1. Which of the following is not used as an antiemetic
   A. Dexamethasone
   B. Cannabinoids
   C. Ondansetron
   D. Diphenhydramine
   E. Diphenoxylate

2. Which is INCORRECT regarding suxamethonium
   A. It can increase heart rate
   B. It can decrease heart rate
   C. It does not cross the blood-brain-barrier
   D. It increases intraocular pressure
   E. It has a short duration of action due to rapid hydrolysis by acetylcholinesterase

3. Which of the following tetracyclines does not require dose adjustment in chronic renal failure
   A. Minocycline
   B. Doxycycline
   C. Tetracycline
   D. Methacycline
   E. All of the above

4. Thiopentone
   A. Can cause intra-arterial thrombosis
   B. Is less fat soluble than other intravenous induction agents
   C. Can cause elevation of intracranial pressure on induction of anaesthesia

5. Heparin
   A. Causes alopecia
   B. Can be given IM
   C. Doses need to be halved in the elderly
   D. Is made of homogenous mucopolysaccharides
   E. Inhibits antithrombin III

6. Anticholinesterases reliably antagonise
   A. Suxamethonium
   B. Tubocurarine
   C. Dantrolene
   D. Baclofen
   E. Mivacurium

7. Regarding the Vaughn-Williams classification
   A. Type III antiarrhythmics increase K⁺ conductance and prolong the action potential
   B. X
   C. X

8. Which of the following is correct regarding the serotonin antagonists
   A. As a group they are more effective in obsessive compulsive disorder than TCAs
   B. When used with morphine they can precipitate serotonin syndrome
   C. Fluoxetine does not have an active metabolite
   D. Paroxetine is more sedative than TCAs
   E. They are not associated with significant drug interactions

9. An example of a protein binding interaction is
   A. X
   B. Digoxin-chlorothiazide
   C. Morphine-chlorpromazine
   D. Aspirin-tolbutamide
10. Maximum efficacy
   A. Is the concentration of drug that produces 50% of maximal effect
   B. Is the maximum response that can be produced by a drug
   C. Is independent of the route of administration
   D. Is limited by side effects
   E. Is the maximum intensity of the drug

11. LD<sub>50</sub> is
   A. 50% of the dose that kills most people
   B. 50% of the dose at which toxicity occurs
   C. 50% of the dose that kills experimental animals
   D. The dose required to kill 50% of experimental animals
   E. The ratio between TD<sub>50</sub> and ED<sub>50</sub>

12. An elderly woman presents with a serum K⁺ of 6.2, which drug is she NOT taking
   A. Spironolactone
   B. Slow K
   C. Methyldopa
   D. Naproxen
   E. Captopril

13. ACE inhibitors
   A. Cause hypokalaemia
   B. Are useful in diabetics
   C. Can safely be used in the second and third trimesters of pregnancy
   D. Have been associated with angioedema
   E. Are lipid soluble and reach the CNS

14. Which of the following is correct regarding the corticosteroids
   A. With chronic use, they increase bronchial reactivity
   B. They have adverse effects on the foetus
   C. They directly relax airway smooth muscle
   D. Stimulate the release of arachidonic acid
   E. Prednisolone and dexamethasone are synthetic

15. Paracetamol forms toxic metabolites via
   A. N-hydroxylation
   B. Glucuronidation
   C. Sulphation
   D. Oxidation
   E. Reduction

16. Paracetamol
   A. Is a weak anti-inflammatory
   B. Has high level of protein binding
   C. Does not interfere with uric acid excretion
   D. Can only be given orally
   E. X

17. Which is incorrect regarding diazoxide
   A. It has a low level of protein binding
   B. It is used in hypertensive emergencies
   C. It may cause sodium and water retention
   D. It may cause significant hypotension
   E. It is structurally related to thiazides

18. The mechanism of action of digoxin is
   A. It increases intracellular calcium
   B. It increases intracellular potassium
   C. It decreases intracellular sodium
   D. X
   E. X
19. Nitrous oxide
   A. X
   B. X
   C. Has a MAC of over 100%
   D. X
   E. X

20. Benzodiazepines
   A. X
   B. X
   C. X
   D. Have a cyclic structure
   E. X

21. Erythromycin
   A. When given IV is in the stearate form
   B. Undergoes hepatic metabolism
   C. Is active against campylobacter
   D. Is bacteriostatic only
   E. Is excreted primarily in the urine

22. Norfloxacin
   A. Is the halogenated form of nalidixic acid
   B. X
   C. X
   D. Xx
   E. X

23. Acyclovir
   A. Is a thymidine kinase
   B. Is a guanidine analogue
   C. Decreases the rate of post-herpetic neuralgia
   D. May give rise to resistant forms of HSV
   E. X

24. Which of the following will not cause bronchodilation
   A. Cromoglycate
   B. Theophylline
   C. Salbutamol
   D. Atropine
   E. Adrenaline

25. Which of the following acts on cell membranes
   A. X
   B. X
   C. Ketoconazole

26. Which of the following is correct regarding aminoglycosides
   A. They require an oxygen dependent mechanism to be taken up into the cell
   B. They synergise with penicillins at high concentrations
   C. They decrease neuromuscular blockade
   D. Resistance is plasmid-mediated
   E. Resistance does not cross species

27. Which of the following is correct regarding verapamil
   A. It has low plasma protein binding
   B. It causes sodium channel blockade
   C. It causes skeletal muscle weakness
   D. It is a positive inotrope
   E. It is a dihydropyridine
28. A young man presents with hypertension and mydriasis after being given a normal dose of drug. Which of the following is it most likely to be
   A. Atropine
   B. Adrenaline
   C. Acetylcholine
   D. Aspirin
   E. X

29. A patient overdoses on an unknown substance and presents restless, agitated and sweaty with dilated pupils. Which drug is the most unlikely
   A. Angel trumpet
   B. Atropine
   C. Adrenaline
   D. Aspirin
   E. Tricyclic antidepressant

30. Which is not a feature of lithium toxicity
   A. Tardive dyskinesia
   B. Tremor
   C. Dysarthria
   D. Diabetes insipidus
   E. X

31. What occurs in phase III of drug trials
   A. A large group of patients with the target disease are treated with the drug
   B. A small number of patients with the target disease are treated with the drug
   C. A small number of patients without the target disease are treated with the drug
   D. All patients being treated are monitored for the occurrence of idiosyncratic reactions
   E. X

32. Which of the following causes the most tachycardia
   A. Adrenaline
   B. Salbutamol
   C. Isoprenaline
   D. X
   E. X

33. Allopurinol
   A. X
   B. Is used in the acute treatment of gout
   C. Has very few side effects
   D. Has very low oral bioavailability
   E. Is a xanthine oxidase inhibitor

34. Beta-blockers
   A. X
   B. Applied topically may cause systemic effects
   C. X
   D. X

35. Ipratropium bromide
   A. Causes most effects within 10 minutes
   B. Is well absorbed across the blood-brain-barrier
   C. Is safe for use in glaucoma
   D. Tolerance is uncommon
   E. It has marked CNS effects

36. Aspirin
   A. Increases plasma volume
   B. Does not cross the placenta
   C. Is a base
   D. Inhibits lipoxigenase
   E. Is slowly absorbed in the ileum
37. Metoclopramide  
   A. Increases antral motility  
   B. Decreases oesophageal pressure  
   C. X  
   D. X

38. Which of the following is an ester anaesthetic  
   A. Lignocaine  
   B. Prilocaine  
   C. Tetracaine  
   D. Bupivacaine  
   E. Ropivacaine

39. Which of the following causes met-haemoglobinemia  
   A. Lignocaine  
   B. Tetracaine  
   C. Bupivacaine  
   D. Procaine  
   E. Prilocaine

40. Theophylline  
   A. Metabolism is induced by smoking  
   B. Slow release needs levels at 6 and 12 hours  
   C. Causes hyperkalaemia  
   D. Weakens contraction of the diaphragm in patients with COAD  
   E. Causes sodium and water retention

41. Naloxone  
   A. Has a half life of 4 hours  
   B. Can cause acute withdrawal syndrome in heroin overdose  
   C. Binds specifically with kappa receptors  
   D. Has an increased half life in the presence of renal failure  
   E. Produces an abstinence syndrome after withdrawal subsequent to chronic administration

42. Which of the following is correct regarding mannitol  
   A. It affects water reabsorption in the collecting ducts and distal convoluted tubule  
   B. It cannot be used in patients with impaired renal dynamics  
   C. It metabolised to glycerol  
   D. It decreases total body water and total body cation content equally  
   E. It inhibits water absorption in the proximal tubule, Loop of Henle and collecting ducts

43. How much drug is contained in 2mL of 0.5% w/v solution  
   A. 10 mg  
   B. 5 mg  
   C. 1 mg  
   D. 100 mg  
   E. 2 mg

44. Which of the following is correct regarding morphine  
   A. The glucuronidated metabolite is excreted in the kidney  
   B. X  
   C. X

41. B  42. E  43. A  44. A
1. Maximum efficacy
   a. Is independent of route of administration
   b. Gives information about the degree of receptor binding and response
   c. Is limited by side effects
   d. Is the concentration of drug that produces 50% of maximal effect
   e. Is the maximum intensity of the drug

2. Propranolol
   a. Is a highly selective β-blocker
   b. Is largely protein bound
   c. Has poor lipid solubility
   d. Has partial agonist activity
   e. Has no local anaesthetic action

3. Local anaesthetics preferentially
   a. Affect large fibres before small fibres
   b. Affect unmyelinated nerves before myelinated nerves
   c. Block C type fibres before A type fibres
   d. Block sensory fibres before motor fibres in mixed nerves
   e. Block central before peripheral fibres in mixed nerves

4. Which of the following antiarrhythmics produces shortening of the QT interval
   a. Quinidine
   b. Procainamide
   c. Lignocaine
   d. Sotalol
   e. None of the above

5. Which of the following antiarrhythmics has minimal effect on healthy myocardial cells
   a. Lignocaine
   b. Adenosine
   c. Flecainide
   d. Amiodarone
   e. Propranolol

6. Which of the following is INCORRECT regarding drugs used in Parkinson’s disease
   a. Carbidopa blocks dopa decarboxylase peripherally
   b. Dopamine cannot cross the blood-brain-barrier
   c. Carbidopa decreases the side effects of L-dopa
   d. Bromocriptine causes more hypotension than L-dopa
   e. Bromocriptine causes more CNS effects than L-dopa

7. Bromocriptine
   a. Generates its anti-Parkinsonian effects by acting on D2 receptors
   b. X

8. Which of the following is INCORRECT regarding salbutamol
   a. May cause a transient decrease in oxygen tension in the blood
   b. It acts via adenylyl cyclase
   c. It causes hyperkalaemia
   d. It can be given orally, parenterally or via inhalation
   e. Bronchodilation persists for 3-4 hours

9. Which of the following is INCORRECT regarding phenytoin
   a. It is well absorbed orally
   b. It displays first order kinetics at low concentrations and zero order kinetics at higher concentrations
   c. It has a high level of protein binding
   d. It causes agranulocytosis in 5% of patients
   e. It causes abnormalities in vitamin D metabolism
10. Which of the following is correct regarding ipratropium bromide
   a. Effect lasts for >4 hours after administration
   b. It is well absorbed when given orally
   c. The onset of peak action is 10 minutes post inhalation
   d. Tolerance is common
   e. It has marked CNS effects

11. Isoprenaline
   a. Increases myocardial oxygen consumption when compared with dobutamine
   b. Is contraindicated down an ETT
   c. Affects β and β₂ receptors
   d. X
   e. X

12. Sodium cromoglycate
   a. is well absorbed when taken orally
   b. stabilises the mast cell in response to IgA and IgE
   c. is only given via inhalation
   d. is not used prophylactically
   e. causes rapid bronchodilation

13. metformin
   a. is a sulphonylurea
   b. requires functioning β islet cells
   c. is associated with obesity
   d. has been known to cause lactic acidosis
   e. acts by increasing pancreatic release of insulin

14. How many mgs of drug are contained in 2mL of 0.5% w/v solution?
   a. 1 mg
   b. 10 mg
   c. 100 mg
   d. 1000 mg
   e. 5 mg

15. Regarding muscle relaxants, which of the following is true
   a. Aminoglycosides increase the efficacy of suxamethonium
   b. Gallamine is excreted in the bile after hepatic metabolism
   c. Vecuronium is an isoquinolone derivative
   d. Atracurium causes hypotension in volume depleted patients
   e. Pancuronium causes histamine release

16. Glyceryl trinitrate
   a. Acts after being converted to nitric oxide
   b. Is metabolised to met-haemoglobin
   c. Acts primarily on atherosclerotic vessels to dilate them
   d. Reduces afterload but does not affect preload
   e. Increases collateral coronary blood flow

17. Regarding cephalosporins
   a. There is no cross-reactivity with penicillin
   b. Cefoxitin is a 3rd generation drug
   c. 2nd generation drugs have less Gram negative action than 1st generation
   d. X
   e. X

18. Which of the following is considered safe in pregnancy
   a. ACE inhibitors
   b. Heparin
   c. Phenytoin
   d. Warfarin
   e. Lithium
19. Which is true regarding amiodarone
   a. It has type I and IV antiarrhythmic properties
   b. Its most serious side effect is decreased renal function
   c. It increases the clearance of digoxin
   d. X
   e. X

20. Which of the following acts at the NMDA receptor?
   a. Glycine
   b. Glutamate
   c. GABA
   d. Aspartate
   e. X

21. Regarding the GABA receptor
   a. GABA_A causes increased conductance of K^+
   b. GABA_A causes increased efflux of Cl^-
   c. Agonists at GABA_A hyperpolarise the cell
   d. X
   e. X

22. Which of the following doesn’t cause constipation
   a. Verapamil
   b. Digoxin
   c. Imipramine
   d. Codeine
   e. Chlorpromazine

23. Regarding the opioids
   a. There is no withdrawal syndrome following prolonged use of naloxone
   b. Tolerance develops readily to miosis and constipation
   c. Kappa receptors are responsible for supraspinal analgesia and addiction
   d. X
   e. X

24. Dextropropoxyphene
   a. Is structurally very similar to methadone
   b. Is a potent analgesic opioid
   c. When combined with paracetamol has good anti-inflammatory properties
   d. Is a phenylpiperidine
   e. In overdose causes death from hepatic toxicity

25. Aspirin
   a. Has anti-inflammatory, analgesic and anti-pyretic properties
   b. Increases prostaglandin and leukotriene synthesis
   c. Is a reversible cyclooxygenase inhibitor
   d. Is a base
   e. Excretion is enhanced by acidifying the urine

26. Digoxin
   a. Increases intracellular calcium
   b. Increases intracellular potassium
   c. Is a positive chronotrope
   d. Is a negative inotrope
   e. Increases atrioventricular conduction velocity

27. Which of the following is correct regarding heparin
   a. It inhibits anti-thrombin III
   b. It decreases formation of fibrin
   c. It acts on factor VII
   d. It acts on prothrombin
   e. It inhibits the action of protein C
28. Streptokinase
   a. is a complex lipopolysaccharide
   b. is synthesised by the human kidney
   c. binds to the proactivator plasminogen
   d. activates the plasminogen that is bound to fibrin
   e. is more dangerous than tPA in those over 75 years of age

29. Which of the following is INCORRECT regarding corticosteroids
   a. They have adverse effects on the foetus
   b. They cause changes by binding to intracellular proteins
   c. X
   d. X
   e. X

30. Which is incorrect regarding Salbutamol
   a. It may cause a transient decrease in oxygen tension
   b. It acts via adenylyl cyclase
   c. It causes hyperkalaemia
   d. It can be given orally, parenterally or via inhalation
   e. Bronchodilation persists for 3-4 hours

31. Frusemide
   a. Is not as strong as thiazide diuretics
   b. Decreases urinary calcium
   c. Acts in the thin ascending limb of the loop of Henle
   d. Relaxes smooth muscle
   e. Is useful as prophylaxis in acute mountain sickness

32. Which of the following alkalinises the urine?
   a. Hydrochlorothiazide
   b. Mannitol
   c. Spironolactone
   d. Acetazolamide
   e. Frusemide

33. Zidovudine
   a. Inhibits thymidine kinase
   b. Causes thrombocytosis
   c. Must be given parenterally
   d. Penetrates CSF poorly
   e. Is eliminated primarily in the urine

34. Which of the following is correct regarding the toxicity of paracetamol
   a. Sulphonation generates the toxic metabolite
   b. The toxic metabolite is generated via phase II reaction
   c. Toxicity increases with decreased glutathione levels
   d. Toxicity is enhanced with cimetidine
   e. Toxicity is related to depletion of sulphates

35. Which of the following is oxidised in the liver
   a. Paracetamol
   b. Phenytoin
   c. Procainamide
   d. Adrenaline
   e. Methadone

36. Which of the following is NOT a phase II reaction
   a. Methylation
   b. Glucuronidation
   c. Acetylation
   d. Sulphonation
   e. Oxidation
37. Regarding the barbiturates
a. x
b. They increase the frequency of opening of GABA-mediated chloride channels
c. Alkalinising the urine is useful in phenobarbitone overdose
d. Acidifying the urine is useful in phenobarbitone overdose
e. They do not affect warfarin metabolism

38. Calculate the half-life of digoxin in a 70kg man using the following facts: Vd=500L/70kg and clearance= 7L/hr/70kg
a. 5 hours
b. 7 hours
c. 50 hours
d. 71 hours
e. 500 hours

39. For which of the following is charcoal no use in overdose
a. theophylline
b. Iron
c. Carbamazepine
d. Paracetamol
e. Tricyclic antidepressants

40. Dantrolene acts by
a. Blocking ryanodine receptors in the sarcoplasmic reticulum
b. Antagonising the effects of suxamethonium
c. Inhibiting prostaglandin synthesis
d. x
e. x

41. Which of the following is INCORRECT regarding cimetidine
a. It induces hepatic enzymes
b. It inhibits H2 receptors
c. It causes confusion in the elderly
d. It inhibits hepatic enzymes
e. X

41. A
1. Acyclovir is active against all of the following EXCEPT
   A. CMV
   B. VZV
   C. HSV
   D. EBV
   E. HIV

2. Pentamidine
   A. Is toxic to pancreatic B cells
   B. Achieves high levels in CNS following oral administration
   C. Can be used for prevention of M. avium-intracellulare in HIV patients
   D. Has a low volume of distribution
   E. Is toxic to hepatocytes

3. Interferons
   A. Are directly antiviral
   B. Exert virus-specific antiviral activities
   C. Can be used to treat Kaposi’s sarcoma
   D. X
   E. X

4. Ticlopidine
   A. Decreases platelet aggregation by inhibiting the ADP pathway of platelets
   B. Has no GI side effects
   C. Inhibits prostaglandin metabolism
   D. X
   E. X

5. Prazosin
   A. Has a half life of 18 hours
   B. Adversely affects lipid profiles
   C. Produces a reflex bradycardia
   D. Has a first dose hypotensive effect
   E. Can increase cardiac output by decreasing preload and leaving afterload unchanged

6. Zidovudine
   A. Is a protease inhibitor
   B. Has a short serum half life
   C. Has no activity against retroviruses
   D. Inhibits viral thymidine kinase
   E. Commonly causes thrombocytosis

7. Which of the following is correct regarding penicillin G
   A. Hyponatraemia is not reported
   B. It has good penetration to the eye
   C. 100 000 U intrathecally can cause seizures
   D. 50% of people who claim to have an allergy will have an allergic response on further exposure
   E. X

8. Which of the following causes hypoprothrombinaemia and bleeding disorders
   A. Cefuroxime
   B. Cephalexin
   C. Cefaclor
   D. Cefotetan
   E. Ceftazidime
9. Naloxone
   A. Has a half life of over 4 hours
   B. Has a half life of less than 1 hour
   C. Has a half life of between 2-3 hours
   D. Has a half life of between 1-2 hours
   E. Has a half life of between 3-4 hours

10. Pethidine
    A. Causes raised CSF pressure
    B. X
    C. X
    D. X
    E. X

11. Which of the following is correct regarding Diazepam
    A. It does not engender psychological dependence
    B. It is metabolised to oxazepam
    C. X
    D. X
    E. X

12. Which of the following is correct regarding Metformin
    A. It is a sulphonylurea
    B. It can cause a significant lactic acidosis
    C. It is similar to chlorpropamide
    D. Its action is dependent on insulin
    E. It requires functioning pancreatic B cells for its action

13. Phenytoin
    A. Has low protein binding
    B. Causes agranulocytosis in 5% or patients
    C. Displays zero order kinetics at low concentrations and first order kinetics at higher concentrations
    D. Has poor oral bioavailability
    E. Can cause abnormalities of vitamin D metabolism

14. Which is the INCORRECT pairing of drug and effect
    A. Phenytoin – gum hypertrophy
    B. Carbamazepine – blood dyscrasias
    C. Phenobarbitone – enzyme induction
    D. Ethosuximide – hirsuitism
    E. Carbamazepine – ataxia

15. Which local anaesthetic causes met-haemoglobinaemia
    A. Lignocaine
    B. Tetracaine
    C. Bupivacaine
    D. Procaine
    E. Prilocaine

16. Benztropine causes
    A. Miosis
    B. Diarrhoea
    C. Confusion
    D. Bronchorrhoea
    E. GIT haemorrhage

17. A patient on phenytoin has a seizure and is found to have a low level. Which of the following is LEAST likely to have caused this
    A. Phenobarbitone
    B. Non-compliance
    C. Hypoalbuminaemia
    D. Disulfiram
    E. Erythromycin
18. Heparin
   A. Inhibits antithrombin III
   B. Causes alopecia
   C. Decreases the rate of conversion of prothrombin to thrombin
   D. Decreases the rate of conversion of fibrinogen to fibrin
   E. Decreases the rate of conversion of factor VII to VIIa

19. 2mL of 0.5% w/v solution contains how much drug
   A. 1mg
   B. 5mg
   C. 10mg
   D. 20mg
   E. 100mg

20. Adenosine
   A. Blocks K⁺ channels
   B. Opens Cl⁻ channels
   C. Has a half life of about 10 minutes
   D. Profoundly blocks the SA node
   E. Suppresses calcium-dependent action potentials

21. Regarding cromolyn, which is INCORRECT
   A. It inhibits IgE-mediated mast cell degranulation
   B. Is used prophylactically
   C. Causes acute bronchodilation
   D. Is only given via inhalation
   E. X

22. Atracurium
   A. Has a longer duration of action than vecuronium
   B. Is not associated with histamine release
   C. Is a steroid derivative
   D. Is eliminated by non-renal and non-hepatic mechanisms
   E. X

23. Which of the following is INCORRECT regarding pancuronium
   A. It is a steroid
   B. It does not stimulate histamine release
   C. It is renally excreted
   D. It has a shorter duration of action than vecuronium
   E. X

24. Which of the following antiseptics is commonly used in clinical practice
   A. 70% ethyl alcohol
   B. 30% ethanol
   C. Formaldehyde
   D. Isopropyl alcohol
   E. All of the above

25. Metronidazole
   A. Commonly causes constipation
   B. Inhibits alcohol dehydrogenase
   C. Is effective treatment for urogenital trichomoniasis
   D. Is not useful in treating giardiasis
   E. Has been shown to be teratogenic in humans

26. Erythromycin
   A. Is predominantly renally excreted
   B. Is a cell wall inhibitor
   C. Is bacteriostatic only
   D. Is effective against Campylobacter jejuni
   E. When given IV is in the stearate form
27. A young patient is given a normal dose of a drug in the emergency department. They develop tachycardia, hypertension and dilated pupils. The drug is most likely to be
A. Adrenaline
B. Atropine
C. Aspirin
D. Acetylcholine
E. X

28. Cisapride
A. Has a half life of 6-8 hours
B. Decreases lower oesophageal sphincter pressure
C. Is well absorbed orally
D. It is a potent anti-dopamine agent
E. It decreases colonic motility

29. Sumatriptan
A. Is a partial $\beta$-agonist
B. Is contraindicated in angina
C. X
D. X
E. X

30. Mannitol
A. Inhibits water absorption in the proximal tubule, Loop of Henle and collecting ducts
B. Is metabolised to glycerol
C. Decreases total body water and total body cation content equally
D. Is of no value when renal dynamics are compromised
E. It affects water reabsorption in the collecting ducts and distal convoluted tubule

31. Metoclopramide
A. Increases tone in the pyloric sphincter
B. X
C. Decreases oesophageal pressure
D. X
E. Increases antral contractility

32. Regarding the treatment of Parkinson’s disease
A. Antimuscarinics are better for the treatment of tremor than dopamine agonists
B. Administration of L-dopa with a dopa decarboxylase inhibitor decreases the side effect profile
C. X
D. X
E. X

33. Dantrolene is a good choice in the treatment of malignant hyperpyrexia because
A. It antagonises the effects of suxamethonium
B. It inhibits prostaglandin synthesis
C. It decreases calcium release from the sarcoplasmic reticulum in skeletal muscles
D. X
E. X

34. Which of the following is safest in pregnancy
A. Lithium
B. Phenytoin
C. Warfarin
D. ACE inhibitors
E. Heparin

35. In a female patient on an ACE inhibitor, which of the following is most likely to impair hypotensive effects
A. Indomethacin
B. Atenolol
C. Spironolactone
D. Irbesartan
E. Frusemide
36. Regarding enzyme induction
   A. It is irreversible
   B. It takes about 4 months to develop
   C. It results in an increase in smooth endoplasmic reticulum
   D. It results in an increase in rough endoplasmic reticulum
   E. X

37. Which of the following is correct regarding ethanol metabolism
   A. The MEOS pathway is the main pathway
   B. The alcohol dehydrogenase pathway is inducible
   C. It obeys first order kinetics
   D. Most alcohol dehydrogenase is found in the stomach
   E. X

38. Which of the following is correct regarding fluoxetine
   A. Serotonin syndrome is characterised by muscle weakness, hyperpyrexia and confusion
   B. It can be removed by haemodialysis
   C. It can cause malignant hyperpyrexia
   D. It is an enzyme inhibitor
   E. It is safe in overdose due to minimal drug interactions

39. Dobutamine
   A. Results in conversion of ATP to AMP
   B. Can decrease systemic vascular resistance (afterload)
   C. X
   D. X
   E. X

40. Clearance
   A. Is proportional to liver blood flow
   B. X
   C. X
   D. X
   E. X

41. Regarding pharmacokinetics and pharmacodynamics
   A. Diffusion is inversely proportional to surface area and directly proportional to thickness
   B. The LD50 is 50% of the dose that kills most people
   C. The LD50 is 50% of the dose at which toxicity occurs
   D. Efficacy is the maximum response produced by a drug
   E. X

42. Regarding bioavailability
   A. Drugs given PR have no first pass metabolism
   B. Transdermal drugs have no first pass metabolism
   C. IV drugs undergo first pass metabolism
   D. It is inversely proportional to extraction ratio
   E. X

43. Which of the following is INCORRECT regarding nitrates
   A. They increase collateral coronary blood flow
   B. They demonstrate tachyphylaxis/tolerance
   C. They demonstrate physical dependence
   D. They selectively dilate atherosclerotic vessels
   E. They decrease preload but do not affect afterload

44. Which of the following is correct regarding propranolol
   A. It is a highly selective β antagonist
   B. It is poorly lipid soluble
   C. It has sodium channel blocking activity
   D. It has partial agonist activity
   E. It has a high oral bioavailability
45. A 42 year old male with typical ischaemic chest pain is seen in the ED. Further investigation leads to a diagnosis of ‘vasospasm’. Which drug is most likely to have caused this
   A. Adrenaline
   B. X
   C. X
   D. X
   E. X

46. A young man presents with dilated pupils, confusion and hyperpyrexia. Which of the following is LEAST likely to account for these effects
   A. Atropine
   B. Datura
   C. Morphine
   D. X
   E. X

47. Which of the following is correct regarding pralidoxime
   A. It inhibits presynaptic acetylcholine release
   B. It cleaves organophosphate from acetylcholinesterase
   C. It cleaves acetylcholinesterase enzyme
   D. It regenerates acetylcholine
   E. X

48. Which of the following is INCORRECT regarding vecuronium
   A. It has minimal cardiovascular effects
   B. It is predominantly renally excreted
   C. It has significantly longer duration of action than pancuronium
   D. X
   E. X

49. Insulin does NOT cause
   A. Decreased glycogenolysis in the liver
   B. Increased glycogen synthesis in the liver
   C. Increased lipolysis in the liver
   D. X
   E. X

50. Penicillins reach high concentrations in
   A. Vitreous humor
   B. CSF with normal meninges
   C. Proximal tubular fluid in the kidneys
   D. Sputum
   E. Breast milk

51. Regarding ergot alkaloids, which of the following is incorrect
   A. they may cause vasodilation, leading to flushing and increased skin temperature of “St Anthony’s Fire”
   B. They may cause diarrhoea
   C. they act at alpha adrenoceptors
   D. they act at dopamine receptors
   E. they act at serotonin receptors

52. Which of the following raises the pH of urine the most
   A. Acetazolamide
   B. Frusemide
   C. Chlorothiazide
   D. Mannitol
   E. Spironolactone

53. The metabolism of paracetamol to its toxic metabolite is via which reaction
   A. Glucuronidation
   B. Sulphation
   C. Hydroxylation
   D. Oxidation
   E. Reduction
54. Histamine when injected locally would be expected to produce all of the following EXCEPT
   A. An increase in contractility of GI smooth muscle
   B. A decrease in systemic vascular resistance
   C. A decrease in myocardial contractility
   D. X
   E. X

55. Propofol
   A. Accumulates
   B. Can produce abnormal muscle movements
   C. Has minimal effects on the CVS
   D. X
   E. X

41. D  42. B  43. B  44. C  45. ?A
1. Regarding paracetamol toxicity
   A. Toxicity is related to glutathione consumption
   B. Toxicity is enhanced with cimetidine
   C. Sulphonation generates the toxic metabolite
   D. The toxic metabolite is generated via phase II reaction
   E. Toxicity is related to depletion of sulphates

2. Paracetamol
   A. Is only given orally
   B. Is highly protein bound
   C. Does not cause hyperuricaemia
   D. Has weak anti-inflammatory properties
   E. X

3. Dextropropoxyphene
   A. When combined with paracetamol is a strong anti-inflammatory
   B. Overdose causes death from hepatotoxicity
   C. Is chemically related to methadone
   D. Is a potent analgesic opioid
   E. X

4. Calculate the half life of a drug with a clearance of 8.4 L/hour and Vd 5L/kg in a 70kg man
   A. 24 hours
   B. 12 hours
   C. 30 hours
   D. 56 hours
   E. >60 hours

5. Which of the following is INCORRECT regarding the treatment of Parkinson’s disease
   A. L-dopa is contraindicated in acute psychosis
   B. Bromocriptine has less side effects than L-dopa
   C. Administration of L-dopa with a dopa decarboxylase inhibitor decreases side effects
   D. Dopamine cannot cross the blood-brain-barrier
   E. Bromocriptine causes more hypotension than L-dopa

6. Which of the following is correct regarding barbiturates
   A. They increase the duration of opening of GABA-mediated chloride channels
   B. They do not affect warfarin metabolism
   C. Acidifying the urine is useful in phenobarbitone overdose
   D. They increase the frequency of opening of GABA-mediated chloride channels
   E. X

7. Which of the following is correct regarding ethyl-alcohol
   A. It is excreted unchanged via the lungs
   B. It causes CNS excitation followed by CNS depression
   C. X
   D. X
   E. X

8. Which of the following is correct regarding Acyclovir
   A. The dose is 10-20mg 5 times daily
   B. It does not work on viruses with a thymidine kinase
   C. It does not work on CMV
   D. It is a guanosine analogue
   E. X
9. Which of the following is correct regarding metronidazole
   A. it has been shown to be teratogenic in humans
   B. it causes a disulfiram-like reaction
   C. it inhibits alcohol dehydrogenase
   D. a single dose is recommended for treatment of Giardiasis
   E. it does not cause a metallic taste in the mouth

10. Which of the following inhibits bacterial cell wall synthesis
    A. Cephalosporins
    B. Tetracycline
    C. Ciprofloxacin
    D. Metronidazole
    E. Erythromycin

11. Tetracycline
    A. May cause photosensitivity
    B. Does not cause discoloration of tooth enamel
    C. X
    D. X
    E. X

12. Gentamicin
    A. Is water soluble but unstable in solution
    B. Is an antibiotic which is oxygen-dependent
    C. may be given orally
    D. has a wide therapeutic index
    E. is not nephrotoxic

13. Which of the following antibiotics is resistant to beta-lactamase
    A. Piperacillin
    B. Cloxacillin
    C. Amoxycillin
    D. Penicillin
    E. Ampicillin

14. Which of the following is NOT an action of glucagon
    A. Smooth muscle relaxation
    B. Positive inotrope
    C. Positive chronotrope
    D. Gluconeogenesis stimulation
    E. Mobilisation of skeletal muscle glycogen

15. Adenosine
    A. Opens K⁺ channels
    B. Opens Cl⁻ channels
    C. Has a half life of 10 minutes
    D. Profoundly blocks the SA node
    E. Blocks calcium-dependent action potentials

16. Which of the following is INCORRECT regarding theophylline
    A. It causes direct bronchodilation
    B. Seizures may occur without any preceding neurological warning signs
    C. Overdose of slow release tablets will give a peak serum level in 6 hours
    D. Metabolism is induced by smoking
    E. Strengthens contraction of the diaphragm in patients with COAD

17. Allopurinol
    A. Is metabolised by xanthine oxidase
    B. Has no side effects
    C. Is useful in the treatment of acute gout
    D. Has low oral bioavailability
    E. x
18. Which of the following is correct regarding ipratropium bromide
   A. The onset of peak action is 10 minutes post inhalation
   B. Tolerance is common
   C. It has marked CNS effects
   D. It may precipitate closed angle glaucoma
   E. It has 100% oral bioavailability

19. Which of the following is INCORRECT regarding trimethoprim
   A. It is synergistic with sulphonamides
   B. It disrupts folate synthesis
   C. It is less toxic to humans than to bacteria
   D. It is bacteriocidal
   E. It is bacteriostatic

20. Which of the following is INCORRECT regarding aminoglycosides
   A. Resistance is plasmid-mediated
   B. Resistance does not cross species
   C. They require an oxygen dependent mechanism to be taken up into the cell
   D. They synergise with penicillins
   E. They decrease neuromuscular blockade

21. Which of the following is INCORRECT
   A. Disinfectants clean non-living fields
   B. Antiseptics clean living fields
   C. Antiseptics in low dose can promote bacterial growth
   D. Alcohol kills all bacteria and spores
   E. X

22. Digitalis
   A. Is a positive inotrope
   B. Is a negative inotrope
   C. Decreases ventricular excitation
   D. Causes a decrease in intracellular sodium
   E. Causes hypokalaemia in overdose

23. Which of the following is correct regarding Cisapride
   A. It has 80% oral bioavailability
   B. It is a potent anti-dopamine agent
   C. The dose needs to be reduced in renal failure
   D. It decreases colonic motility
   E. Has a half life of 6-8 hours

24. Which of the following is most potent
   A. Cortisol
   B. Cortisone
   C. Aldosterone
   D. Corticosterone
   E. Deoxycortisone

25. Which of the following does not cause constipation
   A. Verapamil
   B. Digoxin
   C. Warfarin
   D. Chlorpromazine
   E. Codeine
26. Which of the following is correct regarding verapamil
A. It increases myocardial contractility
B. It is a positive inotrope
C. It causes skeletal muscle weakness
D. It blocks active and inactive calcium channels
E. x

27. Which of the following is correct regarding warfarin
A. It is broken down in the GIT
B. It is routinely added to transfused blood
C. It decreases thromboplastins
D. C
E. C

28. Which of the following has a pure agonist effect in the circulation
A. Adrenaline
B. Noradrenaline
C. Isoprenaline
D. Metoprolol
E. Prazosin

29. Carbamazepine
A. Has active metabolites
B. In overdose causes seizures
C. Is an enzyme inhibitor
D. Enhances sodium channel conductance
E. Is not a tricyclic

30. Which of the following does NOT interact with warfarin
A. Phenobarbitone
B. Loop diuretics
C. Benzodiazepines
D. Cephalosporins
E. Barbiturates

31. Regarding antidepressants
A. Fluoxetine is more sedating than the tricyclic antidepressants
B. SSRIs are more effective in OCD
C. their effects include elevation of seizure threshold
D. sodium bicarbonate worsens arrhythmias in TCA overdose
E. all cause marked sedation

32. Hydralazine
A. Classically has a biphasic response in BP control
B. Should not be used in eclampsia
C. Causes significant hypotension
D. Is predominantly a vasodilator
E. Causes an abrupt but transient fall in blood pressure

33. Which if the following is INCORRECT regarding diazoxide
A. Can be used in hypertensive emergency
B. Is structurally related to thiazide
C. Has a low level of protein binding
D. May cause sodium and water retention
E. can cause significant hypotension
34. ACE inhibitors
   A. Can safely be used in the second and third trimesters of pregnancy
   B. Have been associated with angioedema
   C. Can cause significant reflex tachycardia
   D. Can cause hypokalaemia
   E. Are lipid soluble and reach the CNS

35. Which of the following is correct regarding fibrinolytics
   A. Urokinase is cheap but less selective
   B. Streptokinase comes from human cells
   C. TIMI trial states GI haemorrhage is the most common haemorrhagic complication
   D. GIT haemorrhage within the previous 12 months is a contraindication
   E. Actrilic acid is a potent fibrinolytic inhibitor

36. Termination of irreversible (non-depolarising) neuromuscular blockade involves
   A. Regeneration of receptors
   B. An increase in end plate acetylcholine
   X
   D. X
   E. X

37. Which of the following is correct regarding GTN
   A. It exerts its action after being converted to nitric oxide
   B. It causes met-haemoglobinemia
   C. It acts on atherosclerotic vessels to dilate them
   D. Demonstrates physiologic dependence
   E. Increases collateral coronary blood flow

38. Which of the following has a different mode of action
   A. Insulin
   B. Glucagon
   C. ACTH
   D. PTH
   E. All of the above

39. Choose the odd one out
   A. Muscarine
   B. Acetylcholine
   C. Hyoscine
   D. Bethanechol
   X

40. Half life
   A. May not be a good indicator of clearance
   B. Does not increase with age
   C. Is not dependent on the volume of distribution
   X
   E. X

41. Stemetil
   A. Can be useful in tardive dyskinesia
   B. Can cause neuroleptic malignant syndrome
   C. Has antiemetic effect via 5-HT antagonist activity
   X
   E. X

42. Alpha-methyl-dopa
   A. Can cause a positive Coombe's test
   B. Is a potent vasoconstrictor
   C. Can be given IV or oral
   D. Can precipitated an SLE-like syndrome
   E. Can cause agitation
43. How much drug is contained in 2mL of 0.5% w/v solution
   A. 1mg  
   B. 5mg  
   C. 10mg  
   D. 20mg  
   E. 100mg

44. Which of the following is an example of a phase II biotransformation
   A. Oxidation  
   B. Reduction  
   C. Glucuronidation  
   D. Dehydration  
   E. Hydrolysis

45. Which of the following is an example of a class IV antiarrhythmic
   A. Propranolol  
   B. Phenytoin  
   C. Sotalol  
   D. Verapamil  
   E. Lignocaine

   41. B  42. A  43. C  44. C  45. D
1. Regarding opiates
   a. X
   b. Methadone and dextropropoxyphene are phenylpiperidines
   c. They cause diuresis
   d. They cause urinary retention
   e. X

2. Which of the following anaesthetic agents stimulates the cardiovascular system
   a. Thiopentone
   b. Halothane
   c. Ketamine
   d. Midazolam
   e. Propofol

3. Side effects of tricyclic antidepressants include all of the following EXCEPT
   a. Sedation
   b. Tremor
   c. Urinary retention
   d. Psychosis
   e. Hypertension

4. Side effects of phenothiazines include
   a. Urinary retention
   b. Seizures
   c. Corneal, lens and retinal deposits
   d. Seizures
   e. Extrapyramidal effects

5. Which of the following is correct regarding acyclovir
   a) is commonly given in doses of 10-20 mg TDS
   b) is used to treat CMV
   c) is a guanosine analogue
   d) acts to inhibit viral entry into cells
   e) is only available intravenously

6. Which of the following is correct regarding the antivirals
   a. Valacyclovir is converted rapidly to acyclovir when taken orally
   b. Valacyclovir is only available intravenously
   c. Acyclovir blocks transcription of viral DNA to RNA
   d. X
   e. X

7. 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

8. The site of action of erythromycin is
   a. On the 50S subunit of the ribosome
   b. On the 30S subunit of the ribosome
   c. On the 20S subunit of the ribosome
   d. DNA gyrase
   e. DNA topoisomerase
9. Which of the following is correct regarding erythromycin
   a. When given IV is in the stearate form
   b. It is excreted in the urine
   c. Is bacteriostatic only
   d. Is active against campylobacter
   e. Is a cell wall inhibitor

10. Regarding Ketoconazole
    a. It interacts with terfenadine
    b. It inhibits bacterial cell wall synthesis
    c. X
    d. X
    e. X

11. Which of the following is not an antiemetic
    a. THC
    b. Omeprazole
    c. Haloperidol
    d. Metoclopramide
    e. Domperidone

12. Which of the following does not cause constipation
    a. Digoxin
    b. Verapamil
    c. Imipramine
    d. Codeine
    e. Chlorpromazine

13. Which is correct regarding the action of verapamil
    a. It is a positive inotrope
    b. It shortens the action potential
    c. It blocks both activated and inactivated calcium channels
    d. It blocks cardiac sodium channels
    e. It causes skeletal muscle weakness

14. All of the following are bronchodilators EXCEPT
    a. Sodium cromoglycate
    b. Ipratropium bromide
    c. Salbutamol
    d. Adrenaline
    e. Salmeterol

15. Cisapride
    a. It has 80% oral bioavailability
    b. It is a potent anti-dopamine agent
    c. The dose needs to be reduced in renal failure
    d. It decreases colonic motility
    e. Has a half life of 6-8 hours

16. Promethazine is a weak base with a pKa of 9.1. Which of the following is correct
    a. Urinary secretion will increase if bicarbonate is co-administered
    b. Urinary secretion will increase if ammonium chloride is co-administered
    c. It will be more ionised at blood pH than at gastric pH
    d. X
    e. X

17. Efficacy is
    a. The concentration of drug that produces 50% of maximal effect
    b. The maximum response that can be produced by a drug
    c. Limited by side effects
    d. Independent of route of administration
    e. X
18. Which of the following is correct regarding therapeutic index
   a. It is low in drugs that have a large margin of safety
   b. It is the ratio of ED50 to TD50
   c. It is the ratio of TD50 to ED50
   d. X
   e. X

19. Which of the following is correct regarding beta adrenergic agonists
   a. They may decrease arterial oxygen tension after administration
   b. They cause hypoglycaemia
   c. They stimulate glycogenolysis in the liver and skeletal muscle
   d. They decrease cholesterol levels
   e. X

20. Atropine causes
   a. Bronchoconstriction
   b. A decrease in gastric acid secretion
   c. An initial bradycardia followed by tachycardia
   d. An increase in jejunal peristalsis
   e. A decrease in intraocular pressure

21. Which of the following is correct regarding ipratropium
   a. It has 100% GIT absorption
   b. It has a long duration of action to allow 4 hourly nebuliser administration
   c. The onset of peak action is 10 minutes post inhalation
   d. Tolerance is common
   e. It has marked CNS effects

22. Which of the following does NOT induce hepatic p450 enzymes
   a. Rifampicin
   b. Cimetidine
   c. Carbamazepine
   d. Phenytoin
   e. X

23. Which of the following is INCORRECT regarding cimetidine
   a. It inhibits H1 receptors
   b. It causes confusion in the elderly
   c. It inhibits hepatic enzymes
   d. X
   e. X

24. Cocaine causes all of the following effects EXCEPT
   a. Local anaesthesia
   b. Reduced catecholamine uptake
   c. X
   d. X
   e. X

25. Side effects of prazosin include
   a. Reflex tachycardia
   b. First dose hypotension
   c. Reflex bradycardia
   d. Unfavourable effect on lipids
   e. Hypertension

26. Pralidoxime exerts its effects by
   a. Regeneration of acetylcholine
   b. Inhibiting presynaptic acetylcholine release
   c. Cleavage of acetylcholinesterase from organophosphate molecules
   d. X
   e. X
27. Which of the following is correct regarding SSRI antidepressants
   a. They are metabolised into inactive metabolites
   b. They are the drugs of choice for obsessive-compulsive disorder
   c. Fluoxetine induces liver enzymes
   d. Diazepam and SSRIs used together can result in serotonergic syndrome
   e. They are associated with minimal drug interactions

28. Opiates and receptor action
   a. X
   b. X
   c. X
   d. X
   e. X

29. Which of the following \( \beta \)-blockers is correctly paired with the receptor on which it acts
   a. Propranolol \( \beta_1 \) receptor only
   b. Carvedilol \( \beta_1 \) and \( \beta_2 \) receptors
   c. X
   d. X
   e. X

30. What is the pKa of aspirin
   a. 9.5
   b. 6.5
   c. 3.5
   d. 2.5
   e. 1.5

31. Which of the following is correct regarding thrombolytics and their actions
   a. Aspirin irreversibly inhibits cyclooxygenase
   b. X
   c. X
   d. X
   e. X

32. Propranolol
   a. Is a selective \( \beta \) blocker
   b. Has low lipid solubility
   c. Has partial agonist activity
   d. Has local anaesthetic activity
   e. X

33. Sodium cromoglycate
   a. Is only given by inhalation
   b. Is not useful prophylactically
   c. Causes acute bronchodilation
   d. Is well absorbed when taken orally
   e. X

34. Which of the following is correct regarding the action of amphetamines
   a. There is increased catecholamine release
   b. X
   c. X
   d. X
   e. X

35. Hydralazine
   a. Rarely causes postural hypotension
   b. Is a direct vasodilator
   c. Has a short-lived effect
   d. Displays a biphasic blood pressure response
   e. Should not be used in eclampsia
36. Digoxin
   a. Is a negative inotrope
   b. Increases ventricular excitation
   c. Causes a decrease in intracellular sodium
   d. Causes hypokalaemia in overdose
   e. X

37. Digoxin
   a. Levels are increased by some antibiotics
   b. X
   c. X
   d. X
   e. X

38. Which of the following is correct regarding lithium
   a. It can cause type II diabetes
   b. It is excreted almost entirely in the urine
   c. It requires no treatment in overdose
   d. Dose does not need adjusting in renal impairment
   e. Has high first pass metabolism

39. Anticonvulsants and mechanism of action
   a. X
   b. X
   c. X
   d. X
   e. X

40. Which of the following penicillins is beta-lactamase resistant
   a. Amoxicillin
   b. Piperacillin
   c. Benzylpenicillin
   d. Cloxacillin
   e. X

41. Which of the following is correct regarding cephalosporins
   a. 2nd generation cephalosporins have less gram positive cover than 1st generation
   b. There is no cross reactivity with penicillins
   c. Cefoxitin is a 3rd generation drug
   d. X
   e. X

42. Which of the following is correct regarding local anaesthetics
   a. The may cause blockade of motor nerves before sensory nerves in large mixed nerves
   b. They preferentially block larger fibres
   c. They preferentially block unmyelinated fibres
   d. They have no cardiac effects
   e. They will block A-alpha fibres before A-delta and C fibres

43. The mechanism of action of a beta-lactam is
   a. To inhibit transpeptidation in peptidoglycan synthesis in the bacterial cell wall
   b. X
   c. X
   d. X
   e. X

44. How much drug is in 2mL of 0.5% w/v solution
   a. 1mg
   b. 10mg
   c. 100mg
   d. 1000mg
   e. 1kg
45. Which of the following is INCORRECT regarding heparin
   a. It acts on factor VII
   b. It acts on prothrombin
   c. It decreases the formation of fibrin
   d. It inhibits antithrombin III
   e. X

46. Heparin
   a. Is measured as active units via bioassay
   b. X
   c. X
   d. X
   e. X

47. Which of the following is correct regarding frusemide
   a. It is ototoxic
   b. It is used in the treatment of glaucoma
   c. X
   d. X
   e. X

48. Which of the following drugs alkalinises the urine
   a. Acetazolamide
   b. Frusemide
   c. Chlorothiazide
   d. Mannitol
   e. Spironolactone

49. Which of the following is correct regarding lithium
   a. Its toxicity may be increased by some antibiotics
   b. It needs regular monitoring as it can cause diabetes mellitus
   c. It has a wide therapeutic index
   d. Co-administration of diuretics can result in toxicity in stable patients
   e. Pregnancy can cause changes in metabolism and excretion

50. Which of the following is a side effect of phenytoin
   a. It causes agranulocytosis in 5% of treated patients
   b. It affects vitamin D metabolism
   c. X
   d. X
   e. X

51. Beta blockers
   a. Applied topically may cause systemic effects
   b. X
   c. X
   d. X
   e. X

52. Mechanism of action of adenosine
   a. Blocks K⁺ channels
   b. Opens Cl⁻ channels
   c. Has a half life of about 10 minutes
   d. Profoundly blocks the SA node
   e. Suppresses calcium-dependent action potentials

53. Which of the following antibiotics acts on cell membranes
   a. Ketoconazole
   b. Ceftriaxone
   c. Erythromycin
   d. Metronidazole
   e. Ciprofloxacin
54. In paracetamol overdose, toxic metabolites are generated from
   a. Glucuronidation
   b. Sulphation
   c. N-hydroxylation
   d. Oxidation
   e. Reduction

55. Sumatriptan
   a. Is contraindicated in angina
   b. Is a partial $\beta$ agonist
   c. X
   d. X
   e. X

56. Side effects of methyldopa include which of the following
   a. Positive Coombs test
   b. Agitation
   c. Pancreatitis
   d. X
   e. X

57. In the treatment of gout, which of the following is correct
   a. The use of paracetamol does not affect uric acid concentration
   b. X
   c. X
   d. X
   e. X

58. Paracetamol and protein binding
   a. X
   b. X
   c. X
   d. X
   e. X

59. Which of the following drugs has a half life of 6 hours
   a. Digoxin
   b. Aspirin
   c. Atenolol
   d. Adenosine
   e. Amiodarone

60. Which of the following drugs interacts with warfarin
   a. Ceftriaxone
   b. Diazepam
   c. Indomethacin
   d. Paracetamol
   e. Ethanol

61. Half life is used to calculate
   a. X
   b. X
   c. X
   d. X
   e. X

62. A patient has been given a drug which has caused hypertension and pupillary dilation. Which of the following was he given?
   a. Atropine
   b. Adrenaline
   c. Ganglion blocker
   d. X
   e. X
63. Which of the following is considered an effective technique for sterilisation
   a. Fibreoptics treated in an autoclave at 120 degrees for 2 minutes
   b. Bleach diluted 1 in 10 for 10 minutes for blood
   c. A single wipe of chlorhexidine over skin for 2 minutes for neurosurgery
   d. Chlorhexidine to treat spores
   e. Iodine used somehow to treat spores
1. Which of the following is correct regarding prazosin
   a. It causes reflex tachycardia
   b. It causes first dose hypotension
   c. It causes reflex bradycardia
   d. It has an unfavourable effect on lipids
   e. It acts to reduce preload and afterload

2. A young man presents to ED following an overdose with dilated pupils, tachycardia and a fever. Which of the following is LEAST likely
   a. Aspirin
   b. Atropine
   c. Datura
   d. Chlordiazepoxide
   e. Amitriptyline

3. Which of the following is correct regarding bisphosphonates
   a. 10% of the dose is excreted unchanged
   b. They increase osteoblast activity
   c. They have low oral bioavailability
   d. 90% distributed in the bones
   e. X

4. A young man is treated with a normal dose of a drug and develops tachycardia, hypotension and mydriasis. Which of the following is MOST likely
   a. Dobutamine
   b. Atropine
   c. Adrenaline
   d. X
   e. X

5. Which of the following does NOT induce immunity
   a. Pertussis
   b. Rabies
   c. Redback venom
   d. Tuberculosis
   e. Hepatitis A

6. Which of the following is a live vaccine
   a. Hepatitis A virus
   b. Varicella-Zoster virus
   c. Rabies
   d. Measles
   e. Diphtheria

7. Which of the following is correct regarding antiemetics
   a. Ondansetron is a dopamine antagonist
   b. Metoclopramide increases lower oesophageal sphincter tone
   c. Erythromycin is a prokinetic agent
   d. Marijuana acts on central chemoceptors
   e. X

8. Which of the following is correct regarding adenosine
   a. It has a half life of 5 minutes
   b. It works on calcium dependent action potentials
   c. It increases potassium influx to decrease AV conductivity
   d. It decreases SA node firing
   e. It is the drug of choice for ventricular tachycardias
9. Paracetamol toxicity is caused by  
   a. Phase II reactions  
   b. Depletion of sulphates  
   c. Depletion of glutathione  
   d. Conjugation with glutathione  
   e. Co-administration with cimetidine

10. Which of the following is correct regarding bioavailability  
    a. Is inversely proportional to extraction ratio  
    b. Transdermal route undergoes first pass metabolism  
    c. Rectal route does not undergo first pass metabolism  
    d. It is 100% for inhaled drugs  
    e. Intravenous route undergoes first pass metabolism

11. Adverse effects of penicillin include  
    a. Seizures  
    b. 50% of people who claim allergy will actually have a reaction on further exposure  
    c. Hyponatraemia  
    d. X  
    e. X

12. Which of the following is correct regarding beta blockers  
    a. They cannot be topically absorbed  
    b. They can cause glaucoma  
    c. Glucagon can be used as an antidote  
    d. X  
    e. X

13. Which of the following is correct regarding antibiotic resistance  
    a. Erythromycin resistance is caused by changes in the 50S ribosomal subunit receptor site  
    b. Bacteria resistant to sulphonamides still need PABA  
    c. X  
    d. X  
    e. X

14. What is the mechanism of cytochrome P450 induction  
    a. Rough endoplasmic reticulum hypertrophy  
    b. Smooth endoplasmic reticulum hypertrophy  
    c. Increase in acetylation  
    d. X  
    e. X

15. Which congenital defect – match is correct  
    a. Ethanol and Ebsteins anomaly  
    b. Thalidomide and neural tube defects  
    c. ACE inhibitors and nephrotoxicity  
    d. X  
    e. X

16. A patient presents to the ED post ictal and is found to have a sub-therapeutic level of phenytoin. Which of the following would be LEAST likely to cause this  
    a. Hypoalbuminaemia  
    b. Poor patient compliance  
    c. Carbamazepine co-administration  
    d. Isoniazid co-administration  
    e. Phenobarbital co-administration

17. Which of the following is correct regarding allopurinol  
    a. It is used for acute gout  
    b. It is metabolised by xanthine oxidase  
    c. It has low oral bioavailability  
    d. It has very few side effects  
    e. X
18. Which of the following is correct regarding aspirin
   a. It is an irreversible cyclooxygenase inhibitor
   b. Decreases plasma volume
   c. Does not cross the placenta
   d. Its action on platelet aggregation is reversible
   e. Excretion is enhanced by acidifying the urine

19. Which of the following is a weak base
   a. Warfarin
   b. Penicillamine
   c. Aspirin
   d. Amphetamine
   e. Ibuprofen

20. Which of the following is correct regarding ibuprofen
   a. It has less GI effects than aspirin
   b. It is excreted unchanged in the urine
   c. It is a COX-II selective inhibitor
   d. X
   e. X

21. Which of the following is correct regarding eicosanoids
   a. They are the only arachidonic acid derivatives
   b. They are vasodilators
   c. They include prostaglandins, leukotrienes and thromboxane A2
   d. X
   e. X

22. Which of the following is correct regarding nitrates
   a. They act on afterload
   b. They act on atherosclerotic vessels to dilate them
   c. They decrease both preload and afterload
   d. They demonstrate physiologic dependence
   e. They increase collateral coronary blood flow

23. Which of the following is correct regarding calcium channel blockers
   a. They selectively act on L-type calcium channels
   b. Diltiazem is the prototype of the dihydropyridines
   c. X
   d. X
   e. X

24. ACE inhibitors
   a. Are used in diabetes
   b. Can cause hypokalaemia
   c. Are lipid soluble and reach the CNS
   d. Can safely be used in the second and third trimesters of pregnancy
   e. Have been associated with angioedema

25. Loop diuretics
   a. Cause alkalosis
   b. Cause hypermagnesaemia
   c. Cause ototoxicity by increasing lithium toxicity
   d. X
   e. X

26. Metronidazole
   a. Is used for treatment of trichomonas infection
   b. Has been shown to be teratogenic in humans
   c. Inhibits alcohol dehydrogenase
   d. Is not effective in treatment of giardiasis
   e. Is only available in an intravenous preparation
27. Which of the following techniques is an appropriate form of sterilisation
   a. Fibreoptics treated in an autoclave at 120 degrees for 2 minutes
   b. Bleach diluted 1 in 10 for 10 minutes for blood
   c. A single wipe of chlorhexidine over skin for 2 minutes for neurosurgery
   d. Chlorhexidine to treat spores
   e. Iodine used somehow to treat spores

28. Which of the following is correct regarding ethylene glycol (antifreeze solution)
   a. Renal dysfunction increases its toxicity
   b. Toxicity is due to formation of formic acid
   c. Toxicity is due to formation of oxalic acid
   d. X
   e. X

29. Which of the following is correct regarding benzodiazepines
   a. Oxazepam is metabolised into diazepam
   b. Diazepam is metabolised into oxazepam
   c. Flumazenil is an irreversible antagonist
   d. Diazepam does not engender psychological dependence
   e. X

30. Which of the following is correct regarding SSRIs
   a. They are metabolised into inactive metabolites
   b. They are the drugs of choice for Obsessive-Compulsive disorder
   c. Fluoxetine induces liver enzymes
   d. Diazepam and SSRIs used together can result in serotonergic syndrome
   e. They are associated with minimal drug interactions

31. Choose the correct matching stems
   a. Cisapride causes a prolonged QT interval
   b. X
   c. X
   d. X
   e. X

32. Which of the following is correct regarding cimetidine
   a. It inhibits H1 receptors
   b. It causes confusion in the elderly
   c. It inhibits hepatic enzymes
   d. X
   e. X

33. The safest antibiotic for use in renal failure is
   a. Doxycycline
   b. Tetracycline
   c. Erythromycin
   d. Penicillin
   e. X

34. Which of the following is correct regarding antivirals
   a. Valacyclovir is metabolised to acyclovir
   b. Valacyclovir can be given intravenously
   c. Acyclovir blocks transcription of viral DNA to RNA
   d. Nomonovir acts on HIV-1
   e. X

35. Which of the following is correct regarding prochlorperazine
   a. It works mainly at the level of the GIT
   b. Is structurally similar to (tricyclic) antidepressants
   c. It can cause neuroleptic malignant syndrome
   d. X
   e. X
36. Which of the following is correct regarding tricyclic antidepressants
   a. The phenothiazines are structurally similar to tricyclics
   b. They are completely absorbed and have high oral bioavailability
   c. Their volumes of distribution tend to be very low
   d. They act via inhibition of degradation of noradrenaline and serotonin
   e. x

37. Which of the following is correct regarding opiates
   a. They cause a mild diuresis
   b. They can precipitate urinary retention
   c. They reduce bladder smooth muscle tone
   d. Ganglion blockers will improve urinary flow
   e. x

38. Which of the following has anti-thrombolytic effects
   a. Aspirin
   b. Plasminogen
   c. Aminocaproic acid
   d. Heparin
   e. Warfarin

39. Lignocaine acts
   a. Rapidly on hyperpolarised nerves
   b. Preferentially on rapidly firing nerves
   c. Preferentially on thicker nerves
   d. Lastly on motor nerves
   e. x

40. Which of the following is correct regarding methyl-dopa
   a. It causes a positive Coombe’s tests
   b. It can be given IV or oral
   c. It can precipitated an SLE-like syndrome
   d. It can cause agitation
   e. It is a potent vasoconstricctor

41. Which of the following is INCORRECT regarding theophylline
   a. It can cause hyperkalaemia
   b. It can cause seizures without any other preceding neurological symptoms
   c. It interacts with adenosine
   d. It is a receptor antagonist
   e. Metabolism is induced by smoking

42. Which of the following is correct regarding omeprazole
   a. It is category X in pregnancy
   b. It acts on GIT epithelium
   c. It is not indicated in Zollinger-Ellinson syndrome
   d. X
   e. X

43. Volume of distribution
   a. Is inversely proportional to clearance
   b. Is affected by pKa
   c. Is generally larger than predicted for patients with ascites
   d. Is directly proportional to the drug concentration in plasma
   e. Is high in drugs contained in plasma

44. Which of the following is correct regarding aspirin
   a. In moderate doses it can cause an increased respiratory rate
   b. In toxic levels it results in metabolic alkalosis
   c. Excretion is enhanced by acidifying the urine
   d. It is a reversible cyclooxygenase inhibitor
   e. It does not cross the placenta
45. Which of the following is correct regarding ketamine  
   a. It is a cardiac stimulant  
   b. It reduces laryngeal reflexes  
   c. It is given as an inhaled anaesthetic with nitrous oxide  
   d. X  
   e. X  

46. Which of the following is correct regarding muscle relaxants  
   a. Aminoglycosides decrease their efficacy  
   b. Vecuronium is a steroid derivative  
   c. Gallamine is excreted in the bile after hepatic metabolism  
   d. Atracurium causes hypotension in volume depleted patients  
   e. Pancuronium causes histamine release  

47. Which of the following is correct regarding lithium  
   a. It needs regular monitoring as it can cause diabetes mellitus  
   b. It has a wide therapeutic index  
   c. Co-administration of diuretics can result in toxicity in stable patients  
   d. Pregnancy can cause changes in metabolism and excretion  
   e. It requires no treatment in overdose  

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1. Phenytoin
   a. may cause abnormalities in vitamin D metabolism
   b. X
   c. X
   d. X
   e. X

2. Calculate the half life of digoxin if Cl = 8.4L/min, Vd 5L/kg, 70kg man
   a. X
   b. X
   c. X
   d. X
   e. X

3. Muscarinic & Adrenergic receptors
   a. X
   b. X
   c. various effects
   d. X
   e. X

4. Aspirin
   a. can cause hyperventilation
   b. has a pKa of 6.3
   c. X
   d. X
   e. X

5. Elderly people have a decreased metabolism of
   a. propranolol
   b. lignocaine
   c. X
   d. X
   e. X

6. All the following cause constipation except
   a. verapamil
   b. imipramine
   c. codeine
   d. digoxin
   e. X

7. Frusemide
   a. lasts six hours
   b. can cause ototoxicity
   c. X
   d. X

8. Site of action of diuretics
   a. thiazides - proximal part of the distal convoluted tubule
   b. X
   c. X
   d. X

9. Amiodarone
   a. prolongs the QT interval
   b. X
   c. X
   d. X
10. **Ipratropium**
   a. onset of action in 10 minutes
   b. X
   c. X
   d. X
   e. contraindicated in glaucoma

11. **Atracurium**
   a. is broken down by Hoffman elimination
   b. X
   c. X
   d. X
   e. X

12. **Ketamine**
   a. is a cardiovascular stimulant
   b. X
   c. X
   d. X
   e. X

13. **Complimentary medicine question on**
   a. St John’s Wort
   b. Echinacea
   c. Garlic
   d. X
   e. X

14. **Elderly patients**
   a. have decreased total body water
   b. X
   c. X
   d. X
   e. X

15. **Adenosine**
   a. suppresses calcium-dependent action potentials
   b. X
   c. X
   d. X
   e. X

16. **Allopurinol**
   a. metabolised by xanthine oxidase
   b. X
   c. X
   d. X
   e. X

17. **Acute gout**
   a. X
   b. X
   c. X
   d. X
   e. X

18. **Steroids**
   a. mineralocorticoid effects of commonly used steroids
   b. X
   c. X
   d. X
   e. X
19. Sulphonamides
   a. are analogues of PABA
   b. X
   c. X
   d. X
   e. X

20. Valacyclovir
   a. converted to acyclovir when given orally
   b. X
   c. X
   d. X
   e. X

21. Metronidazole
   a. is an effective treatment for trichomonas
   b. inhibits alcohol dehydrogenase
   c. X
   d. X
   e. X

22. Metformin
   a. does not require functioning pancreatic beta cells to perform its actions
   b. is a sulphonylurea
   c. X
   d. X
   e. X

23. Ondansetron
   a. blocks 5HT3 receptors
   b. blocks dopamine receptors
   c. X
   d. X
   e. X

24. Metoclopramide
   a. increases antral motility
   b. X
   c. X
   d. X
   e. X

25. With regard to receptors
   a. desensitisation is rapidly reversible, leading to full response on re-exposure
   b. receptor downregulation is a rapid process (minutes)
   c. all receptors are associated with the cell membrane
   d. X
   e. X

26. Bioavailability
   a. is 100% for drugs given rectally
   b. is equal to 1-extraction ratio
   c. X
   d. X
   e. X

27. 2ml of 0.5% w/v is equivalent to
   a. 0.01mg
   b. 0.1mg
   c. 1mg
   d. 10mg
   e. 100mg
28. Which of the following drugs is safe to give in pregnancy
   a. heparin
   b. ramipril
   c. sodium valproate
   d. warfarin
   e. phenytoin

29. Heparin
   a. may cause alopecia
   b. X
   c. X
   d. X
   e. X

30. Penicillin G
   a. achieves high concentration in renal tubules
   b. is well absorbed orally
   c. X
   d. X
   e. X

31. Gentamicin
   a. enters bacteria via an oxygen dependent process
   b. may be given orally
   c. X
   d. X
   e. X

32. Lithium
   a. antagonises antidiuretic hormone
   b. X
   c. X
   d. X
   e. X

33. Marijuana
   a. causes conjunctival erythema and tachycardia
   b. X
   c. X
   d. X
   e. X

34. N-acetyl cystine
   a. is a source of glutathione
   b. X
   c. X
   d. X
   e. X

35. Methylxanthines
   a. may decrease the seizure threshold
   b. adenosine receptor antagonists
   c. X
   d. X
   e. X

36. Salbutamol
   a. may cause an initial fall in pO2
   b. X
   c. X
   d. X
   e. X
37. The opiate associated with seizures when given in high dose to patients with renal failure is
   a. Pethidine (meperidine)
   b. oxycodone
   c. morphine
   d. methadone
   e. X

38. A young man presents with typical chest pain, later diagnosed as vasospasm. This is most likely mediated via
   a. alpha receptors
   b. X
   c. X
   d. X
   e. X
1) Calculate the t1/2 of a drug with a renal clearance of 8.4L/h, Vd of 5L/Kg in a 70Kg male
   a. 29 hours

2) Which of the following is not a type 1 biotransformation reaction
   a. glucoronidation

3) t1/2 of naloxone
   a. 60-90 minutes

4) 5mL of 2% of w/v solution contains
   a. 10mg

5) Heparin
   a. causes alopecia

6) Which of the following does NOT alter INR when taking warfarin
   a. benzodiazepines

7) Ticlopidine
   a. Inhibits ADP induced platelet aggregation

8) Metronidazole is effective against
   a. vaginal trachomoniasis

9) Which of the following does not inhibit cell wall synthesis
   a. erythromycin

10) Valacyclovir
    a. Is converted to acyclovir in the peripheral circulation

11) Gentamicin
    a. enters the cell by via O2 dependent process
    b. X
    c. X
    d. X
    e. X

12) Which of the following does not cause constipation
    a. digoxin

13) A patient arrives to the ED with dilated pupils and hypertension, tachycardia, which is the least likely toxin
    a. aspirin

14) ACE inhibitors
    a. can cause angio-oedema
    b. are useful in diabetes

15) Hydralazine is
    a. predominately a vasodilator

16) Fluoxetine is
    a. a liver enzyme inhibitor

17) SSRI's are the preferred treatment of
    a. OCD
18) a high degree of tolerance occurs to all effects of morphine except
   a. miosis

19) which of the following is a live virus vaccine
   a. measles

20) local anaesthetics
   a. preferentially block faster firing nerves

21) which of the following is a liver enzyme inducer
   a. barbiturate

22) salbutamol
   a. does not cause hyperkalaemia

23) barbiturates prolong the opening of chloride channels

24) methaemoglobinemia is caused by Prilocaine

25) phase 3 drug trials
   a. involve a large amount of people to reduce bias

26) Metoclopramide
   a. increases lower oesophageal sphincter tension

27) Adenosine
   a. suppresses Calcium-dependent action potential

28) Regarding enzyme induction
   a. results in increased smooth ER amount

29) which of the following antibiotics is resistant to β-lactamase
   a. cloxacillin

30) what is the pKa of aspirin
   a. 3.5

31) In paracetamol overdose
   a. patient is symptomatic immediately after ingestion
   b. acetylcysteine binds the toxic metabolite
   c. can cause interstitial nephritis

32) regarding muscle relaxants
   a. mivacurium is longest acting
   b. blockade causes by suxamethonium can be fully reversed with neostigmine
   c. negative inotrope effects of suxamethonium can be attenuated by atropine

33) All activate G-protein coupled receptors except
   a. marijuana
   b. GHB
   c. LSD
   d. Amphetamines
   e. Heroin
34) General anaesthetic that also causes bronchodilation is ketamine.

35) Marijuana
   a. half-life one hour
   b. perceptual changes are dose-dependent

36) Metformin
   a. action depends on functioning beta cells
   b. frequently causes hypoglycaemia
   c. reduces hepatic gluconeogenesis

37) Dexamethasone
   a. is 30 times more potent than prednisolone
   b. has significant mineralocorticoid activity
   c. is available only as oral preparation