metabolic acidosis in overdose
- E. has no effect on body Mg<sup>2+</sup> stores in chronic use

49. The volume of distribution of a drug

- A. relates its dose to its clearance rate
- B. is not an apparent volume
- C. if high, implies greater concentration of drug in extravascular tissue
- D. if high, implies greater plasma protein binding of the drug
- E. if high, implies easier clearance of the drug by haemodialysis in overdose

50. Warfarin

- A. is an orally administered anticoagulant with low bioavailability
- B. block the alpha carboxylation of glutamate residues in protein C
- C. has an anticoagulant action which is immediate
- D. does not cross the placenta-blood barrier
- E. causes increased prothrombin time when given with diuretics

51. Zidovudine (AZT)

- A. acts on thymidine kinase
- B. must be given parenterally
- C. inhibits synthesis of viral DNA
- D. stimulates reverse transcriptase
- E. is effective against herpes viruses

52. EC50 is

- A. drug concentration with 50% receptors bound
- B. drug concentration with 50% of maximal drug effect
- C. a representation of the receptors affinity for drug binding
- D. always equal to K<sub>d</sub>
- E. measured with radioactive receptor

53. Which of the following vasodilators acts by arteriolar dilation with negligible venous dilation

- A. glyceryl trinitrate
- B. verapamil
- C. sodium nitroprusside
- D. diazoxide
- E. none of the above

54. Which of the following antidotes acts by BYPASSING blockade of a receptor

- A. glucagon (Beta blocker poisoning)
- B. flumazenil (Benzo poisoning)
- C. propranolol (Theophylline poisoning)
- D. methanol (ethanol poisoning)
- E. acetyl-cysteine (paracetamol poisoning)

55. Metoclopramide exerts its anti-emetic effect by

- A. inhibiting the action of acetylcholine at muscarinic nerve endings in the gut
- B. by blocking dopamine D<sub>2</sub> receptors in the chemoreceptor trigger zone
- C. lowering the tone of the lower oesophageal sphincter
- D. raising the tone at the pylorus
- E. none of the above are correct

56. Regarding the pharmacokinetics of lithium, which of the following is NOT true

- A. lithium is rapidly absorbed throughout the gut
- B. lithium has a volume of distribution of about 50L
- C. concomitant use of a diuretic can reduce lithium clearance by 50%
- D. lithium is easily dialysable from blood
- E. more than 50% of lithium is bound to plasma protein

57. Dopamine

- A. has less alpha agonist effect than dobutamine
- B. dilates the renal vascular bed by its action of Beta 1 receptors
- C. causes a profound rise in peripheral vascular resistance
- D. is inactivated by sodium bicarbonate
- E. causes vasoconstriction at all doses

58. Streptokinase

- A. has a shorter half-life than r-tPA
- B. is a non-fibrin selective fibrinolytic
- C. is less likely than r-tPA to cause a coagulation disturbance in plasma
- D. reduces mortality from myocardial infarction in 40% of cases
- E. is ineffective for the treatment of non-coronary thrombosis

59. The following are effects of hydrocortisone EXCEPT

- A. suppression of gluconeogenesis
- B. increased urinary calcium excretion
- C. osteoporosis
- D. psychotic states
- E. delayed healing of wounds

60. Which of the following does not cause cholestatic hepatitis

- A. chlorpromazine
- B. carbimazole
- C. phenytoin
- D. erythromycin
- E. glibenclamide

61. With reference to drug receptors

- A. the total number of receptors is unrelated to the maximal effect of a drug
- B. pure pharmacologic antagonists bind to receptors and directly alter the receptors function
- C. they include regulatory proteins, enzymes, transport proteins and structural proteins
- D. receptor-mediated responses to drugs usually remain constant over time, even in the continued presence of the agonist
- E. receptor desensitisation is usually irreversible

62. Which of the following adverse drug reactions does not have a hereditary basis

- A. Prolonged paralysis after succinyl choline
- B. Malignant hyperthermia after Halothane
- C. Thrombocytopenia after Quinidine
- D. Development of lupus erythematosus during treatment with Hydralazine
- E. Resistance to Warfarin but sensitivity to Vitamin K

63. In all but which of the following situations is the effect of the drug potentiated

- | Potentiating drugs | Potentiated drugs  |
|--------------------|--------------------|
| A. Thiazide        | Digoxin            |
| B. Verapamil       | Digoxin            |
| C. Chloral hydrate | Warfarin           |
| D. Naproxen        | Thiazide diuretics |
| E. Diltiazem       | Propranolol        |

64. The time taken for a drug to reach steady state plasma concentration after either infusion or oral administration depends on

- A. Rate of infusion
- B. Half life
- C. Total amount of drug
- D. Total clearance
- E. Bioavailability

65. Which does not cause postural hypotension

- A. Amitriptyline
- B. Naproxen
- C. Frusemide
- D. Felodipine
- E. Enalapril



66. In all but which one of the following situations is the effect of the drug diminished

- | Inhibitor         | Drug            |
|-------------------|-----------------|
| A. Cholestyramine | Warfarin        |
| B. Naloxone       | Morphine        |
| C. Metoprolol     | Diltiazem       |
| D. Rifampicin     | Corticosteroids |
| E. Flumazenil     | Oxazepam        |

67. All of the following changes except which one occur with age, and affect drug treatment

- A. decreased lean body mass
- B. decreased GFR
- C. decreased sensitivity to beta adrenoceptor function
- D. decreased sensitivity to Warfarin
- E. increased sensitivity to centrally acting sedative-hypnotics

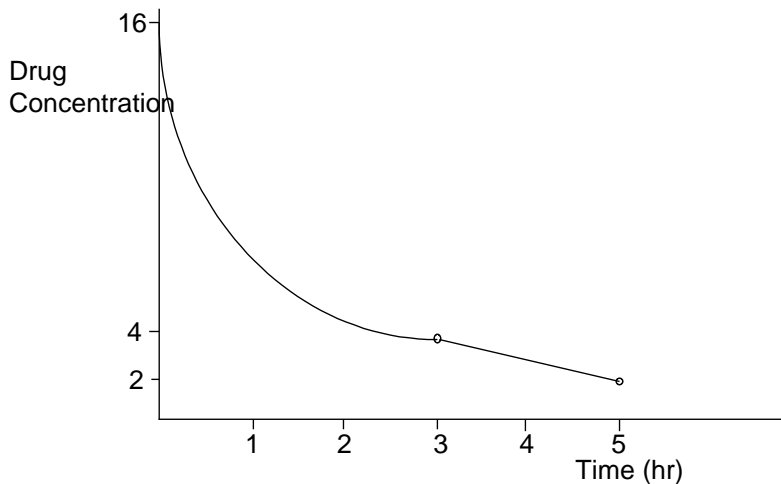
68. The pharmacokinetic value that most reliably reflects the amount of drug reaching the target tissue when given orally is

- A. Peak blood concentration
- B. Time taken to reach peak blood concentration
- C. Product of the volume of distribution and the first order rate constant
- D. Volume of distribution
- E. Area under the blood concentration-time curve

69. Monitoring the blood level is particularly important in all except

- A. When interpatient variability is considerable
- B. When the therapeutic index is low
- C. When the biological effect is difficult to monitor
- D. When the drug has a short duration of action

70-72. Referring to the following graph, where 300mg of a drug is administered IV to a 50kg woman:



70. Volume of distribution is

- A. 3L
- B. 10L
- C. 30L
- D. 50L
- E. 300L

71. Half life is

- A. 30 min
- B. 1 hr
- C. 2 hr
- D. 3 hr
- E. 4 hr

72. Total body clearance is
- A. 0.2 L/hr
  - B. 0.5 L/hr
  - C. 1 L/hr
  - D. 3 L/hr
  - E. 10.5 L/hr
73. Pancytopenia is common after
- A. Phenytoin
  - B. Chlorthiazide
  - C. Guanethidine
  - D. Methotrexate
  - E. Reserpine
74. CO poisoning causes all except
- A. oxygen carrying decreased
  - B. oxyhaemoglobin dissociation curve shifted to right
  - C. Carboxyhaemoglobin less than 30% gives minimal symptoms
  - D. Treatment with 100% oxygen is effective
75. Ototoxicity occurs with all except
- A. Ethacrynic acid
  - B. Gentamicin
  - C. Frusemide
  - D. Allopurinol
76. Side effects of contraceptive pill include all but
- A. decreased glucose tolerance
  - B. increased blood pressure
  - C. sodium and water retention
  - D. ovarian carcinoma
77. Direct hepatic toxicity occurs in all but
- A. Halothane
  - B. Thiopentone
  - C. Enflurane
  - D. Methoxyflurane
78. Carbidopa is used in the treatment of Parkinson's because
- A. Precursor of L-dopa
  - B. Dopamine antagonist
  - C. Decreased peripheral breakdown of L-dopa
  - D. Decreased breakdown of dopamine
  - E. Promotes regeneration of dopaminergic neurones
79. Methyldopa is used as an antihypertensive because
- A. Blocks beta receptors
  - B. Prevents conversion of angiotensinogen to angiotensin
  - C. Alters central sympathetic activity
  - D. Directly dilates arteriolar smooth muscle
  - E. Produces catecholamine depletion in postganglionic sympathetic nerves
80. Digoxin is best described as
- A. greater than 90% plasma protein bound
  - B. has enterohepatic circulation
  - C. completely orally absorbed
  - D. excreted unchanged in urine, predominantly
  - E. High margin of safety

81. Quinidine has its effect on Digoxin by

- A. decreasing absorption from gut
- B. Decreasing metabolism
- C. Increased concentration in plasma
- D. decreased effect on AV node
- E. decreased effect on sodium/potassium ATP ase

82. Verapamil works by

- A. decreasing calcium entry through slow channels
- B. decreasing repolarisation
- C. increasing calcium entry through fast channels
- D. antagonising opening of fast sodium channels
- E. enhancing potassium efflux

83. Which effect is not due to the inhibition of metabolism

Inhibiting drug	Inhibited drug
A. Cimetidine	Phenytoin
B. Erythromycin	Theophylline
C. Rifampicin	Contraceptive pill
D. Metronidazole	Alcohol
E. Allopurinol	Azathioprine

84. Which of the following groups of drugs can be used in control of nausea and vomiting

- A. Corticosteroids
- B. Marijuana derivatives
- C. Benzodiazepines
- D. 5HT<sub>3</sub> inhibitors
- E. All of the above

85. Features of third generation cephalosporins include

- A. Good efficacy against gram positive organisms
- B. Reliable activity in cases of P.aeruginosa meningitis
- C. Consistent activity against haemophilus and neisseria species
- D. Reliable high oral bioavailability
- E. Reversible binding to the 50S subunit of the bacterial ribosome

86. Regarding Aspirin

- A. It is a selective inhibitor of cyclo oxygenase II
- B. It is a base
- C. It is slowly absorbed in the ileum
- D. It blocks the CNS response to interleukin 1
- E. Its action on platelet aggregation is reversible

87. Regarding the opioid receptors, all of the following are true EXCEPT

- A. They are closely linked with the cAMP system
- B. Analgesia at a supraspinal level results principally from kappa receptors
- C. They are highly concentrated in the dorsal horn of the spinal cord
- D. They may be involved with pain modulation
- E. Sigma receptors are related to the hallucinogenic effects of opioids

88. Overdoses of salicylates lead to all the following effects EXCEPT

- A. Tinnitus
- B. Marked hyperventilation
- C. Increased metabolic rate
- D. Nausea and vomiting
- E. Metabolic alkalosis

89. Regarding nonsteroidal anti-inflammatory drugs

- A. They commonly cause psychosis
- B. They may impair the hypotensive effects of ACE inhibitors
- C. About 50% of patients develop adverse effects from aspirin
- D. Misoprostol is contraindicated with NSAID's.
- E. Sulindac is less gastro-irritative than aspirin

90. Methylxanthine drugs
- A. reduce intracellular cAMP levels
  - B. are adenosine agonists
  - C. Stimulate the enzyme phosphodiesterase
  - D. have direct positive chronotropic and inotropic effects on the heart
  - E. are potent diuretics
91. Corticosteroids
- A. with chronic use, increase bronchial reactivity
  - B. directly relax airway smooth muscle
  - C. can be administered as an aerosol if lipid soluble
  - D. stimulate the release of arachidonic acid
  - E. induce adrenal suppression irrespective of dose
92. Regarding Gentamicin
- A. It can be mixed in the same administration set with penicillin
  - B. most streptococci are sensitive to Gentamicin
  - C. If organisms are resistant to Gentamicin, they will also be resistant to tobramycin
  - D. Purulent exudates do not affect the activity of topical Gentamicin
  - E. Ototoxicity manifests itself mainly as vestibular dysfunction
93. Intermediate spectrum (second generation) cephalosporins include all of the following EXCEPT
- A. Cefoxitin
  - B. Cephadrine
  - C. Cefaclor
  - D. Cefamandole
  - E. Cefuroxime
94. Regarding Cimetidine, all of the following are true EXCEPT
- A. it may cause gynaecomastia
  - B. it decreases serum phenytoin levels
  - C. it increases the anticoagulant effect on Warfarin
  - D. it can be used to treat Zollinger-Ellison syndrome
  - E. it has a volume of distribution of (approx) 70L in a 70kg male
95. Opiates
- A. can interact with monoamine oxidase inhibitors to produce hypopyrexia
  - B. show strong development of tolerance with respect to miosis with long term use
  - C. cause postural hypotension equally in normovolaemic and hypovolaemic states
  - D. cause nausea and vomiting purely through local GIT effects
  - E. cause respiratory depression which is overcome by any rise in PaCO<sub>2</sub>
96. Common effects of inhalational general anaesthetics include
- A. increased mean blood pressure
  - B. increased tidal volume of respiration
  - C. increased metabolic rate of the brain
  - D. increased cerebral blood flow
  - E. increased hepatic blood flow
97. Regarding gastro-intestinal drugs, all of the following is true except
- A. Cimetidine slows hepatic microsomal metabolism of Warfarin and phenytoin
  - B. Omeprazole is capable of inhibiting 100% of gastric acid secretion
  - C. Metoclopramide hastens gastric emptying and raises lower oesophageal sphincter pressure
  - D. Lactulose is an osmotic laxative
  - E. Sucralfate is considered a colloidal bismuth compound
98. With regard to local anaesthetics, all of the following are true except
- A. They have a high affinity for sodium channels in the resting state
  - B. they are antagonised by an elevated extracellular calcium
  - C. they are enhanced by raised extracellular potassium
  - D. they block myelinated fibres before unmyelinated fibres of the same diameter
  - E. they preferentially block small nerve fibres

99. Propranolol

- A. antagonises catecholamines at alpha and beta adrenoceptors
- B. stimulates renin secretion by catecholamines
- C. increases plasma triglycerides
- D. increases plasma HDL cholesterol
- E. blocks beta 1 receptors in bronchial smooth muscle

100. Regarding Amiodarone, all of the following are true except

- A. It causes hyperthyroidism
- B. It achieves higher levels in cardiac tissue than plasma
- C. It is a noncompetitive alpha blocker
- D. It has a half life of 24 hours
- E. Markedly prolongs the QT interval

101. Important effects of digoxin on heart muscle include

- A. increased force of contraction
- B. decreased atrioventricular conduction velocity
- C. increased ectopic automaticity
- D. decreased ejection time
- E. all of the above

102. The effects of digoxin include all the following except

- A. increased cardiac intracellular potassium
- B. increased cardiac intracellular sodium
- C. increased cardiac intracellular calcium
- D. increased force of cardiac contraction
- E. reduced sympathetic outflow of the heart

103. Regarding Lignocaine

- A. it lengthens action potential duration by blocking sodium channels
- B. doses do not need to be altered in liver disease
- C. it is limited in its use by the high rate of cardiotoxicity
- D. its clearance is reduced by cimetidine
- E. it is a class 1C antiarrhythmic

104. Lignocaine

- A. is a potent suppressor of normal cardiac activity
- B. appears to act exclusively on the sodium channel
- C. has calcium channel blocking effect
- D. has sympatholytic action
- E. has low first pass metabolism

105. Nitrous oxide

- A. can be used safely in patients with bowel obstruction
- B. is a useful analgesic in patients with decompression illness
- C. is mainly metabolised in the liver
- D. if used for a prolonged period, results in megaloblastic anaemia
- E. is effective due to its high blood solubility

106. Suxamethonium

- A. is antagonised by neostigmine
- B. may induce hyperkalaemia
- C. is a nondepolarising muscle relaxant
- D. is contraindicated within 12 hours of a burn injury
- E. dosage, when repeated, may cause a severe tachycardia

107. Lignocaine

- A. blocks potassium channels
- B. has a half life of 50 minutes
- C. is metabolised in the liver by dealkylation
- D. is metabolised in the blood stream by plasma cholinesterases
- E. is a class 1C antiarrhythmic

108. Which of these drugs is safe to use in tricyclic overdose

- A. Phenytoin
- B. Flumazenil
- C. Quinidine
- D. Procainamide
- E. None of the above

109. Sotalol

- A. is a beta-1 selective beta adrenoceptor blocker
- B. has a bioavailability of approximately 50% due to first pass effect
- C. has no local anaesthetic action
- D. has class 1 antiarrhythmic properties only
- E. has class 1 and IV antiarrhythmic properties

110. Which neuromuscular blocker is most likely to cause tachycardia

- A. Atracurium
- B. Vecuronium
- C. Pancuronium
- D. Succinylcholine
- E. Rocuronium

111. Regarding drugs which act at adrenoceptors

- A. Clonidine is an alpha antagonist used in the treatment of hypertension
- B. Timolol causes pupil dilation
- C. Noradrenaline causes bradycardia
- D. Atenolol is more lipid soluble than Propranolol
- E. Stimulation of alpha receptors causes an increase in insulin release

112. Which of the following is true concerning drugs used for the treatment of hypertension

- A. Hydralazine dilates venous capacitance vessels
- B. Sodium nitroprusside is metabolised in the liver
- C. Clonidine causes development of positive Coombs test
- D. Guanethidine causes marked postural hypotension, diarrhoea and impaired ejaculation
- E. Guanethidine is transported across the sympathetic nerve membrane by a specific transport molecule

113. Atropine

- A. is a quaternary ammonium compound
- B. may cause bradycardia
- C. its mydriatic action lasts 12-24 hours
- D. it is predominantly metabolised by the liver
- E. it causes an increase in sweating

114. Regarding antimuscarinic drugs

- A. antimuscarinics may be used to treat peptic ulcer disease
- B. antimuscarinics decrease intestinal transit time, decreasing absorption of certain drugs
- C. increase resting bladder tone
- D. Benztropine has a direct effect on dopamine receptors and is used in the treatment of Parkinson's disease
- E. Ipratropium has little systemic effects because it is a tertiary amine

115. Which drug and adverse effect is correctly matched

- A. Calcium channel blockers - dry cough
- B. Methyl dopa - SLE type syndrome
- C. Hydralazine - hirsutism
- D. Clonidine - rebound hypertension
- E. Prazosin - renal failure

116. Regarding nitrates

- A. Isosorbide mononitrate has a bioavailability of 100%
- B. GTN causes platelet aggregation
- C. GTN has its primary effect on arteriolar smooth muscle
- D. Methaemoglobinaemia occurs in adults with large doses nitrates, causing significant effects
- E. Nitrates cause bradycardia due to direct cardiac effects on cAMP levels in myocardial fibres

117. Digoxin tends to

- A. decrease intracellular sodium due to decreased Na/Ca exchange
- B. have a concentration in the heart 10-50x higher than that in plasma
- C. predominantly increases the length of the action potential
- D. shift the Frank-Starling curve to the right
- E. cause ST segment elevation and T wave inversion in the ECG

118. All of the following increased the likelihood of digoxin toxicity except

- A. Diuretic therapy
- B. increased plasma calcium concentration
- C. Quinidine
- D. Calcium carbonate containing antacids
- E. antibiotics in 10% of the population

119. Which of the following is true of antiarrhythmic drugs of Class 1

- A. Lignocaine prolongs the action potential duration and is therefore a group 1B antiarrhythmic
- B. Flecainide causes cinchonism
- C. Group 1A drugs are particularly associated with torsade de points
- D. Toxic effects of group 1A drugs are exacerbated by decreased potassium
- E. The dose of Lignocaine should be decreased in renal failure

120. Concerning antiarrhythmics

- A. Sotalol exists as 2 optical isomers, of which only one is antiarrhythmic
- B. Bretyllium may cause marked hypertension due to its direct effect on vascular smooth muscle
- C. Sotalol is safe in asthma as its beta blocking effect is negligible
- D. Amiodarone may cause either hyper or hypothyroidism
- E. Flecainide may cause pulmonary fibrosis

121. Which of the following Drug - Adverse Reaction pairs is incorrect

- A. Quinidine - Constipation
- B. Procainamide - SLE like syndrome
- C. Adenosine - hypotension
- D. Sotalol - torsade de pointes
- E. Amiodarone - paraesthesias

122. Which of the following is true of acetazolamide

- A. It causes acidosis of the CSF
- B. It may be used in the treatment of kidney stones
- C. it is useful in treatment of ascites associated with liver failure
- D. it causes a metabolic alkalosis
- E. it may be used in patients with sulfonamide allergy as, though derived from Sulfonamides, it is sufficiently structurally different

123. Concerning diuretics

- A. Loop diuretics are useful in treatment calcium kidney stones
- B. Amiloride may cause gynaecomastia
- C. Mannitol may cause pulmonary oedema
- D. Loop diuretics may cause hyperlipidaemia
- E. Amiloride works by combining with the intracellular aldosterone receptor

124. Which of the following is correctly paired to its site of action

- A. Metolazone - collecting ducts
- B. Spironolactone - distal convoluted tubule
- C. Bumetanide - proximal tubule
- D. Ethacrynic acid - thick ascending limb of loop of Henle
- E. Hydrochlorothiazide - proximal tubule

125. Regarding drugs which affect histamine

- A. H2 blockers cause orthostatic hypotension due to alpha blocking effect
- B. Terfenadine and Ketoconazole is a good combination for itchy fungal skin lesions
- C. Adrenaline is useful in anaphylaxis as it blocks H1 receptors
- D. Terfenadine is highly lipid soluble
- E. H1 blockers may cause urinary retention and blurred vision

126. Which of the following is correct about H2 blockers

- A. Cimetidine induces the enzymes of the cytochrome P450 system
- B. Cimetidine inhibits renal clearance of certain acidic drugs
- C. Ranitidine does not cross the placenta and is therefore safe in pregnancy
- D. Ranitidine may cause a reversible hepatitis
- E. Cimetidine decreases the effects of diazepam

127. Which of the following concerning Sumatriptan is not correct

- A. it is a 5HT<sub>3</sub> antagonist
- B. it may cause chest discomfort
- C. It relieves symptoms in 70% of migraine sufferers
- D. it may cause dizziness and weakness
- E. its half life is less than 2 hours

128. Regarding ergot alkaloids, which of the following is incorrect

- A. they act at alpha adrenoceptors
- B. they act at dopamine receptors
- C. they act at serotonin receptors
- D. they may cause vasodilation, leading to flushing and increased skin temperature of "St Anthony's Fire"
- E. They may cause diarrhoea

129. Which of the following is true of theophylline (Vd 0.5 L/kg, therapeutic level 10mg/L)

- A. a loading dose of 5 mg/kg given as an IV push will achieve therapeutic levels
- B. at toxic levels, arrhythmias and convulsions are preceded by gastrointestinal symptoms
- C. it strengthens contraction of the diaphragm in patients with COAD
- D. it causes sodium and water retention
- E. smoking causes increased plasma levels

130. Concerning beta agonists

- A. Salmeterol's long duration of action is due to its resistance to metabolism
- B. Isoprenaline is a potent bronchodilator
- C. Salbutamol has a duration of action of 30 minutes
- D. Adrenaline is the only beta agonist available for subcutaneous injection
- E. none of the above are true

131. Concerning adrenal suppression during use of corticosteroids

- A. it may be decreased by using aerosol formulations in asthma
- B. it may be decreased by taking the dose early in the morning
- C. it may be decreased by giving the drug on alternate days
- D. all of the above
- E. none of the above

132. Regarding drug action on the GI tract

- A. Aluminium hydroxide causes diarrhoea
- B. Sucrulfate tends to cause a metabolic alkalosis
- C. Omeprazole's duration of action is at least 48 hours
- D. Diphenoxylate causes diarrhoea
- E. Docusate is a bulk forming laxative

133. Metoclopramide works in which of the following ways

- A. it is a dopamine antagonist
- B. it is cholinomimetic
- C. it releases acetyl choline from neurons in the enteric plexus
- D. it sensitises intestinal smooth muscle cells to acetyl choline
- E. all of the above

134. Regarding antiemetics, which of the following is true

- A. Betahistine may aggravate asthma
- B. Promethazine acts on the vestibular nuclei and tractus solitarius
- C. Hyoscine may cause blurred vision
- D. all of the above
- E. none of the above



135. Which of the following is true of beta lactam antibiotics
- A. they inhibit transpeptidases
  - B. they inhibit peptidyl transferase
  - C. patients with a past history of penicillin allergy have a 90-95% chance of recurrence of allergic response on repeat exposure
  - D. clavulanic acid inhibits cell wall synthesis
  - E. penicillins are predominantly hepatically metabolised
136. Which of the following is not true of beta lactam antibiotics
- A. Ampicillin is excreted in bile
  - B. Penicillins only cross the blood brain barrier when the meninges are inflamed
  - C. penicillin may cause haemolytic anaemia
  - D. Imipenem is not a beta lactam though its mode of action is similar
  - E. None of the above
137. Choose the correct answer
- A. Chloramphenicol causes gray discoloration of tooth enamel
  - B. Chloramphenicol binds to the 30S ribosomal subunit
  - C. Neonates lack hepatic glucuronosyl transferase necessary for chloramphenicol elimination
  - D. Tetracyclines are bacterocidal
  - E. Tetracyclines should be taken with milk to decrease GI side effects
138. Which of the following statements about aminoglycosides is true
- A. They bind to the 50S ribosomal subunit, and inhibit peptidyl transferase
  - B. they may cause respiratory paralysis
  - C. Resistance is primarily due to a change in their binding site
  - D. They are lipid soluble
  - E. Loop diuretics increase elimination and, therefore, decrease toxic effects
139. Vancomycin's mode of action is by
- A. inhibition of cell wall synthesis
  - B. inhibition of protein synthesis
  - C. inhibition of DNA synthesis
  - D. affecting cell membrane permeability
  - E. all of the above
140. All of the following are true of Erythromycin except
- A. Erythromycin inhibits the hepatic cytochrome P450 system
  - B. Its mechanism of action is by blocking formation of the initiation complex
  - C. it is active against methicillin resistant staphylococci
  - D. it should not be given with terfenadine
  - E. Resistance can result from formation of enzymes which methylate its receptor
141. Which of the following is true of fluoroquinolones
- A. their elimination by the kidneys may be blocked by probenecid
  - B. resistance is due to a structural change in their receptor
  - C. they penetrate cell body tissues including the CNS
  - D. ciprofloxacin decreases plasma theophylline levels by increasing its metabolism
  - E. they are structurally related to sulfonamides
142. Examples of drug synergism established clinically include all of the following except
- A. Penicillin and Vancomycin in enterococcal infections
  - B. Amphotericin B and Flucytosine in Cryptococcal meningitis
  - C. Carbenicillin and Gentamicin in pseudomonal infections
  - D. Penicillin and Tetracycline in bacterial meningitis
  - E. Trimethoprim and Sulfamethoxazole in coliform infections
143. Which of the following is true of benzodiazepines
- A. they are weak acids, well absorbed from the stomach
  - B. all benzodiazepines undergo hepatic metabolism
  - C. they increase the duration of chloride channel opening by interaction with the GABA receptor
  - D. Flumazenil is useful in mixed overdoses of unknown drugs
  - E. Cimetidine halves the elimination half life of diazepam

144. An alcoholic who complains of visual disturbance "like being in a snowstorm" has
- liver failure
  - been drinking ethylene glycol
  - been drinking methanol
  - Wernicke-Korsakoff syndrome
  - Intracerebral haemorrhage
145. Which of the following is true concerning alcohol
- chronic ingestion leads to increase in alcohol dehydrogenase
  - Ethanol ingestion by a patient on disulfiram causes an accumulation of formaldehyde causing nausea, flushing and hypotension
  - Chronic alcohol ingestion is associated with an increased incidence of breast cancer
  - All of the above
  - None of the above
146. Which of the following pairs of anticonvulsant-adverse effect is correct
- Phenytoin - headache
  - Valproate - dependence
  - Ethosuximide - Diplopia
  - Carbamazepine - Blood dyscrasias
  - Phenytoin - Hepatotoxicity
147. Which of the following treatments would be appropriate
- Absence seizures - Ethosuximide
  - Complex partial seizure - Phenytoin
  - Generalised tonic clonic seizures - Carbamazepine
  - Myoclonic syndromes - Lamotrigine
  - All of the above
148. Regarding Phenytoin
- Plasma levels are decreased by isoniazid
  - It causes increased incidence of cleft lip in foetus of mother on Phenytoin
  - it may cause aplastic anaemia
  - it may cause fatal hepatotoxicity
  - all of the above
149. Which of the following is true comparing Propofol and Thiopentone
- they are equal in their anticonvulsant effects
  - both are contraindicated in porphyria
  - both have antiemetic action
  - both cause a decrease in cerebral oxygen consumption
  - Thiopentone causes more cardiovascular depression than Propofol
150. Local Anaesthetics
- are chemicals which become charged by gaining a proton
  - Lignocaine is metabolised by plasma cholinesterase
  - are more effective at type A than type C nerve fibres
  - have a higher affinity for rested sodium channels
  - should never be injected intravenously
151. Which of the following is true of Suxamethonium
- During Phase I block, there is post tetanic potentiation
  - Phase I block is augmented by cholinesterase inhibitors
  - it is rapidly excreted by the kidneys
  - it is a competitive antagonist of acetyl choline
  - administration of a 2nd dose may cause tachycardia
152. Which of the following is not an adverse effect of Suxamethonium
- increased intraocular pressure
  - muscle pain
  - decreased potassium
  - malignant hyperthermia
  - increased intragastric pressure

153. Concerning antipsychotic drugs

- A. they cause postural hypotension by their effect on the vasomotor centre
- B. Haloperidol has less autonomic effects than Thioridazine
- C. The phenothiazines predominantly block D4 receptors
- D. they are frequently fatal in overdose
- E. they are excreted unchanged in the urine

154. Which of the following is not true of Lithium

- A. it is distributed throughout total body water
- B. it may cause reversible nephrogenic diabetes insipidus
- C. it may cause flattening of the T wave on the ECG
- D. Tremor is a common adverse effect
- E. Thiazide diuretics cause a decrease in plasma levels

155. One of the following statements about antidepressants is true

- A. their effects include elevation of seizure threshold
- B. the use of moclobemide and fluoxetine together is indicated in severe depression
- C. sodium bicarbonate worsens arrhythmias in TCA overdose
- D. all cause marked sedation
- E. none of the above

156. Which of the following pairs of opioid receptor - effect is not true

- A. Mu - euphoria
- B. Sigma - spinal analgesia
- C. Delta - respiratory depression
- D. Sigma - dysphoria
- E. Mu - physical dependence

157. With prolonged use of opioids, tolerance develops to which of the following

- A. miosis
- B. antidiuretic effect
- C. respiratory depression
- D. constipation
- E. convulsions

158. Which of the following does not increase the likelihood of bleeding in a patient taking Warfarin

- A. Aspirin
- B. Indomethacin
- C. 3rd generation Cephalosporins
- D. Cimetidine
- E. Metronidazole

159. All of the following are absolute contraindications to thrombolytic agents except

- A. Pregnancy
- B. BP of >220/140
- C. CPR for 5 minutes
- D. Intracranial malignancy
- E. Aortic dissection

160. Regarding heparin

- A. LMW fraction consists of the molecular weight range 6000-10 000
- B. It may be given by the subcutaneous, IM or IV route
- C. Protamine antagonises its effects by binding to antithrombin III
- D. it is hepatically metabolised
- E. it may cause alopecia

161. Which of the following is true of aspirin

- A. there is more of the unionised form in acid environments
- B. it inhibits lipoxigenase
- C. at normal analgesic doses it decreases plasma uric acid levels
- D. in overdose, there is initial metabolic acidosis
- E. it decreases the effects of tolbutamide

162. Which of the following is true of oral hypoglycaemics
- A. Biguanides cause an increase in endogenous insulin release
  - B. Metformin is metabolised in the liver
  - C. Tolbutamide has a half life of 3-6 hours
  - D. Metformin does not cause hypoglycaemia
  - E. Chlorpropamide may cause persistent diarrhoea
163. Which of the following is not a consequence of first order kinetics
- A. Half life increases with dose
  - B. The area under the curve is proportionate to the dose
  - C. The composition of drug products of metabolism is independent of the dose
  - D. the amount of drug excreted unchanged in urine is proportionate to the dose
  - E. Steady state concentration is proportionate to the dose
164. The Henderson Hasselbach equation states that
- A.  $\text{pH} - \text{pKa} = \log [\text{Protonated form} / \text{Unprotonated form}]$
  - B.  $\text{pH} - \text{pKa} = \log [\text{Unprotonated form} / \text{Protonated form}]$
  - C.  $\text{pKa} - \text{pH} = \log [\text{Protonated form} / \text{Unprotonated form}]$
  - D.  $\text{pKa} - \text{pH} = \log [\text{Unprotonated form} / \text{Protonated form}]$
  - E. Something completely different
165. A patient has taken an overdose of a drug with a pKa of 9. Which of the following is true
- A. Urinary excretion would be accelerated by giving  $\text{NaHCO}_3$
  - B. More of the drug will be in its unionised form in the stomach than in the jejunum
  - C. Gastric lavage should always be carried out to punish the patient for wasting your time
  - D. Haemodialysis should be carried out immediately
  - E. Administration of  $\text{NH}_4\text{Cl}$  will increase urinary excretion
166. All of the following agents may increase the anion gap
- A. Isoniazid
  - B. Methanol
  - C. Iron
  - D. Ethylene glycol
  - E. All of the above
167. Which of the following potential poison - effect is correctly paired
- A. Carbon monoxide - carboxyhaemoglobinaemia
  - B. Paraquat - Pulmonary fibrosis
  - C. Cyanide - Cytochrome oxidase inactivation
  - D. Sodium nitrite - Methaemoglobinaemia
  - E. All of the above
168. In young children, the most dangerous toxic effect of atropine is
- A. Intraventricular heart block
  - B. Dehydration
  - C. Hypertension
  - D. Hyperthermia
  - E. Hallucinations
169. Which of the following is not a phase I metabolising reaction
- A. Acetylation
  - B. Deamination
  - C. Hydrolysis
  - D. Oxidation
  - E. Reduction
170. Bioavailability of drugs is
- A. 100% for intramuscular injection
  - B. 100% for oral preparations not metabolised by the liver
  - C. Equal to the amount of drug in the body at the time of peak concentration relative to the amount administered
  - D. Important because it determines the fraction of the dose administered which reaches the systemic circulation
  - E. Less than 100% only in orally administered drugs

171. Which of the following drugs achieves high concentrations in both urine and bile

- A. Aminoglycosides
- B. Sulphonamides
- C. Nitrofurantoin
- D. Ceftriaxone
- E. Erythromycin

172. Tubocurarine blocks the neuromuscular action of acetylcholine by

- A. Blocking its synthesis
- B. Blocking its release
- C. Breaking it down in the synapse
- D. Reversibly blocking its receptor sites
- E. Reversibly binding to acetylcholine molecules

173. With regard to clonazepam, which is not true

- A. Is often used IV in status epilepticus as it is short acting
- B. Sedation is a significant problem, especially at the start of therapy
- C. Development of tolerance limits its use in long term anticonvulsant therapy
- D. Acts on GABA receptors
- E. Can be given as an IV bolus

174. Aspirin

- A. Decreases plasma level of phenytoin
- B. Increases the activity of spironolactone
- C. Will cause penicillin G level in plasma to reduce
- D. Inhibits the uricosuric effect of probenecid
- E. Toxicity will be enhanced by acetazolamide

175. Propofol

- A. Has an elimination half life of 4 hours
- B. The effect of a single dose is terminated by first pass metabolism
- C. The effect of a single dose lasts about 30 minutes on average
- D. Is unsuitable for use as a maintenance anaesthetic
- E. None of the above is true

PHARMACOLOGY ANSWERS

1. E	16. C	31. C	46. C	61. C	76. D
2. B	17. D	32. C	47. D	62. C	77. B
3. E	18. B	33. A	48. C	63. D	78. C
4. D	19. A	34. C	49. C	64. B	79. C
5. E	20. A	35. E	50. E	65. B	80. D
6. C	21. B	36. B	51. C	66. C	81. C
7. D	22. D	37. C	52. B	67. D	82. A
8. D	23. D	38. D	53. C	68. E	83. C
9. E	24. A	39. B	54. A	69. D	84. E
10. D	25. B	40. D	55. B	70. C	85. C
11. E	26. E	41. E	56. E	71. C	86. D
12. C	27. E	42. C	57. D	72. D	87. B
13. C	28. D	43. A	58. B	73. D	88. E
14. C	29. A	44. C	59. A	74. B	89. B
15. B	30. E	45. C	60. C	75. D	90. D

91. C	106. B	121. A	136. D	151. B	166. E
92. E	107. C	122. A	137. C	152. C	167. E
93. B	108. A	123. C	138. B	153. B	168. D
94. B	109. C	124. D	139. A	154. E	169. A
95. A	110. C	125. E	140. C	155. E	170. D
96. D	111. C	126. D	141. A	156. B	171. D
97. E	112. D	127. A	142. D	157. C	172. D
98. A	113. B	128. D	143. B	158. B	173. A
99. C	114. A	129. C	144. C	159. C	174. D
100. D	115. D	130. B	145. D	160. E	175. A
101. E	116. A	131. D	146. D	161. A	
102. A	117. B	132. C	147. E	162. D	
103. D	118. D	133. E	148. B	163. A	
104. B	119. C	134. D	149. D	164. C	
105. D	120. D	135. A	150. A	165. E	