

GENESIS

(Post Graduation Medical Orientation Centre)

Foundation Batch-1

Total Number- 100

Pass Mark: 70

Subject: CVS Physiology

Question 31-50 is based on Single answers

Time: 40 Min

Date: 29/02/20

1. Which is common peripheral vasodilator

- a) Endothelin
- b) Thromboxane A2
- c) Prostaglandin
- d) Angiotensin
- e) Histamine

FFFT [Ref: Ganong 25th/ P-586]

2. During isovolumic contraction phase

- a) Both A-V valve & semilunar valve closes
- b) Muscle length remain same
- c) Pressure in the atria decreases
- d) Pressure in the aorta decreases
- e) Pressure in the aorta exceeds that in the left ventricle

TFFFF [Ref: Ganong 25th/ P-538]

3. Affecting end diastolic volume

- a) Ventricular filling time
- b) Ventricular contraction
- c) Total peripheral resistance
- d) Cardiac distensibility
- e) Intrathoracic pressure

TFFT [Ref: Vision physiology/9th /p-149+Ganong 25th /P-538]

4. Increase pressure in the carotid sinus causes

- a) Vasodilatation
- b) Increased force of contraction
- c) Increased heart rate
- d) Decreased TPR
- e) Increase the diameter of blood vessels

TFFT [Ref: Ganong 25th /p-538]

5. Ventricular filling

- a) Most rapid in middle third of diastole
- b) Depends on after load
- c) Depends on cardiac cycle time
- d) Begins & isometric relaxation phase
- e) Atria contract during last third of diastole

FFFT [Ref: Gayton and Hall 13th P-115]

6. ↑ Pulse pressure if there is ↓

- a) Stroke volume
- b) Arterial compliance
- c) TPR
- d) Ejection velocity
- e) Age

FTFF [Ref: Gayton and Hall 13th P-181+Wikipedia]

7. Ions/Factors that cause local vessel dilatation

- a) H⁺
- b) K⁺
- c) Serotonin
- d) TxA2
- e) NO

TFFT [Ref: Ganong 25th/ P-586]

8. Following hemodynamic changes occur during expiration

- a) Reduction in right ventricular output
- b) Reduction in left ventricular output
- c) Prolongs right ventricular ejection
- d) Shortens left ventricular ejection
- e) Heart rate slows

TFFT

9. Causes of pansystolic murmurs

- a) Tricuspid regurgitation
- b) VSD
- c) ASD
- d) Aortic stenosis
- e) HOCM

TFFF [Ref: MNacleodi-59]

10. Continuous murmurs

- a) Common in adults
- b) Caused by PDA
- c) Machinery like
- d) Best heard at the upper left sterna border
- e) Radiates over the left scapula

FTTT [Ref: Macleods-14th P-61]

11. Quiet First heart sound found in

- a) Long PR interval
- b) Rheumatic mitral regurgitation
- c) Poor left ventricular function
- d) Atrial myxoma
- e) Short PR interval

TTFF [Ref: Macleods-]

12. In JVP casus wave found in

- a) Complete heart block
- b) Pulmonary embolism
- c) Pulmonary stenosis
- d) Junctional bradycardia
- e) Supraventricular tachycardia

TFFT

13. In JVP

- a) 'V' wave is due to atrial emptying
- b) 'y' wave is due to atrial filling
- c) 'a' wave is due to atrial systole
- d) 'x' wave is due to atrial relaxation
- e) 'c' wave is due to tricuspid bulging into atria

FFTTT

14. Causes of wide pulse pressure

- a) ↑ compliance
- b) Congestive cardiac failure
- c) Cardiogenic shock
- d) Cardiac tamponade
- e) ↑ Stroke volume

FFFFT

15. Regularly irregular pulse found in

- a) Sinus arrhythmia
- b) Mobitz type I second degree heart block
- c) Atrial fibrillation
- d) Multiple ectopics
- e) Atrial flutter

TTFFF

16. 4th heart sound found in

- a) HTN
- b) Aortic stenosis
- c) Hypertrophic cardiomyopathy
- d) Aortic regurgitation
- e) Aortic regurgitation atrial fibrillation

TTTFF (Macleod's/Page-57)

17. On the patients right the silhouette is formed by

- a) Pulmonary trunk
- b) Right atrium
- c) Superior vena cavae
- d) Inferior vena cavae
- e) Aortic arch

FTTTF [Ref: Dave 444]

18. In distinguishing venous from arterial pulsation in neck

- a) Venous pulse has two peaks
- b) Height of venous pulse varies with respiration
- c) Height of venous pulse varies with position
- d) Abdominal compression causes arterial pulses to rise
- e) Arterial pulse is not easily palpable

TTTFF [Ref: Dave 443]

19. The first heart sound corresponds in time with

- a) Closure of the aortic and pulmonary valves
- b) The P wave of the
- c) A rise in atrial pressure
- d) A rise in ventricular pressure
- e) The A wave in central venous pressure

FFTTF

20. Hardening of the arterial walls tends to raise

- a) Arterial compliance
- b) Systolic arterial pressure
- c) Diastolic arterial pressure
- d) Peripheral resistance
- e) Arterial pulse wave velocity

FTFFT

21. Ventricular extrasystoles

- a) Are usually associated with a normal QRS complex
- b) From the same focus have similar QRS complexes
- c) Usually occur following a compensatory pause
- d) May fail to produce a pulse at the wrist
- e) Indicate serious heart disease

FTFTF

22. In atrial fibrillation

- a) The electrocardiogram shows no evidence of atrial activity
- b) Ventricular rate is lower than atrial rate
- c) Respiratory sinus arrhythmia can usually be seen
- d) The ventricular rate is irregular
- e) The QRS complexes have an abnormal configuration

FTFTF

23. Intravenous infusions of adrenaline and noradrenaline have similar effects on

- a) Skeletal
- b) Renal blood flow
- c) Skin blood flow
- d) Diastolic arterial pressure
- e) Heart rate

FTTFF

24. The tendency for blood flow to be turbulent increase when there is a decrease in blood

- a) Vessel diameter
- b) Density
- c) Flow velocity
- d) Viscosity
- e) Hemoglobin level

FFFTT

25. The velocity of blood flow

- a) In capillaries is low because they offer high resistance to flow
- b) In veins is greater than in venules
- c) Can fall to zero in the ascending aorta during diastole
- d) Is greater towards the centre of large blood vessels than at the periphery
- e) In the circulation falls as the haematocrit falls

FTTTF

26. The strength of contraction of left ventricular muscle increases when

- a) End-diastolic ventricular filling pressure rises
- b) Serum potassium levels rise
- c) Blood calcium levels fall
- d) Strenuous exercise is undertaken
- e) Peripheral resistance is increased as in hypertension

TFFTT

27. During isometric ventricular contraction

- a) The entry and exit valves of the ventricle are closed
- b) Pressure in the aorta rises
- c) Pressure in the atria falls
- d) Left coronary blood flow falls
- e) The rate of rise in pressure is greater in the right than in the left ventricle

TFFTF

28. In the electrocardiogram, the

- a) QRS complex follows the onset of ventricular contraction
- b) T wave is due to repolarization of the ventricles.
- c) SR interval corresponds with atrial depolarization
- d) RT interval is related to ventricular action potential duration.
- e) R-R interval normally varies during the respiratory cycle

FTFTT

29. Cardiac output

- a) Is normally expressed as the output of one ventricle in litres/minute
- b) May not increase when heart rate rises
- c) Usually rises when a person lies down
- d) Rises in a hot environment
- e) Does not increase in exercise following denervation of the heart

TTTTF

30. Increased sympathetic drive to the heart increases the

- a) Rate of diastolic depolarization in sinoatrial node cells
- b) Coronary blood flow
- c) Rate of conduction in Purkinje tissue
- d) Slope of the Frank-Starling (work versus stretch) curve of the heart
- e) Ejection fraction of the left ventricle

TTTTT

Each question below contains five suggested answers- choose the one best response to each question (36-50)

31. Long term regulation of blood pressure is maintained by

- a) Baroreceptor reflex mechanism
- b) CNS ischaemic mechanism
- c) Capillary fluid shift mechanism
- d) Renal body fluid mechanism
- e) Renin-angiotensin vasoconstrictor mechanism

D (Ref: Gyton and hall 13th /Page-242)

32. Which of the following normally has a slowly depolarizing "prepotential"?

- a) Sinoatrial node
- b) Atrial muscle cells
- c) Bundle of His
- d) Purkinje fibers
- e) Ventricular muscle cells

A

33. In second-degree heart block

- a) The ventricular rate is lower than the atrial rate.
- b) The Ventricular ECG complexes are distorted.
- c) There is a high incidence of ventricular tachycardia.
- d) Stroke volume is decreased.
- e) Cardiac output is increased.

A

34. Currents caused by opening of which of the following channels contribute to the repolarization phase of the action potential of ventricular muscle fibers?

- a) Na⁺ channels
- b) Cl⁻ channels
- c) Ca²⁺ channels
- d) K⁺ channels
- e) HCO₃⁻ channels

D

35. Which part of the ECG (eg, Figure 29-5) corresponds to ventricular repolarization?

- a) The P wave
- b) The QRS duration
- c) The T wave
- d) The U wave
- e) The PR interval

C

36. The fourth heart sounds is caused by

- a) Closure of the aortic and pulmonary valves
- b) Vibrations in the ventricular wall during systole
- c) Ventricular filling
- d) Closure of the mitral and tricuspid valves
- e) Retrograde flow in the vena cava

C

37. The dicrotic notch on the aortic pressure curve is caused by

- a) Closure of the mitral valve
- b) Closure of the tricuspid valve
- c) Closure of the aortic valve
- d) Closure of the pulmonary valve
- e) Rapid filling of the left ventricle

C

38. The work performed by the left ventricle is substantially greater than that performed by the right ventricle because in the left ventricle

- a) The contraction is slower
- b) The wall is thicker
- c) The stroke volume is greater
- d) The perload is greater
- e) The afterload is greater

E

39. Starling's law of the heart

- a) Does not operate in the failing heart
- b) Does not operate during exercise
- c) Explains the increase in heart rate produced by exercise
- d) Explains the increase cardiac output that occurs when venous return is increased
- e) Explains the increase cardiac output that occurs when sympathetic nerves supplying the heart are stimulated

D

40. Which of the following has the highest total cross sectional area in the body

- a) Arteries
- b) Arterioles
- c) Capillaries
- d) Venules
- e) Veins

C

41. The velocity of blood flow

- a) Is higher in the capillaries than the arterioles
- b) Is higher in the veins than in the venules
- c) Is higher in the veins than the arteries
- d) Falls to zero in the descending aorta during diastole
- e) Is reduced in a constricted area of a blood vessel

B

42. When the radius of the resistance vessels is increased, which of the following is increased

- a) Systolic blood pressure
- b) Diastolic blood pressure
- c) Viscosity blood pressure
- d) Hematocrit
- e) Capillary blood flow

E

43. When a pheochromocytoma (tumor of the adrenal medulla) suddenly discharges a large amount of epinephrine into the circulation, the patient's heart rate would be expected to

- a) Increase because the increase in blood pressure stimulates the carotid and aortic baroreceptors
- b) Increase because epinephrine has a direct chronotropic effect on the heart
- c) Increase because of increased tonic parasympathetic discharge to the heart
- d) Decrease because the increase in blood pressure stimulates the carotid and aortic chemoreceptors
- e) Decrease because of increased tonic parasympathetic discharge to the heart

B

44. Orthostatic hypotension due to a malfunction in the baroreceptor reflex was diagnosed in a 65-year-old man who had been experiencing frequent episodes of syncope as he got out of bed in the mornings. Activation of the baroreceptor reflex

- a) Is primarily involved in short-term regulation of systemic blood pressure
- b) Leads to an increase in heart rate because of inhibition of the vagal cardiac motor neurons
- c) Inhibits neurons in the CVLM
- d) Excites neurons in the RVLM
- e) Occurs only under situations in which blood pressure is markedly elevated

A

45. A 45-year-old woman had a blood pressure of 155/95 mm Hg when she was at her clinician's office for a physical. It was her first time to see this clinician and her first physical in over 10 years. The clinician suggested that she begin monitoring her blood pressure at home. Sympathetic nerve activity would be expected to increase

- a) If glutamate receptors were activated in the NTS
- b) If GABA receptors were activated in the RVLM
- c) If glutamate receptors were activated in the CVLM
- d) During stress
- e) When one transitions from an erect to a supine posture

D

46. A 55-year-old man comes to his primary care clinician complaining of erectile dysfunction. He is given a prescription for Viagra, and on follow-up reports that his ability to sustain an erection has been improved markedly by this treatment

- a) Histamine
- b) Endothelin-1
- c) Prostacyclin
- d) Nitric oxide
- e) Atrial natriuretic peptide

D

47. The pressure differential between the heart and the aorta is least in the

- a) Left ventricle during systole
- b) Left ventricle during diastole
- c) Right ventricle during systole
- d) Right ventricle during diastole
- e) Left atrium during systole

A

48. Injection of tissue plasminogen activator (t-PA) would probably be most beneficial

- a) After at least 1 year uncomplicated recovery following occlusion of a coronary artery
- b) After at least 2 month uncomplicated recovery following occlusion of a coronary artery
- c) During the second week after occlusion of a coronary artery
- d) During the second day after occlusion of a coronary artery
- e) During the second hour after occlusion of a coronary artery

E

49. Which of the following organs has the greatest blood flow per 100g of tissue

- a) Brain
- b) Heart muscle
- c) Skin
- d) Liver
- e) Kidney

E

50. Which of the following does not dilate in the skin

- a) Increased body temperature
- b) Epinephrine
- c) Bradykinin
- d) Substance P
- e) Vasopressin

E