CVS

CV01 [Mar96] [Jul97] [Mar99] [Feb00] [Jul01] [Jul02] [Feb04] In a normal cardiac cycle:

A. RA systole precedes LA systole
B. RV ejection precedes LV ejection in expiration
C. RV contraction precedes LV contraction in inspiration
D. Pulmonary valve closes after aortic in inspiration
E. Pulmonary valve closes before aortic in expiration

Alt version 1: In a normal cardiac cycle (same as CV01 but we remembered the options as)

A. RA ejection precedes LA ejection
B. RV contraction starts before LV contraction
C. LV ejection starts before RV ejection
D. Pulmonary valve closes before aortic valve
E. Aortic valve closes after pulmonary valve in ?expiration

Alt version 2: With respect to the cardiac cycle:

A. Right ventricle starts ejecting before left ventricle
B. Pulmonary valve closes before aortic valve
C. Right & left atrial systole occur simultaneously
D. Peak aortic blood flow coincides with jugular venous c wave
E. Right ventricular ejection precedes left ventricular ejection
(The above version is reported as accurate for the July 01 paper - It was Q14 on the Physiol paper)

CV01b [Jul04] Physiological systole is defined as:

A. AV open to AV Close
B. MV close to MV open
C. MV close to AV Close
D. AV open to MV open

CV02 [acd] [Jul98] [Jul99] [Apr01] [Jul02] [Feb04] [Jul04] Version 1: Normal jugular venous pressure c waves occur:

A. Just prior to atrial systole
B. Just after atrial systole
C. During ventricular systole
D. During expiration
E. ?

Version 2: The ‘c’ wave in the JVP corresponds most closely with:

A. Peak aortic flow
B. Isovolumetric contraction
C. Isovolumetric relaxation
D. Closure of aortic valve
E. Closure of mitral valve

CV03 [Mar96] [Mar99] [Feb04] In a normal heart at rest the LV end-systolic volume is:

A. 10 to 30 ml
B. 50 to 70 mls
C. 120 to 150 ml
D. ?80 - 100 ml

CV03b [Mar97] [Jul00] [Apr01] Left ventricular end-diastolic volume is:

A. 10-30 mls
B. 30-50 mls
C. 50-70 mls
D. 70-120 mls
E. 120-150 mls
(Jul 00 & Apr 01 versions recalled as RV EDV rather than LV)

CV04 [ad] [Jul98] [Jul01] In moderate exercise, the LV end-systolic volume is:

A. 10 mls
B. 30 mls - SV ↑ 10-35% in mod exercise but could be ↑ed LVEDV
C. 70 mls
D. 120 mls
E. 140 mls

CV05 [Mar96] [Feb00] [Jul00] Effect of tilting table from flat to head up include:

A. Decreased activation of RAS
B. Changes to skin blood flow occur immediately
C. ?
D. ?
E. None of the above

CV06 [Mar96] The best site to measure mixed venous pO2 is:

A. Superior vena cava
B. Right atrium
C. Pulmonary artery
D. Pulmonary vein
E. ?

CV07 [ad] [Jul98] [Jul99] [Apr01] Changes with raised intracerebral pressure (ICP):

A. BP increase, HR decrease, RR decrease - ↑vagal output causes ↓RR
B. BP increase, HR increase, RR decrease
C. BP decrease, HR increase, RR increase
D. BP increase, HR decrease, RR increase
E. No change in BP or HR

CV08 [Mar96] [Jul97] [Mar98] [Apr01] With increased heart rate: (OR: "With moderate tachycardia:"

A. Myocardial oxygen demand increases
B. Ratio of systole to diastole increases
C. Vascular filling is unchanged
D.Prolonged AP
E.Decrease in diastolic filling - maybe - ↓diastolic time but unless ↑↑HR then filling should be ok
F. Decrease in coronary perfusion - again depends on level of tachy >180 this would be true
G. None of the above

CV09 [Mar96] In exercising muscle, the major increase in blood flow is due to:

A. Sympathetic vasodilatation
B. Metabolic vasodilatation
C. Muscle pumping
D. ?

CV10 [Mar96] Which circulation has predominant metabolic control?

A. Renal
B. Liver
C. Lung
D. Splanchnic
E. ?

CV10b [Mar02] [Jul02] [Jul03] Local metabolic control is most important in determining flow to:

A. Skin
B. Lung
C. Skeletal muscle
D. Kidney
E. Liver

- Alt wording: Which tissues autoregulate blood flow prominently:
- Alt wording in July 03: Metabolic regulation of arteriolar resistance is most important in:

(Comment received Jul03: "Options D & E were Lungs & Kidneys - two clearly incorrect answers since their flow is varied according to factors important to the body as a whole rather than for their own benefit ie oxygenation & filtration (& temperature regulation, in the case of skin). "

CV11 [Mar96] Myocardial ischaemia in shock is due mainly to:

A. Decreased coronary artery pressure
B. Increased myocardial O2 demand
C. Decreased myocardial O2 supply - although could be argued this. But O2 flow based on diastolic pressures not systolic. depends on type of shock
D. ?

CV12 [Mar97] [Mar99] [Jul99] [Jul03] The atrial component of ventricular filling

A. 5%

B. 10%

C. 30% - my notes say 10-20%!!!!

D. 50%

E. 80%

CV13 [Mar97] Skin perfusion decreases:

A. With standing

B. ?

C. ?

D. ?

CV14 [Mar97] [Jul98] [Mar99] [Feb00] In a 70 kg man 2 metres tall with right atrial pressure of 2 mmHg & aortic root pressure 100 mmHg, the pressure in the dorsum of the foot is:

A. 0 mmHg

B. 2 mmHg

C. 5 mmHg

D. 30 mmHg

E. >50 mmHg states that in an upright adult human with MAP of 100 mmHg, the pressure in a large artery in the foot is 180 mm Hg.

CV15 [Mar97] [Apr01] When moving from a supine to an erect position:

A. Mean arterial pressure increases

B. Skin perfusion immediately decreases

C. Decreased renin-angiotensin II

D. Cardiac output increases

E. Increased ADH secretion

F. TPR increases

Moving from supine to erect causes hypotension, increased TPR and increased ADH.

CV15b [Mar98] Changes from supine to standing causes:

A. Hypotension

B. Adrenal gland activation

C. ?

D. ?

E.

(See also CV05)

CV16 [Mar97] [Jul99] [Mar03] [Jul03] The lowest intrinsic discharge activity resides in the:

A. SA node

B. AV node

C. Bundle branches

D. Purkinje fibres

E. Ventricular fibres

(see also CV28)

March 2003 version: Slowest conduction (velocity) occurs in:

A. Atrium

B. AV Node -

both nodes are 0.05m/s

C. Bundle of His

D. Purkinje Fibres

E. Ventricular muscle

CV17 [Mar97] [Jul98] [Apr01] The hepatic artery : portal vein blood flow ratio is:

A. 1 : 10

B. 3 : 1

C. 2 : 1

D. 1 : 6

E. 1 : 3

CV18 [Mar97] [Mar98] [Jul01] CSF production & absorption:

{Diagram of CSF pressure versus flow with lines}

A. Unit for x-axis is mmCSF

B. A is shifted to A1 when paCO2 is 50mmHg

C. ?

D. B is shifted to B1 with hypothermia to 33°C

E. B is shifted to B1 with metabolic acidosis

CV19 [Jul97] [Mar03] [Jul03] [Jul04] Which ONE of the following causes vasodilatation:

A. TXA2

B. Serotonin (5HT)

C. Endothelin

D. Neuropeptide Y

E. Angiotensin II

F. VIP

(Comment from July 2003: Question states vasodilatation)

CV19b [Feb00] Which of the following is not a vasodilator?

A. cGRP

B. VIP

C. Neuropeptide Y

D. Bradykinin

E. Acetylcholine

Vasoconstrictors:

- TXA2 - promotes platelet aggregation and vasoconstriction
- Endothelin - three types produced by endothelial cells, endothelin-1 is one of most potent vasoconstrictors
- Angiotensin II - increased with elevated renin secretion when BP falls or ECF volume drops, works to maintain BP
- Serotonin - has effects on CNS, GIT and vascular systems
- Neuropeptide Y - augments vasoconstrictive effects of noradrenergic neurons, found in brain and autonomic nervous system

Vasodilators:
- Prostacyclin - inhibits platelet aggregation and promotes vasodilation
- VIP - found in nerves in GIT and circulating blood
- ACh, Histamine via H1Rs, Bradykinin, Substance P and VIP act on endothelial system
- Adenosin, Histamine via H2Rs produced relation of vascular smooth muscle independent of endothelium
- Nitric Oxide

CV20 [Jul97] [Feb04] Which ONE of the following causes vasoconstriction:

A. Serotonin

B. Prostacyclin

C. Neuropeptide Y

D. Substance P

E. Alkalaemia

F. cGRP

G. Oxytocin

CV20b [Mar99] Which ONE of the following is true?

A. Neuropeptide Y secreted by vagus - postganglionic symp nerves

B. CGRP present in afferent nerves

C. ?

CV20c [Feb00] Each of the following cause vasoconstriction except:

A. Lying down

B. Bradykinin

C. Carotid occlusion

D. Hypovolaemia

E. Valsalva manoeuvre

CV21 [Jul97] [Apr01] [Jul02] In running 100 metres, the increased oxygen requirements of tissues is met by:

A. Increased cardiac output

B. Increased 2,3DPG

C. Increased erythropoietin

D. Rise in CO2 partial pressure, activating peripheral chemoreceptors

E. Increased oxygen tension

F. Increased arterial CO2 partial pressure, leads to vasodilatation

CV22 [d] [Jul98] [Mar99] [Jul99] [Jul00] [Apr01] [Feb04] Which one of the following (does/does not) cause (an increased/ a decreased) heart rate?

A. Bainbridge reflex

B. Carotid chemoreflex

C. Bezold-Jarisch reflex

D. Hering-Breuer reflex

E. Cushing reflex

F. Pulmonary chemoreflex

G. Stimulation of atrial stretch receptors

H. Stretching the atrium

I. Stretching the ventricle

(Comment: Lots of options! May really be 2 similar questions here)

- **Bainbridge reflex**: opposite to baroreceptor reflex. Infusion of volume tends to increase heart rate when heart rate is slow/blood volume is high. The opposite may occur if initial HR is higher - however, according to Ganong this may be "competition" with the baroreceptor reflex

- **Bezold-Jarisch reflex**: coronary chemoreflex. Serotonin /capsaicin/ veratridine/phenyldiguinide and some other drugs injected into coronary vessels supplying left ventricle stimulates C fibre endings - afferent vagal response casues apneoa, followed by rapid breathing, hypotension and bradycardia.
- **Cushing reflex**: caused by increased intracranial pressure which compromises blood supply to the vasomotor area causing local hypoxia and hypercapnia which in turn increases its neuronal discharge resulting in an increase in blood pressure. This increased blood pressure stimulates the baroreceptors leading to a decrease in heart rate.
- **Pulmonary chemoreflex**: similar to the coronary chemoreflex (Bezold-Jarisch reflex-see above) except that the drugs are injected into the pulmonary arteries. Causes a decreased heart rate.
- **Stimulation of the atrial stretch receptors**: An increase in the rate of discharge of the atrial stretch receptors results in vasodilation and an increase in heart rate.
- **Stretching the atrium**: This will result in an increase in the rate of discharge of type B atrial stretch receptors, so it will increase the heart rate.
- **L ventricular stretch**: Similar to arterial baroreceptor reflex, will cause a decrease in HR
- **Carotid Chemoreflex**: Primarily involved in regulation of respiration, however, hypoxic stimulation of chemoreceptors causes vasoconstriction and bradycardia - this may be overridden by the hypoxic stimulation of adrenaline secretion which causes tachycardia (Ganong)
- **Hering-Breuer Reflex**: Primarily regulates lung inflation/deflation, no effect on HR as far as I can see

CV23 [d] [Jul98] [Jul01] Pressure difference when lying supine is greatest between:

C. Anterior tibial artery and vein

B. Pulmonary artery and vein

A. Femoral vein and right atrium

D. Renal afferent arteriole & renal vein

E. ?

CV24 [Jul97] [Mar98] Femoral vein pressure decreased most in standing person by:

A. Taking a step forward - mm pump ⟹ vein pressure from >80 to 30

B. Systemic arteriolar constriction

C. Systemic arteriolar vasdilatation

D. Apnoea

E. ?

CV25 [Jul97] [Feb00] [Jul01] The highest oxygen extraction is found in the:

A. Carotid body

B. Heart

C. Kidney

D. Brain

(See also CV46)

CV25b [Mar03] [Jul03] In order of oxygen extraction from highest to lowest:

Heart > Brain >= Muscle > liver > skin > kidneys
Heavy breathing may leave skin (k)lammy.

A. Heart > Brain > Kidney

B. Kidney > Brain > Heart

C. Kidney > Heart > Brain

D. Brain > Kidney > Heart

E. Heart > Kidney > Brain

(Comment received: "5 options, only 1 had kidney last")

CV26 [Jul97] [Jul00] In the initial phase of the Valsalva manoeuvre:

A. Heart rate increases
B. Cardiac output increases
C. Venous return increases

D. Blood pressure increases transiently
E. Peripheral vascular resistance increases

CV26b [d] [Jul98] [Jul99] [Jul01] [Jul03] Feb12

Valsalva manoeuvre during the increased intrathoracic phase:

A. Right ventricular filling reduced in diastole
B. Blood pressure initially decreases
C. Vasoconstriction during phase II
D. Heart rate decreased
E. ?
July 2001 (Q25) version: During increased intrathoracic pressure of a Valsalva manoeuvre

A. Diastolic filling of the rights ventricle is decreased
B. Arterial baroreceptor activation produces bradycardia
C. Increased venous pressure augments cardiac output
D. Total peripheral resistance is decreased
E. Arterial blood pressure initially decreases

CV27 [Jul97] [Feb04] The LAST part of the heart to depolarise is:

A. Base of the left ventricle
B. Base of the right ventricle
C. The apex of the epicardium
D. The endocardium of the right ventricle
(see also CV40)

CV28 [d] [Mar98] [Jul98] [Jul99] [Feb00] [Jul00] [Jul01] [Mar02] [Jul02] [Jul04] [Feb06] The fastest conduction velocity is found in:

A. SA node
B. Atrial muscle
C. AV-node
D. Bundle of His
E. Ventricular conduction system/Purkinje system
F. Ventricular muscle
G. Left bundle branches
H. Right bundle branches
(see also CV16)

Mar 02 version: Which part of heart has fastest conduction?

A. AV node

B. His bundle

C. Purkinje fibres

D. SA node

E. ??

CV29 - DELETED - Same as CV08

CV30 [d] [Jul98] [Jul00] [Apr01] [Jul01] [Feb04] Isovolumetric contraction is closest to:

A. c wave

B. a wave

C. v wave

D. x descent

E. y descent

(see also CV51)

CV31 [Jul97] [Feb00] The Fick principle states that:

A. Oxygen uptake as gas is equal to the arterio-venous oxygen difference in flow through the lungs

B. Arterio-venous oxygen difference in the brain multiplied by flow equals oxygen uptake

C. ?

D. ?

E. None of the above

CV32 [Jul97] With a mixed venous oxygen content of 110ml/l and an arterial oxygen content of

150ml/l and oxygen uptake of 280ml/min cardiac output is

A. 5 litres/min

B. 6 litres/min

C. 7 litres/min

D. 8 litres/min

E. 9 litres/min

Cardiac output = O2 uptake / Arterio-venous O2 difference
= 280 / (150-110)
= 280 / 40
Cardiac output = 7 L/min

CV33 [Jul97] Blood flow per unit mass:

(no other details)

CV33b [] [Mar98] [Jul98] [Jul00] [Jul01] [Mar03] [Jul03] [Feb04] Blood flow at rest is most for:

A. Brain

B. Liver

C. Kidney

D. Heart

E. Skin

F. Skeletal muscle

(Alt version: Percent of cardiac output is most for:)

(Jul01 - %CO version)

CV34 [Mar98] [Mar03] [Jul03] [Feb04] Oxygen consumption (in mls/100g/min) is highest for

A. Muscle

B. Brain

C. Kidney

D. Liver

E. Heart

[[Comment received :"NB – the stem seemed to imply total organ blood flow as opposed to per unit weight “)

CV34b [Apr01] Oxygen consumption at rest is most for:

A. Brain

B. Heart

C. Liver

D. Kidney

E. Skeletal muscle

F. Skin

(Comment on CV34b: "no units given ie whether per 100g or total")

CV34c [Apr01] During strong (?severe) exercise, oxygen consumption is greatest in:

A. Brain

B. Heart

C. Skeletal muscle

D. Liver

E. Kidney

F. Skin

Oxygen consumption of the heart (mL/100g/min):

- Arrested: 2
- Resting: 8
- Heavy Exercise: 70

Oxygen consumption of skeletal muscle (mL/100g/min):

- Resting muscle: 1
- Contracting muscle: 50

Mass of Heart = 0.3 kg; Mass of Skeletal Muscle = 31.0 kg

- B correct for O2 consuption per 100g
- C correct for whole organ O2 consumption

(Comment: On Apr 2001 paper there were 2 questions on oxygen consumption, one at rest]] [CV34] [Jul96] and one during exercis] [Mar98]] [CV34] [Mar97]. Neither question specified whether absolute consumption or ml/100g/min which is a significant oversight. Options were said to be the same for both. KB 26-May-01)

CV35 [] [Mar98] [Jul98] [Jul99] [Mar02] [Jul02] The effects on plasma volume of 500 ml blood loss are neutralized within:

A. 1-2 hours

B. 8-10 hours

C. 24 hours

D. 1 week

E. 1 month

(Also remembered as: After 500ml blood donation in a healthy male, plasma volume will return to normal within:)

Mar 02: Following a 500ml loss of plasma, the volume is compensated by:

A. 8 - 12 hours

B. 24 – 48 hours

C. 3 weeks

D. ?

E. ?

CV36 [Mar98] Venoconstriction occurs EXCEPT during:

A. Lying down

B. Valsalva manoeuvre

C. Carotid sinus compression

D. ?

E. ?

CV37 [Jul98] [Mar99] [Jul99] [Jul01] Coronary blood flow is:

A. Dominant in left coronary artery in 60% of people

B. Better supply to subendocardium in systole

C. Better supply to subendocardium in diastole

D. Better supply to left ventricle in systole

E. Left > right during systole

F. Supply to subepicardium > in LV than RV during systole

Also remembered as: Blood flow in the left (?ventricle/?coronary artery) during systole

A. In less in subendocardium

B. Is less in the middle muscle layers (or: middle layer of ventricular wall)

C. Greater in right ventricle than left ventricle

D. ?

E. ?

CV38 [Jul98] Adenosine receptor:

A. Blocks AV conduction

B. ?IP3

C. ?

D. ? (see also CD14)

CV39 [Mar99] [Jul99] [Jul02] [Mar03] [Jul03] Compensatory mechanisms in a patient with coarctation of the (descending) thoracic aorta:

A. Lower sympathetic tone in the lower half of the body

B. Decreased total peripheral resistance

C. Increased BP in upper body

D. Reduced function of the baroreceptors

E. BP in lower limb is normal

Jul99 version: Coarctation of the aorta:

A. Cardiac output is 1.5 times normal

B. Systemic vascular resistance is higher in the lower limbs as cvompared to the upper limbs

C. Blood flow in all tissues will be normal

D. Arterial baroreceptors are inactive

E. Blood pressure the same at arm and leg

When a constrictor is placed on the aorta above the renal arteries, the blood pressure in both kidneys falls, renin secreted, angiotensin formed causing vasoconstriction. Within a few days, salt and H2O retention occurs so that the arterial pressure in the lower body at the level of the kidneys rises approx. to normal wheras high pressure persists in the upper body. Now the kidneys are no longer ischaemic so secretion of renin will decrease.

Arterial pressure in the lower body is usually almost normal whereas the pressure in the upper body is far higher than normal (55% higher).

Blood flow in arms is normal (despite higher BP) because of compenstation to elevated pressure by local autoregulation.

Blood flow in legs where the pressure is not elevated is almost exactly normal.

CV40 [Mar99] During a cardiac cycle, the first part of the ventricles to contract is:

A. Apex of left ventricle

B. Base of left ventricle

C. Septum

D. Epicardium at base of left ventricle

E. ?Right ventricle ?

CV41 [Mar99] Beta adrenergic receptors:

A. Described by ?Lundqvist/?Lofgren in ?1936/?1943

B. At least 3 subtypes are now known at least 4 now

C. ?

D. ?

(Comment: Option A refers to Ahlqvist who first suggested the presence of alpha & beta adrenergic receptors. -KB)

[Comment March 2003: "This was actually on the Pharmacology MCQ paper"]

CV42 [Mar99] [Jul00] [Apr01] [Jul04] When the aortic valve closes, the pressure in the right ventricle is:

A. 0 mmHg

B. 15 mmHg

C. 30 mmHg

D. 50 mmHg

E. 120 mmHg

CV43 [Jul98] [Apr01] The velocity of blood flow is greatest in:

A. Capillaries

B. Pulmonary vein during diastole

C. Small arteries

D. Inferior vena cava

CV44 [Jul98] [Feb00] [Jul02] [Mar03] [Jul03] [Feb04] In a 70kg trained athlete at rest:

A. Cardiac output is 7 litres per minute

B. Left ventricular end-systolic volume is 60mls (?? OR: end-diastolic volume is ? 60mls ?100mls)

C. Stroke volume is 70mls

D. Oxygen consumption is 350mls/min

E. A-v O2 extraction is 5mlsO2/100mls blood - trained athletes are able to extract more O2 in muscles during exercise though

CV45 [Mar99] Physiological consequences of aortic cross-clamping:

A. ?

B-E. ?

Aortic cross-clamping:

- Increase afterload
- decrease organ perfusion
- increase MAP prox to clamp
- LVF, AV regurg
- increase baroreceptor firing -> decrease symp activity -> decr PVR, decr HR

CV46 [Mar99] During exercise, oxygen extraction is greatest in:

A. Brain

B. Heart

C. Skeletal muscle

D. ? (see also CV25)

- Heart (114ml/L) > Brain (62ml/L) > Skeletal muscle (60ml/l)

CV47 [Mar99] [Mar03] [Jul03] If CO constant & ODC unchanged& O2 consumption constant, mixed venous oxygen tension decreased with:

A. Cyanide toxicity

B. Anaemia

C. Decreased temperature

D. Increased CO2

E. ?Hypocarbia

(See also RE10 which is very similar)

CV48 [Jul99] [Jul01] Afferents from the Carotid ?sinus ?body:

A. Use glycine as a neurotransmitter

B. Synapse in the C1 area of the brainstem

C. Travel via sympathetic nerves

D. ?

E. ?

July 2001 version (Q24 on this paper): Arterial baroreceptor afferents

A. Reach spinal cord via sympathetic nerves

B. Utilise glycine as a neurotransmitter

C. Primary synapse in C1 area of the medulla

D. Activate GABA inhibitory interneurons

E. Excite autonomic efferents in the anterolateral horn

CV49 [jq] [Jul01] [Jul04] Which ONE of the following is true:

A. Right atrial systole and left atrial systole occur at same time
B. Pulmonary valve closes before aortic in inspiration
C. c wave of atrial pressure trace occurs at time of peak aortic pressure
D. RV ejection precedes LV ejection
E. ?

CV50 [Jul00] [Feb04] In an average, healthy 70kg male with standing erect with mean arterial BP of 100mmHg:

0.77mmHg for each cmH2O above heart
A: Cerebral venous pressure is approximately 10mmHg
B: Mean arterial pressure at head level is 70mmHg
C: Venous pressure in foot is approximately ?70/?100mmHg
D. Cerebral perfusion pressure 70mmHg 100mmHg - 23mmHg - normal ICP (10mmHg) = 67mmHg which roughly equals to D.
(See also CV14)

CV51 [Jul00] [Jul01] [Feb04] During isovolumetric contraction of the ventricles:

A. Aortic blood flow is reversed
B. Coronary blood flow increases
C. The pulmonary valve is not yet shut
D. Aortic pressure is falling:
E. When both ventricles reach the same pressure their respective outflow valves open
(Q13 on Jul 01)

CV51b [Mar02] Isovolumetric contraction is associated with:

A. Immediate increase in heart rate due to cardiac sympathetics
(OR: Baroreceptor reflex decrease in heart rate)
B. Cardiac output increased/unchanged
C. Increased systolic BP and decreased diastolic BP
D. Does no work Work = PxV = 0 and there is no volume change
E. Decrease stroke volume

CV52 [Apr01] [Jul03] [Feb04] Cerebral blood flow is increased by:

A. Decrease in CSF pressure of 5 mmHg
B An increase in MAP of …
C. Significantly increased by an increase of pCO2 of 5mmHg An increase in pCO2 of 1mmHg increases CBF by 4%. linear between 20-80mmHg
D. Plasma glucose > 10 mmol/l
E. Increased regional (?OR global) neural activity (OR: Increased metabolic requirements)
The most important regulatory mechanism for CBF is CMRO2 ∴ think metabolic!

CV53 [Apr01] [Aug 11] [Feb12] Baroreceptors located in all EXCEPT:

A. Carotid sinus
B. Carotid body
C. Right atrium
D. Aortic arch
E. Large veins
(Comment: The carotid body is a chemoreceptor. Many people get the roles of the carotid body & carotid sinus mixed up. Having both options here probably alerts you to the correct answer - KB)

CV54 [Apr01] [Jul01] The volume of blood is greatest in:

A. Systemic Capillaries
B. Large veins
C. Small arteries
D. The liver
E. ?The lung

CV55 [Apr01] Hydrostatic pressure in the capillaries increases in:

A. Arteriolar constriction
B. Venous constriction
C. Capillary dilatation
D. ?

CV56 [Jul01] Configuration of an ECG recording:

A. 25 mm / sec, 0.5 mV /cm
B. 25 mm/sec, 1mV /cm
C. 50mm/sec 0.5 mV /cm
D. 50mm/sec 1mv / cm
E. none

- 1 big box on x-axis = 0.2sec, and consists of 5 small boxes each 0.04secs
- 1 big box on y-axis = 0.5mV, and consists of 5 small boxes each 0.1mV

Alt version: On a standard ECG

A. Speed 50mm/s 50mm/mv
B. Speed 50mm/s 25mm/mv
C. Speed 25mm/s 25mm/mv
D. Speed 25mm/s 50mm/mv
E. None of the above

CV57 [Jul01] During exercise in an untrained person, increased cardiac output is mainly due to:

A. Increased heart rate
B. Increased stroke volume
C. Increased venous return
D. ?
E. ?

CV58 [Mar02] Long term control of tissue blood flow includes:

A. Adenosine
B. Nitric oxide
C. Change in tissue vascularity
D. Oxygen tension at the precapillary sphincter
E. “something else also short term”

CV59 [Mar03] [Jul03] Peak left ventricular (LV) volume corresponds with (or correlates best with):

A. a wave
B. v wave
C. c wave
D. x descent
E. y descent

CV60 [Mar03] Cardiac muscle is different from skeletal muscle because:

A. Fast Na Channels
B. Slow Ca Channels
C. Presence of actin and myosin
D. Lower RMP
E. ?

CV61 [Mar03] [Jul03] [Feb04] [Jul04] Widened pulse pressure in all except:

A. More rapid ventricular ejection
B. Increased aortic compliance
C. Increased diastolic pressure
D. ?

Alt version: All increase pulse pressure except

A. Increased TPR
B. Increased Stroke Volume
C. Increased LV dP/dT
D. Increased Diastolic pressure
E. Increased aortic compliance

CV62 [Jul03] Adrenaline in VF arrest

A. Increases contractility
B. 'Coarsens' fine VF

acts to vasoconstrict to ↑perfusion pressure to myocardium to ↑chance of successful defib

(Comments received Jul03: "Couple of other options that were plain wrong. Maybe I missed something but I assumed it was mainly to contract the peripheral circulation and allow circulating blood to stay in the coronary and cerebral circulation. I didn't

think it was to increase contractility (the ventricle is not pumping blood out and circulation is due to CPR . ??)

CV63 [Jul03] In a young woman who loses 20% of her blood volume:

A. Decreased diastolic BP
B. Increased serum ADH
C. Increased pulmonary vascular resistance
D. Decreased cerebral blood flow
E. Increased urinary sodium concentration partially right even though aldosterone ⟹ ↑Na retention with water

CV64 [Feb04] In chronic anaemia:

A. Increased arterial-venous oxygen content difference
B. Increased venous pO2
C. Increased oxygen consumption - due to compensatory ↑HR
D. Decreased heart rate
E. Increase oxygen tension in mixed venous blood

CV65 [Jul04] The QT interval is measured from

A. The start of the q wave to the start of the t wave
B. The peak deflection to the t wave
C. ?

CV66 [Mar 05] Pulmonary capillary wedge pressure wave form has:

A. a wave but no c or v waves
B. a and c waves but no v wave
C. a and v waves but no c wave
D. a, c and v waves - same as RA/LA pressure trace
E. None of the above

CV67 [Mar 05] A decrease in stroke work is due to an increase in:

A. Contractility
B. Ejection fraction
C. Preload
D. Aortic compliance
E. Venous return

CV68 [Mar 05] Total peripheral resistance:

A. Is 17 times greater than pulmonary vascular resistance = 1/7th
B. Is mainly due to capillary beds
C. Can be determined from the arterial pulse pressure
D. Has units of dynes x sec x cm^-5
E. Can be calculated from MABP, CO and PAOP (alt version: PCWP)

CV69 [Jul06] ECG vs cardiac cycle

A. Isovolumetric contraction starts after QRS complex completed
B. T-wave starts with isovolumetric relaxation
C. QT interval from end of isovolumetric contraction to ???
D. ST segment begins at isovolumetric relaxation
E. P wave immediately before mitral valve opening
F. Peak of left atrial V wave corresponds to start of isovolumetric relaxation
I don't remember an option about QT interval, but there was one unless it was another question!)

CV70 [Jul06] The radial pressure wave differs form the aortic because

A. Systolic pressure lower
B. Diastolic pressure greater
C. Aortic mean pressure greater
D. Dicrotic notch more pronounced
E. Radial systolic pressure peaks earlier

CV72 [Jul06] In the cardiac action potential, the (plateau?) is due to

A.
B.
C. due to slow Ca channel?
D. due to K+ channel ?.....
E.

CV73 [Feb06] Effect of ageing (normally):

A. pulse pressure widens
B. diastolic increases
C. increased aortic compliance

D. increased rate of ventricular filling in diastole
E. heart rate increases (*?? not sure if this is right option - but another incorrect answer I think*)

CV74 [Feb06] The organ most UNLIKELY to demonstrate an increase in blood flow in response to decreased capillary partial pressure of oxygen?

A. Liver
B. Skeletal muscle
C. Heart
D. Kidneys
E. Lung

CV75 [Feb06] Feb12 Which of the following are not produced by vascular endothelium?

A. thromboxane
B. Endothelin
C. prostacyclin
D. NO
E. something else that i think was produced by endothelium

CV76 [Feb06] Regarding blood flow in capillaries: Poiseuille Equation

A. increases as diameter decreases
B. is a newtonian fluid
C. increases as viscosity decreases
D. something wrong
E. something wrong

CV77 [Feb06] Regarding pressure volume loop of heart:

A. contractility is demonstrated by end systolic point
B. afterload is determined by end diastolic volume
C. ventricular diastolic elastance curve is change in pressure / change in volume in diastole
D. end systolic pressure volume relationship gives guide of afterload
E. aortic valve closes at diastolic blood pressure
(*very poorly worded question that will surely be scrapped*)

CV78 [Feb06] Effect of exercise:

A. systolic BP decreases
B. pulse pressure (?widens/?narrows)
C. diastolic BP decreases
D. diastolic pressure increases
E. ?

CV79 [Jul06] Blood flow in exercise

A. Decreased blood flow to splanchnic system
B. Increases to all skeletal muscle (it did say skeletal)
C. Increased systemic vascular resistance
D. Skin blood flow does not change.
E. Increased cerebral blood flow

CV80 Feb12 A prolonged PR interval, ST segment flattening, and the appearance of a U-wave is consistent with: *new*

A. Hyperkalaemia.
B. Hypokalaemia.
C. Hypomagneseamia.
D. Hypocalcaemia.
E. None of the above

CV81 Feb12 The R wave in lead 2 of an ECG corresponds to:

A. Aortic valve opening
B. Just after closure of mitral valve
C. Peak of atrial contraction
D. Start of isovolumetric contraction
E. ?

CV82 Feb12 All of the following are ion channels in the heart EXCEPT:

A. Inward rectifier K channels
B. Transient inward K channels
C. Delayed rectifier K channels
D. Ca channels
E. Na channels

CV83 Feb12 The U wave on an ECG represents " (...I dont remember this question at all?)" = slow repolarisation of papillary muscles

A.Atrial repolarisation
B.Atrial and ventricular repolarisation
C.Some electrolyte abnormality (can't remember which electrolyte/s it had)

CV84 Feb12 Comparing the aorta and the radial artery

A. MAP higher in aorta
B. Dicrotic notch more pronounced in radial artery
C. Systolic pressure higher in aorta
D. Diastolic pressure higher in aorta
E. Faster systolic peak in radial

CV85 Feb12 Effects of long term exercise:

A. Increased maximal heart rate
B. Increased stroke volume
C. Decreased muscle capillaries
D. Decrease muscle blood flow for the same level of work (? Maybe worded like this)
E. increased lactate production for same amount of work

CV86 Feb12 Lead II of an ECG

A. PR interval <0.12 seconds
B. Q waves may or may not be pathological
C. Needs 3 electrodes to record
D. Positive electrode on left arm, negative electrode on right arm

CV87 Question about conductance of blood flow (conductance = reciprocal of resistance)

A. is directly related to resistance
B. directly related to the diameter squared
C. same as pressure difference between arterial and venous system
D.
E. ??addition in parallel circuits to get total conductance??