

Feb 2011 MCQs

Pharmacology

Unclassified Pharmacology

Most common side effect of 1g IV [vancomycin](#)

- A. hypotension and histamine release **red man syndrome**
- B. something about hepatitis
- C. something about renal failure - **v unlikely with one off norm/low dose**
- D. hypertension
- E. ?

General Pharmacology

- new

Which drug is optimally given as a racemic mixture?

- a. morphine
- b. bupivacaine**
- c. noradrenaline
- d. methadone
- e. dexmetetomidine - **not racemic**

Racemic morphine, noradrenaline, and methadone are not as efficacious as their active enantiomer (the "inactive" enantiomer has weaker actions). Dexmetetomidine is not racemic. Therefore, this leaves bupivacaine. Racemic bupivacaine is equally as efficacious as levobupivacaine but racemic bupivacaine has more toxicity. Answer is B.

All of the following are desirable characteristics for a drug to be infused EXCEPT (I thought this question was stupid because they were all desirable)

- a. short half life
- b. clearance independent of hepatic function
- c. titratable effect
- d. no active metabolites
- e. Low Therapeutic Ratio (i think that was it...?)**

- new

What DOES NOT influence calculations for loading dose:

A. CSHT

B. K_{e0}

C. Volume of distribution

D. Patient age/comorbidities

ALT version: When calculating a loading dose the pharmacokinetic parameters considered? (?all except):

A. V_d

B. Half Life

C. Effect site equilibration time constant (K_{e0})

D. Clearance

E. Therapeutic index

Answer: **A** CSHT. All the others predict onset not offset.

Alt version: **B** Although I am not sure about clearance.

Drug which readily crosses blood brain barrier

a. ?neostigmine

b. dopamine

c. GABA

d. [suxamethonium](#)

e. propranolol - highly lipid soluble (with esmolol)

- Repeat*

Which is not ligand gated ion channel

a. alpha 2 receptor

[GP19](#)

Which one acts on ligand gated ion channel

a. Morphine

b.

c.

d. Vecuronium

e.

General Anaesthetics - Inhalational

[IN19](#) Isoflurane

a. halogenated methyl ethyl ether

b. enantiomer of enflurane

c. Boiling point higher than sevo

d. requires thymol as a preservative - **halothane**

e.

- new

Isoflurane, % metabolised in the body

A. 0.02%

B. 0.2% by CYP450E1

C. 3%

D. ?

E. ?

**N20 = not
0.02% des
0.2% iso
sevo 2.5
en 3%
hal 25%**

Which volatile anaesthetic is metabolised least?

A. Desflurane

B. Isoflurane

C. Halothane

D. Sevoflurane

E. Enflurane

Correct answer A

[IN10](#) The second gas effect is seen with nitrous oxide because

- a. It has a low solubility
- b. ? It is taken up more rapidly than other agents
- c. faster equilibration
- d. It is used in high concentrations
- e.

- new

The offset of effect of volatile anaesthetics

- a. Can be represented by an Fa/Fi curve
- b.
- c.
- d. Is faster with high fresh gas flows? Is influenced by fresh gas flows?
- e. Is faster with overpressure? something about overpressuring (it said you can overpressure it)

General Anaesthetics - Intravenous

Thiopental, proportion or fraction remaining in brain 30 minutes after IV bolus dose it did make it clear that it was the % of the entire initial dose

- a. 0.2%
- b. 0.5%
- c. 1%
- d. a 10%
- e. a 50%

Courtesy of Stoelting answer is **D**.

- Repeat*

[Propofol](#):

- A. ?
- B.
- C. is 98% protein bound
- D.
- E.

- Repeat*

Which drug does NOT have antiemetic properties?

- A. propofol
- B. ondansetron
- C. dexamethasone
- D. etomidate
- E. midazolam

Propofol 3 compartmental model

- a. ?
- b. intercompartmental clearance is zero order kinetic
- c. Long elimination half life due to large volume of third compartment **suppose so but define long**
- d. Effect site is part of central compartment
- e.

There was another question about propofol clearance as well.

Etomidate

- a. pure isomer (I thought there was typo in question reading like "insomer") Yep it said insomer. **presented as racemic mixture but only D has pharm action**
- b. should not be given to patients with cardiovascular instability
- c. **can cause myoclonic movements on induction**
- d. ?
- e.

- new

Use of ketamine infusion as sole anaesthetic

- a. more water soluble than propofol therefore not good for anaesthetic
- b. **30% experience emergence phenomenon**

- c. is not ideal due to long half life of 80 minutes
 - d. ?
 - e. good analgesic but not enough hypnosis or sedation
- (can't remember this question well, please feel free to correct)

Local Anaesthetics

- new

Most to least potent local anaesthetic when given intrathecally

a. lignocaine >

b. lignocaine >

c. ropivacaine > bupivacaine > levobupivacaine > lignocaine

d. levobupivacaine = bupivacaine > ropivacaine > lignocaine

e. bupivacaine > levobupivacaine > ropivacaine > lignocaine although ropiv not licenced for intrathecal

ED 50 bupiv = 5.5mg, levo 5.68, ropiv 8.41 ligno likely higher

EMLA:

a. lignocaine + procaine

b. total local anaesthetic concentration is 2.5% = ligno & prilocaine 2.5% each. as % thus total conc must be same?

c. at 60 minutes penetration is 10mm 3mm

d. more effective in caucasians

e. causes vasoconstriction

Muscle Relaxants & Antagonists

- new

Patient with Ea:Ea genotype, dibucaine number is

a. 20

b. 35

c. 40

d. 60

e. 80

(I don't think there was an option of 80 - which made it easier!)

Muscle relaxant with metabolite which is 50-70% active

a. atracurium

b. vecuronium - **metabs up to 50% active**

c.

d. D-tubocurarine

e. none of the above

Note: pancuronium - would be correct answer

Which one does not decrease the activity of plasma cholinesterase

A. neostigmine

B. pancuronium - **does inhibit plasma cholinesterase**

C. metoclopramide

D. frusemide

E. ?

- new

Drugs with prolonged action in plasma cholinesterase deficiency

a. suxamethonium and remifentanil

b. mivacurium and remifentanil

c. suxamethonium and procaine

d. esmolol and remifentanil

e. remifentanil and procaine

Answer: C - because Remifentanil = nonspecific tissue and plasma esterases, Esmolol = plasma esterases (not cholinesterases)

- new

What is most correct with Phase 2 block

- A. Decreased acetylcholine release?
- B. ?
- C. Fade seen on TOF
- D. ?
- E. ?

Major Analgesics/Opioids

- new

Log dose curve of two full opioid agonists given (ED₅₀ of the first one is 2, and that of second one is 16 in diagram) How many times the first one is more potent than the second?

- a. 8
- b. 4
- c. 2
- d. 0.5
- e. 0.2

Most likely side effect of intrathecal morphine

- A. sweating
- B. urinary retention
- C. ?
- D.
- E.

Regarding [remifentanyl](#)

- A. Context Sensitive Half Life 4 minutes
- B. Not eliminated by the liver at all
- C. ?
- D. ?
- E. ?

Anticholinergics/Antimuscarinics

Most dangerous side effect of [atropine](#) in children

- A. Tachycardia
- B. Hyperthermia

- C. Dehydration
- + other things that weren't effects of atropine

Psychotherapeutic Drugs

[Flumazenil](#)

- A. Is effective for barbiturate and benzodiazepine overdose **benzo's only**
- B. Direct effect on GABA
- C. Has active metabolites **inert**
- D. Elimination half life is 6 hours. **53min**
- E. Has effects when given in isolation? **yup weak intrinsic agonist**

Cardiovascular Drugs

[CD63 Clonidine](#) side effects

A. Sedation

- B. Nausea and vomiting
- C. ?
- D. ?
- E. delirium

- Repeat*

[Milrinone](#)

- A. (?vasodilation or ?decrease cAMP) by stimulating phosphodiesterase
- B. pulmonary vasodilation by inhibiting myosin light chain kinase
- C. systemic vasodilation by releasing nitric oxide in vascular endothelium
- D. systemic vasoconstriction
- E. cardiac arrhythmia by increasing beta 1 activity

[Nitric oxide:](#)

- A. Causes pulmonary hypertension in neonates
- B. A gas which is easy to deliver and titrate
- C. ?

- Repeat*

[Digoxin toxicity:](#)

- A. shorten PR interval

B. visual disturbance

C. ?prolong QT interval

D. ventricular extrasystoles **also true**

E. >1 ng/ml **>2.4**

- Repeat*

Beta blocker with the HIGHEST oral bioavailability

A. [labetalol](#) 90

B. [atenolol](#) 50

C. [sotalol](#) 100

D. [metoprolol](#) 10

E. ?carvedilol

[Sodium nitroprusside](#) at 10mcg/kg/min **norm dose 0.5-1.5 mcg/kg/min**

A. decrease mixed venous oxygen saturation

B. lactic acidosis

C. ?

D. ?

E. increase hepatic rhodanase activity

[Adenosine](#)

A. half life more than 10 minutes **seconds** (Alt: t1/2 15 mins)

B. activates potassium channels in conducting tissues **in nodal tissue**

C. depress SA node activity **works on AVN & SAN**

D. increased effect with caffeine **less**

E. ?use in AF (can't sure about this option)

- new

The urine volume, pH, Na, K, Cl and HCO₃ concentrations were measured before(control) and after giving drugs X & Y.

Urine Flow

pH

Na

K

**Cl
HCO₃**

Control

1ml/min

6.4

50

15

60

1

Drug X

8mL/min

6.0

140

30

155

1

Drug Y

2mL/min

8.2

70

60

15

120

The most likely site of action of drug X is

- a. proximal convoluted tubule
- b. cortical portion of ascending limb of loop of Henle
- c. medullary portion of ascending limb of loop of Henle**
- d. distal convoluted tubule
- e. collecting duct

Note that drug Y was not actually asked about, but did help to rationalise the answer.

please feel free to enter numbers into the table above. I've done what i can remember - if you are sure it was different then feel free to change it.

- Sorry but I took you up on your offer... this question is flogged straight from Stoelting (as usual)

- Drug X - Loop diuretic - Medullary portion of AscLOH
- Drug Y - Carbonic anhydrase inhibitor - PCT

See Stoelting 4th edition pg 489

Endocrine Drugs

[EN02](#) Prostaglandin F2-alpha used for post partum haemorrhage, most likely side effect

- A.
- B. vasodilation
- C.
- D. Severe hypertension secondary to PGE₂ vasoconstriction
- E. bronchoconstriction (?secondary to PGF₂α receptor effect)

I thought the stem of this question went something like in post partum haemorrhage what would be the most likely side effect of the following drugs a. ergometrine + something b oxytocin = something c + d effects of PGE₂ and PGF-α with vasodilation and bronchoconstriction but can't remember which one they put with which

[EN02](#) Oxytocin 10 units given IV

- A.
- B. metabolised in liver **hydrolysis in liver & kidney**
- C. Causes hypotension by direct effect on heart. **nope ↑HR & ↑CO**
- D.
- E. **?vasodilation**

Miscellaneous Drugs

Adverse effects with [paracetamol](#):

- A. gastric irritation
- B. prolonged bleeding
- C. Inhibit platelet aggregation
- D. causes metHb
- E. **Renal impairment/failure**

Answer: Renal impairment; by p-aminophenol. MetHb is caused by phenacetin, a withdrawn drug related but different to paracetamol

Compared with heparin, low molecular weight heparin

- a. **1/10th the average molecule size? LMWH = 2-8000Da, UFH 5-25000**
- b. higher protein binding

- c.
- d. better bioavailability at low doses
- e. same effect on factor 2 and 10

- Repeat*

Which one of the following is non-particulate antacid

- A. aluminium hydroxide
- B. magnesium trisilicate
- C. sodium citrate
- D. ??cimetidine ??cisapride
- E. sucralfate

- Repeat*

Which drug reversibly inhibits platelet aggregation?

- A. [clopidogrel](#)
- B. [warfarin](#)
- C. [heparin](#)
- D. diclofenac
- E. [aspirin](#)

answer diclofenac

Side effect of Gelofusin (succinylated gelatin)

- A. prolonged pruritus
- B. immune mediated hypersensitivity - yeah baby gelo is BAD. GIVE IT TO YOUR MOTHER IN LAW. ONLY!!
- C. decrease factor 8 levels (Alt: decr factor 7 levels)
- D. inhibit platelet function
- E. RBC rouleaux formation

Ethanol

- a.
- b. Eliminated at constant rate virtually independent of serum concentration
- c.

d. ?does not affect hepatic P450 enzymes.

e. Hepatic first pass metabolism at constant rate almost (or virtually, something though) independent of rate of absorption

The main mechanism of action of Ondansetron is most likely through

a. decrease serotonin levels in CTZ

b. action is mainly due to peripheral antagonism of 5HT3 receptors

c. Inhibition of a ligand gated CATION channel

d. irreversibly binds to 5HT3 receptor

e. 5-HT4 antagonism

Caffeine causes

a.

b. cerebral vasoconstriction

c.

d.

e. potent diuretic

Which is not a serotonin receptor antagonist

a. sumatriptan agonist

b. ondansetron

c. ketanserin antiHTN. 5HT3 rec 2 (with LSD wahoo)

d. ?

e. clozapine

answer sumatriptan

Often drug overdose goes with specific treatment. Typical pairing is

a.

b. beta blockers and glucagon doesnt work though!!!

- c. Tricyclic antidepressants and physostigmine
- d.
- e.

Warfarin:

- a. racemic mixture
- b.

- repeat*

All exist as a racemic mixture except:

- a. Lignocaine

Dexmedetomidine:

- a. can cause bradycardia and sinus arrest

Question about phenoxybenzamine

Physiology

General Physiology

Fluid & Electrolytes

[FE36](#) With regards to chloride:

- A. ? changes in direct proportion to bicarbonate -
- B. it is the major cation extracellularly **anion**
- C. is a weak base **strong base**
- D. ?
- E. Intracellular concentration $< 20 \text{ mMol/L} = 9$

[FE27](#) Regarding potassium and hydrogen:

- A. both go in the same direction.
- B. acidosis increases potassium loss.
- C. insulin affects the interaction between potassium and H^+

D. hypokalaemia inhibits acid secretion i think. Na/K exchanger in distal mechanism. hypoK would mean low K in tubule.

E. ?

[FE04](#) Hyperkalemia:

A. loss of p wave

B. inverted T wave

C. ST depression

D. prolonged QT

E. ?

[FE20](#) Magnesium is essential for:

A. muscle contraction

B. cofactor in Na/K/ATPase

C. something about bone

D. ?

E. ?

Acid-base physiology

[AD24](#) Haemoglobin is a better buffer than plasma proteins because

A. present in much greater quantity x6

B. Hb contains 38 carboxyl residues histidine

C. plasma proteins have pKa closer to physiological pH

D. ?

E. ?

[AD10](#) [AD26](#) Loss of 1 litre of pancreatic fluid-with normal fluid status causes:

A. Hyperchloremic acidosis

B. (Every other wrong combination)

C. ?

D. ?

E. ?

[MCQ-Feb11-02](#) Values measured directly from blood gas machine

A. pH, pO₂, pCO₂

B. (other wrong combo's)

C. ?

D. ?

E. ?

Respiratory Physiology

With cardiac output and oxyhemoglobin dissociation curve unchanged, venous partial pressure of oxygen will be decreased with.

A. cyanide poisoning

B. ?

C. Anaemia

D. Hypothermia

E. Carbon monoxide poisoning

MF16 ABG of pregnant woman pH 7.45, pCO₂ 32, pO₂ 105, HCO₃ 22, Sats 99%

A. She must be breathing supplemental O₂

B. She has a metabolic acidosis which is normal in pregnancy

C. metabolic alkalsosis

D. She has a respiratory alkalosis which is normal in pregnancy

E. Bicarbonate should be higher

Healthy male ABGs ph 7.4 pco₂ 50 (no bicarb value was given)

A. acute respiratory acidosis

B. bicarb likely to be raised

C. ?

D. ?

E. ?

(* repeat*) At altitude, breathing air: Atmospheric pressure = 248 mmHg, pCO₂ = 20. pAO₂ is

A. 0 mmHg

B. 17 mmHg

C. 27 mmHg

D. 30 mmHg

E. Something higher

Low Spo₂(or increased A-a gradient) during abdominal surgery under GA is due to

A. increased shunt

B. increased dead space

- C. alveolar hypoventilation
- D. ?
- E. ?

Which of the following muscles are NOT used in active EXPIRATION

- A. external intercostals
- B. diaphragm
- C. pectoralis minor
- D. Anterior scalene
- E. abdominal muscles

STUPID!!!!!!

- repeat*

Dissolved O₂ concentration

- A. 6mls/100mL when breathing 100%O₂ at 3 atm**
- B. 6mls/100mL when breathing 100% O₂ at 1 atm
- C. 0.003/100ml when breathing 100% at 1 atm
- D. 0.003/100ml when breathing 100% at 1 atm
- E. ?

Answer = B (comment: incorrect, at 1 atm it will only give 2ml/100ml of O₂, so the answer should be a.)

Answer = B (see below)

Or, rather, Answer A (see below)

Ganong 23rd ed: "When blood is equilibrated with 100% O₂ (PO₂ = 760 mm Hg), the normal hemoglobin becomes 100% saturated. When fully saturated, each gram of normal hemoglobin contains 1.39 mL of O₂. However, blood normally contains small amounts of inactive hemoglobin derivatives, and the measured value in vivo is lower. The traditional figure is 1.34 mL of O₂. The hemoglobin concentration in normal blood is about 15 g/dL (14 g/dL in women and 16 g/dL in men). Therefore, 1 dL of blood contains 20.1 mL (1.34 mL × 15) of O₂ bound to hemoglobin when the hemoglobin is 100% saturated. The amount of dissolved O₂ is a linear function of the PO₂ (0.003 mL/dL blood/mm Hg PO₂)."

Therefore dissolved O₂ in ml/100ml blood = 0.003 × (760 - [CO₂] - [H₂O]) = 0.003 × (760 - 47 - 40) = 2.019 at 1atm = ~6ml at 3atm.

Dead space is increased with (repeat)

- A. moving from supine to erect position**

- B. intubation
- C. moving from erect to semirecumbent
- D. tucking chin in
- E. ?

RE68 Blood draining from an unventilated part of lung will have an O₂ composition identical to

- A. coronary sinus
- B. pulmonary artery**
- C. Bronchial artery
- D. Alveolar gas
- E. ?

Following is true (cant remember correct wording)

- A. apical alveoli have higher po₂ than basal alveoli**
 - B. ventilation increase from base to apex.
 - C. basal alveoli have lower pco₂ than apical alveoli
 - D. apical Co₂ levels are low (28mmHg)**
 - E. V/Q ratio at apex/base is low/high with a value 0.3/3 in brackets
- only things top ⇒ bottom which ↓ = V/Q, PO₂, CaO₂, pH.
rest ↑s as go down!!

During the increased intra-thoracic pressure phase of valsalva manouvre

- A. decreased diastolic filling right ventricle**
- B. no change in SVR
- C. ?lasting bradycardia
- D. increased pressure augments cardiac output
- E. ?

CO₂ highest in which sample: (repeat)

- A. ideal alveolar gas**
- B. mixed expired gas
- C. end-expiratory gas
- D. ?
- E. ?

CVS physiology

Greatest prepotential??

- A. SA node
- B. AV node
- C. Atrial muscle fibres
- D. Ventricular muscle
- E. ?

"The prepotential is a gradually change in the electrical charge at the inner surface of the cell membrane." Therefore A

In mild to moderate hemorrhage in healthy adult

- A. ?
- B. ?
- C. significant cerebral and coronary vasoconstriction does not occur - also prob true though. splachnic, lung, liver and periphery first
- D. blood pressure is normally maintained
- E. ?

↑ RR is most sensitive sign of haemorrhage, then narrowed pulse pressure > only then hypotension!!! How dare they ask an ED question!!!

Comment - Class 1 (0-15%), 2 (15-30%), 3 (30-40%), 4 (>40%) haemorrhage is usual classification. BP decreases in class 3 or 4 so both options are probably correct. (Source: ATLS manual)

CV28 Which has fastest conduction velocity?

- A. SA node
- B. atrial muscle
- C. AV node
- D. Bundle branches
- E. Ventricular muscle

GO MANSON

CV34 Greatest AV O₂ gradient to least AV O₂ gradient (repeat)

- A. heart muscle > liver > skin > kidney
- B. Heart > liver > kidney > skin
- C. ?

D. ?

E. ?

(Heavy Breathing May Leave Skin Klammy)

heart>brain>muscle>liver>skin>kidney

CV53 Baro-receptors located in all EXCEPT

A. carotid sinus

B. carotid body

C. aortic arch

D. Vena cava

E. Atria?

CV61 Pulse pressure is decreased in all EXCEPT

A. increased aortic compliance

B. increased SVR

C. Decreased diastolic pressure

D. ?

E. ?

In old age, all occur EXCEPT (I think it was an except question, not 100% sure though)

A. Diastolic BP increases

B. pulse pressure increases

C. Ventricular compliance increases

D. Aortic compliance increases? Not sure on this one.

E. ?

Answer is C.

What is the mixed venous SvO₂ for normal adult breathing 100% O₂

A. 75%

(I recall this as being the partial pressure, not sats... anyone?) In which case the answer would be 50mmHg (which has been previously asked).

Mitral valve opening coincides with:

- A. the second heart sound
 - B. LV pressure > LA pressure
 - C. isovolumetric contraction
 - D. ?
 - E. ?
- (??none of the above? - Am I wrong?)

Which corresponds to maximal calcium flux in the myocyte:

- A. P wave
- B. T wave
- C. R wave
- D. ST segment longest segment
- E. ?

Answer ?D ?ST segment - comments?

Following is true

- A. o₂ extraction is 70% normally in the heart.
- B. coronary blood flow increases only to 400ml/min during exercise.
- C. ?
- D. ?
- E. ?

In exercise increases up to 5x (=1.250L/min)

Exercise causes (can someone remember this ? properly)

- A. decreases SVR

Renal physiology

What is the maximum molecular weight of a molecule able to be filtered by the glomerulus?

- A. 2,000 Da?
- B. 7,000 Da
- C. 35,000 Da
- D. 70,000 Da
- E. ?

I thought there was one around 350 in there -- yes there is, added here, and i think its the correct answer

No, the answer is 68,000 Da, closest would be D. 4-8nm fuck the Da

The primary goal of (or something like that, but wording was important) renal autoregulation of blood flow is to:

A. Maintain GFR

B. Maintain blood supply to renal medulla

C. ?

D. ?

E. ?

Plasma creatinine can be used as a measure of GFR: (repeat)

A. can be used to calculate creatinine clearance

B. as it is freely filtered, not reabsorbed, not secreted

C. as it is produced in the liver at a relatively constant rate

D. ?

E. ?

GI physiology

(*repeat*)

Which of the following increases increases duodenal pH

A. secretin

B. gastrin

C. CCK

D. ?

E. ?

(#repeat#)

Following are functions of liver except

A. immunoglobulins

Blood & Immunology

[BL27](#) Blood viscosity:

A. increases proportionally to hematocrit ratio

B. can be calculated by rearranging the hagen poisuelle law

C. varies inversely with flow.

- D. does not depend on the diameter of the tube over a large range (I don't remember this being an option at all) Agree, this was not an option
- E. decreases with increasing blood flow

Prostacyclin opposite to **TxA2**

- A. Causes vasoconstriction **VD**
- B. inhibits platelet aggregation**
- C. causes bronchoconstriction
- D. inhibits renin secretion
- E. ?

Haemoglobin:

- A. 1 porphyrin ring and 1 ferrous ion
- B. 4 and 4**
- C. etc with different numbers

Complement

- A. C5b6789 causes opsonisation
- B. C5b causes....
- C. C3a causes....
- D. c5a causes chemotaxis** -- which is the answer, no?
- E. ?

Endocrine & metabolic physiology

Calcium metabolism

- A. 10% of ingested calcium is absorbed **90%**
- B. mucosal binding protein is needed
- C. absorbed by facilitated diffusion.**
- D. ?
- E. ?

B2 adrenoreceptors

- A. decreases renin release
- B. something about insulin
- C. **ciliary muscle** relaxation/**contraction**
- D. ?

E. ?

Basal heat production in adults is mostly due to

A. skeletal muscle activity

B. Na/K/ATPase

C. ?

D. ?

E. ?

[MCQ-Aug11-14](#) Insulin causes:

A. increases hormone sensitive lipase

B. increases lipoprotein lipase

C. (other 3 options) effects on a whole lot of other enzymes

D. ?

E. ?

ADH produced in:

A. hypothalamus

B. anterior pituitary

C. posterior pituitary

D. ?

E. ?

Conversion of pyruvate to lactate is useful for the body as:

A. produces 2 ATP

B. converts NADPH to NAD⁺

C. ?

D. ?

E. None of the above

(others recalled B as "converts NAD⁺ to NADH")

Neurophysiology

[MCQ-Feb11-01](#) Pacinian corpuscles:

A. large receptive field

B. ? minimally sensitive to pressure changes

C. slowly adapting

- D. ?
- E. ?

Delay in neuro transmission is due to (or something like that)

- A. time taken for binding of neurotransmitters to post synaptic receptors
- B. delay is 10miliseconds
- C. calcium release into the synapse
- D. EPP to reach threshold
- E. ?

"Most of this delay is consumed by the release process, particularly the time required for calcium channels to open." 0.5ms. Katzung 11Ed pp359. Therefore A best answer.

Resting Membrane potential

- A. Independent of anions
- B. generated by Na/K atpase
- C. ?
- D. ?
- E. ?

Can't remember what the other options were, or what was the correct answer

Flow in the anterior cerebral artery

- A. reduction in BP from 120 mmhg to 80 mmhg
- B. decreases when intracranial pressure doubled
- C. decreases when breathing air with pCO₂ 6 mmHg
- D. increased when breathing 100% O₂
- E. ?

Unmyelinated C fibres terminate in which laminae (repeat)

- A. C = I and II Aδ = 1 & 5
- B. I and IV
- C. II and III etc
- D. ?
- E. ?

Physiology of muscle & NMJ

(*new*)

Mini end-plate potential

- A. influenced by extracellular calcium concentration
- B. magnesium
- C. abolished by curare
- D. ? redback spider venom (increased/decreased by)
- E. tiger snake venom (increased/decreased by)

(*repeat*)

Which of the following increases acetylcholine release

- A. ?
- B. ?
- C. Acetylcholine
- D. ?
- E. ?

Immediate source of energy for muscle contraction (repeat).

- A. Phosphoryl creatine in skeletal muscle and cardiac muscle and ATP for smooth muscle.
- B. ATP for all muscle types
- C. ?
- D. ?
- E. ?

Smooth muscle differs from skeletal muscle (repeat)

- A. high actin : myosin ratio ratio smooth muscle between 2:1 to 10:1 (skel mm 6:1 & cardiac 4:1)
- B. more mitochondria no
- C. ?
- D. ?
- E. ?

Something about fluid leaving capillaries in skeletal muscle being low:

- A. due to low Kf
- B. high interstitial protein content
- C. lymphatics help in clearing the fluid

D. ?

E. ?

Maternal, foetal & neonatal physiology

[MF03](#) Ductus arteriosus closure

A. due to increased pO₂

B. mediated by prostaglandins ↓ prostaglandin

C. increased pressure in LA compared to RA

D. due to increased SVR - reverses flow

E. ?

Clinical measurement

Which is NOT used in BIS monitoring

A. Fourier analysis

B. Time domain analysis

C. Statistical multivariate analysis

D. Bispectral analysis

E. Fronto temporal monitoring

Which is INCORRECT in regards to pneumotachograph

A. No pressure drop across screen

B. accuracy affected by temperature

C. provides measurement of volume - it can do this...if you assign area

D. flow is laminar

E. Is affected by anaesthetic gases

Co₂ measurement from a side stream analysis requires

A. infra red source with 2 wavelengths

B. low gas flows

C. high gas flows

D. a small sampling chamber

E. a variable filter

Which of the following is a base SI unit

A. Newton

B. Ampere

C. Joule

D. Pascal

E. Hertz

Clarke electrode: (repeat)

A. Platinum anode, Ag/AgCl cathode

B. current of 0.6amps applied

C. measures O₂ tension in blood and gas samples

D. temperature control is not important

E. can be used to measure O₂ from blood and gas samples (which is the correct answer)