

MCQ Physiology CVS

1. In the electrocardiogram at a heart rate of 80 per minute:

- a) the PR interval should be less than 0.2 s and greater than 0.12 s
- b) the QRS complex should last less than 0.02 s
- c) the T wave is normally greater than 1 mV
- d) there will be an interval of 0.75 s between the end of one complex and the beginning of the next
- e) the T wave is ventricular repolarisation

2. Fibrinogen degradation products are natural anticoagulants interfering with:

- a) polymerisation of the fibrin monomer
- b) platelet aggregation
- c) thrombin activity
- d) serum calcium concentrations
- e) intrinsic pathway activation

3. Atropine:

- a) has no effect on acetylcholine production or destruction
- b) dilates cutaneous blood vessels
- c) is a parasympathetic depressant
- d) stimulates the respiratory centre
- e) increases intraocular pressure

4. In the cardiac cycle:

- a) left ventricular volume is maximal at the end of atrial systole
- b) the mitral valve closes by contraction of the papillary muscles
- c) the left ventricular pressure is maximal just before the aortic valve opens
- d) the ejection fraction is about 85%
- e) the aortic valve closure is due to rebound of the aortic valve

5. Pulmonary vascular resistance:

- a) is increased in chronic hypoxia
- b) has a value approximately one-sixth that of the systemic circulation
- c) can be measured using a flow-directed balloon catheter with a thermistor tip
- d) is increased by isoprenaline
- e) is decreased by 5-hydroxytryptamine (5-HT)

6. Dopamine:

- a) increases cardiac output
- b) in high doses causes peripheral vasodilatation

- c) increases renal blood flow
- d) increases ventricular excitability
- e) increases splanchnic blood flow

7. The following are true of alpha-adrenoceptor blocking agents:

- a) they increase blood flow in normal skin and muscle
- b) they cause drowsiness
- c) the clinically useful drugs are competitive antagonists
- d) they have only alpha 1- blocking activity
- e) they are chronotropic agents

8. In the normal cardiac cycle:

- a) the period of ventricular systole is equal to the Q-T interval
- b) the duration of the QRS complex depends on the heart rate
- c) the PR interval is less than 0.22 s
- d) ejection occurs throughout systole
- c) the R-R interval may vary

9. The oxygen carrying capacity of the blood is:

- a) the maximum quantity of oxygen that will combine with 100 ml of whole blood
- b) the ratio between oxygen uptake and oxygen usage
- c) independent of the haemoglobin concentration
- d) the oxygen physically dissolved in blood
- c) normally of the order of 15 ml per 100 ml whole blood

10. Captopril:

- a) increases the rate of breakdown of angiotensin II
- b) inhibits the breakdown of bradykinin
- c) may cause an increase in plasma potassium
- d) can safely be given in large doses in hypertensive crisis
- e) urine should be checked regularly for proteinuria

11. The following are isotonic with plasma:

- a) 1.2% sodium bicarbonate
- b) 5% dextrose
- c) 0.9 molar NaCl
- d) Hartmann's solution (Ringer-Lactate)
- e) human plasma protein fraction (5% human albumin solution)

12. When measuring arterial blood pressure using a sphygmomanometer cuff:

- a) if the cuff is too small for the arm, the pressure will tend to read high
- b) accuracy is increased by leaving the cuff slightly inflated between readings

- c) the slower the deflation, the more accurate the reading
- d) a mercury column has a low frequency response
- e) diastolic pressure agrees more accurately with direct measurement than will systolic pressure

13. Sympathetic innervation of blood vessels:

- a) is mediated by alpha-adrenoceptors
- b) is mediated locally by noradrenaline
- c) implies that sympathectomy induces vasodilation
- d) increases flow independent of vessel diameter
- e) induces vasodilation in response to cold and haemorrhage

14. Venous return to the heart is decreased by:

- a) the Valsalva manoeuvre
- b) exercise
- c) paralysis of skeletal muscles
- d) femoral arteriovenous fistula
- e) rapid infusion of blood

15. The following are important in physiological limitation of blood clotting:

- a) removal of activated clotting factors by the liver
- b) prostacyclin
- c) protein C
- d) a factor released from the endothelial cells
- e) fibrinogen

16. Heart rate is slowed by:

- a) amphetamine
- b) atropine
- c) propranolol
- d) dobutamine
- e) nifedipine

17. Using propranolol to treat hypertension:

- a) may exacerbate asthma
- b) often produces postural hypotension
- c) is contraindicated in patients with high plasma renin levels
- d) may precipitate cardiac failure in susceptible patients
- e) should be avoided in a patient with Raynaud's phenomenon

18. Cardiac output may be measured by:

- a) thermodilution
- b) electromagnetic flow meter
- c) Doppler ultrasound

- d) limb plethysmography
- e) ballistocardiography

19. In pulse oximetry:

- a) the theoretical basis is Stefan's law
- b) calibration is against known *in vitro* standards
- c) carboxyhaemoglobin does not affect readings
- d) accuracy at readings above 90% saturation is to within 0.1%
- e) pulse amplitude is a good indicator of cardiac output

20. The coronary blood flow:

- a) is about 500 ml/min at rest
- b) supplies muscle that takes up 40 ml oxygen per minute at rest
- c) is altered directly by vagal activity
- d) ceases in systole
- e) is autoregulated

ANSWERS

- 1.TFFFT
- 2.TTTFF
- 3.TTTFT
- 4.TFFFT
- 5.TFFFF
- 6.TFTTT
- 7.TFFFF
- 8.TFFFT
- 9.TFFFF
- 10.FTTFF
- 11.TTTTT
- 12.TFFTF
- 13.TTTFF
- 14.TFTFF
- 15.FTTTF
- 16.FFTFF
- 17.TFFTT
- 18.TTTFT
- 19.FFFFF
- 20.FTTFT