1. In the disease condition known as aneurysm the wall of the artery is:

A. Constricted
B. Greatly dilated
C. Hardened
D. Lined by fatty deposits
E. Replete with many dilated vasa vasorum

2. Which of the following blood vessels has the thickest tunica adventitia?

A. Distributing artery
B. Elastic artery
C. Muscular artery
D. Muscular vein
E. Muscular venule

3. Which is the most important type of blood vessels in respect of interchange between the vascular system and tissue fluid?

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3. Which is the most important type of blood vessels in respect of interchange between the vascular system and tissue fluid?

A. Arterioles
B. Capillaries
C. Elastic arteries
D. Large veins
E. Metarteriole

4. Which type of blood capillaries has incomplete or discontinuous basal lamina?

A. Continuous

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A. Arterioles
B. Capillaries
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E. Metarteriole

4. Which type of blood capillaries has incomplete or discontinuous basal lamina?

A. Continuous
B. Fenestrated with diaphragm
C. Fenestrated without diaphragm
D. Sinusoidal
E. B and C

5. A lymphatic capillary has all EXCEPT one of the following structural features.

4. Which type of blood capillaries has incomplete or discontinuous basal lamina?

A. Continuous
B. Fenestrated with diaphragm
C. Fenestrated without diaphragm
D. Sinusoidal
E. B and C

5. A lymphatic capillary has all EXCEPT one of the following structural features.

A. Fenestrated endothelial cells
B. Lack of tight junctions between endothelial cells
C. Lack of valves
D. No pericytes associated with endothelial cells
E. Poorly developed or no basal lamina

6. Varicose veins are abnormally enlarged tortuous veins. This condition occurs as a result of:

6. Varicose veins are abnormally enlarged tortuous veins. This condition occurs as a result of:

A. Degeneration of vessel walls
B. Loss of muscle tone
C. Valvular incompetence
D. All of the above
E. A and B only

E. A and B only

7. Which statement is true? Large veins differ from their arterial counterpart by having:

A. Fewer collagenous fibres in tunica media
B. Fewer vasa vasorum
C. Indistinct internal elastic lamina
D. Prominent external elastic lamina
E. Thin tunica adventitia

8. Which blood vessels are most affected by vasoconstrictor agents that raise systemic blood pressure by of vascular smooth muscles?

A. Arterioles
B. Capillaries
C. Elastic arteries
D. Muscular arteries
E. Venules

9. The apex beat is the palpable conical part of the left ventricle. Which of these surface markings is the best place to feel the apex beat on the thoracic wall?

A. Sternal edge in the second left intercostal space
B. Sternal edge in the second right intercostal space
C. Left 5th intercostal space just internal to the mid-clavicular line
D. Just below the xiphisternum
E. Right 5th intercostal space just internal to the mid-clavicular line

10. A 26-year old man fractured (broke) a rib while playing football. At the clinic, the medical officer has to determine the numeral value of the fractured rib. Which of these ribs or its costal cartilage is the most suitable rib to start enumerating the ribs from?

A. Rib 1
B. Rib 2
C. Rib 3

11. Which of these mediastinal structures is palpable on the surface of the chest wall?

A. Aorta
B. Superior vena cava
C. Brachiocephalic trunk
D. Trachea
E. Oesophagus

12. The costal lines of pleura reflections cross which rib in the mid-axillary line?

C. Brachiocephalic trunk
D. Trachea
E. Oesophagus

12. The costal lines of pleura reflections cross which rib in the mid-axillary line?

A. 6th
B. 8th
C. 10th
D. 12th
E. 4th

13. Which chamber of the heart is labelled with the arrow in this radiograph?

13. Which chamber of the heart is labelled with the arrow in this radiograph?

A. Left atrium
B. Right ventricle
C. Left ventricle
D. Right atrium
E. None of the above

A. Left atrium
B. Right ventricle
C. Left ventricle
D. Right atrium
E. None of the above

14. When someone is not exercising, most of his total blood volume is in the
a. heart
b. arteries
c. capillaries
d. veins
e. Kidneys

15. Blood is moved through the vascular system by
a. valves in the walls of the blood vessels
b. peristalsis caused by the smooth muscle in the blood vessel walls
c. pressure gradients created by the heart
d. osmotic pressure
e. colloid pressure

16. Which of the following is not an important factor controlling venous blood flow?
   a. positive cardiac pressure
   b. negative cardiac pressure
   c. venous valves
   d. contraction of skeletal muscles
   e. Inhalation

17. The maximum pressure developed in a systemic artery
   a. is called the systolic pressure
   b. occurs during ventricular diastole
   c. is called pulse pressure
   d. occurs during atrial systole
   e. is called the diastolic pressure

18. If a person's blood pressure is 110/70, then the
   a. pulse pressure is 40 mm/Hg
   b. diastolic pressure is 40 mm/Hg
   c. systolic pressure is 70 mm/Hg
   d. mean arterial pressure is 120 mm/Hg

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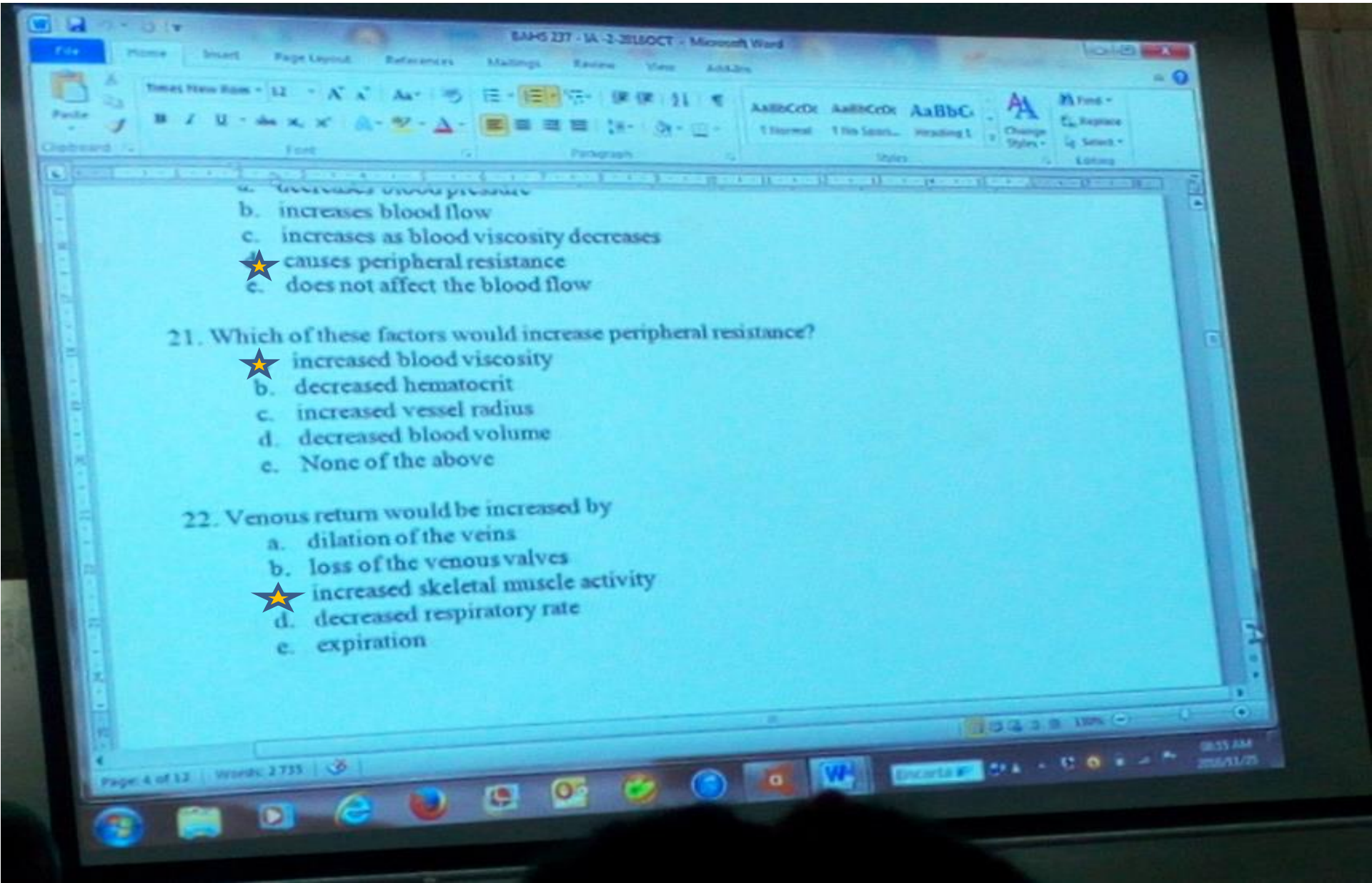
    a. pulse pressure is 40 mm/Hg
    b. diastolic pressure is 40 mm/Hg
    c. systolic pressure is 70 mm/Hg
    d. mean arterial pressure is 120 mm/Hg
    e. All the above

19. Pulse pressure is calculated by
    a. adding diastolic pressure to systolic pressure
    b. subtracting diastolic pressure from systolic pressure
    c. adding the diastolic and systolic pressure, then dividing by 2
    d. adding one-third of the difference between the diastolic and the systolic pressure to the diastolic pressure.
    e. None of the above

20. Friction between blood and blood vessels……



23. Information about blood pressure is collected and sent to the brain by
    a. osmoreceptors
    b. endothelial cells
    c. chemoreceptors
    d. photoreceptors
    e. baroreceptors

24. If there is a blockage between the AV node and AV bundle, how will this affect the appearance of the ECG:
    a) P-R interval would be smaller
    b) QRS interval would be longer
    c) there would be more P waves than QRS complexes
    d) there would be more QRS complexes than P waves
    e) the T wave would not be present

25. The T wave on an ECG represents:
    a) ventricular depolarization
    b) ventricular repolarization
    c) atrial depolarization
    d) atrial repolarization

e) ventricular systole

26. As blood travels from the aorta to the capillaries:
    a) pressure increases
    b) viscosity increases
    c) resistance increases
    d) velocity increases
    e) flow increases

27. If communication between the SA node and the AV node becomes blocked which is most certainly affected:
    a) the ventricles will contract at a slower rate
    b) afterload will increase
    c) the atria will contract at a slower rate
    d) stroke volume will increase
    e) all of the above

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c) there would be more P waves than QRS complexes
d) there would be more QRS complexes than P waves
e) the T wave would not be present

29. A valve damaged by rheumatic fever fails to open completely. This is called:
a) stenosis
b) heart block
c) ischemia
d) MI
e) fibrillation

e) fibrillation

30. According to Starling's Law of the heart, cardiac output is directly related to:
a) the size of the ventricles
b) the heart rate
c) amount of blood returning to the heart
d) end-systolic volume
e) cardiac reserve

31. The T wave on an ECG represents:
a) ventricular depolarization
b) ventricular repolarization
c) atrial depolarization

32. The R wave of ECG:

a. Coincides with ventricular diastole.
b. Normally, its amplitude is 0.1-0.2 mV.
c. Is inverted in lead 1.
d. Has duration of 1-2 millisecond.
★ Is due to depolarization of the main ventricular muscles.

33. The T wave on an ECG represents:

a) ventricular depolarization
★ b) ventricular repolarization
c) atrial depolarization
d) atrial repolarization
e) ventricular systole

34. The atria will empty during which of the phase:

a. atrial diastole
b. atrial systole
c. ventricular diastole

34. The atria will empty during which of the phase:

a. atrial diastole
b. atrial systole
c. ventricular diastole
d. ventricular systole
e. closure of AV valve

35. The first heart sound results when the

a. ventricle contracts
b. semilunar valves close
c. A-V valves close
d. atria contract
e. Aortic valve closes

36. The increase in heart rate caused by seeing a snake run after you is probably the result of which of the following?

a. medullary accelerator center
b. hypothalamus
c. sympathetic nerves
d. increase in blood pressure
e. parasympathetic nerves

37. Which wave on the ECG represents the depolarization of the atria?

a. P wave
b. QRS complex
c. T wave
d. U wave
e. Q wave

38. The time taken for an impulse to travel from the S-A node to the A-V node is shown on the ECG strip as the?

a. QRS complex

c. T wave
d. U wave
e. Q wave

38. The time taken for an impulse to travel from the S-A node to the A-V node is shown on the ECG strip as the?
a. QRS complex
b. S-T interval
c. P-Q interval
d. QRS-T interval
e. P-S complex

39. Which of the following factor helps venous return to the heart?
a. Valves
b. Inspiration
c. skeletal muscle
d. lying down
e. all the above

40. The amount of blood ejected by the left ventricle each minute is calculated from which formula?

b. S-T interval
c. P-Q interval
d. QRS-T interval
e. P-S complex

39. Which of the following factor helps venous return to the heart?
a. Valves
b. Inspiration
c. skeletal muscle
d. lying down
e. all the above

40. The amount of blood ejected by the left ventricle each minute is calculated from which formula?
a. heart rate + stroke volume
b. heart rate X stroke volume
c. heart rate divided by stroke volume
d. heart rate - stroke volume
e. heart rate X End diastolic volume

41. The SA node is the normal pacemaker because of its :

d. heart rate - stroke volume
e. heart rate X End diastolic volume

41. The SA node is the normal pacemaker because of its :
a. location in the atrium
b. neural control
c. muscular structure
d. Relative position to the A.V node.
★ rate of impulse discharge

42. About the cardiac muscle all the following are true except :
a. It has low electric resistance of the membrane at the intercalated discs
b. It forms true syncytium.

e. rate of impulse discharge

42. About the cardiac muscle all the following are true except :

a. It has low electric resistance of the membrane at the intercalated discs

b. It forms true syncytium.

c. It obeys the all or none law

d. It cannot enter into titanic contraction

e. It is an excitable tissue

43. The cardiac tissue with the slowest rhythmicity is the :

a. S.A node
b. S.A node with sympathetic stimulation
c. AV node.
★ purkinje fibers
e. None of the above

44. The action potential of cardiac muscle differs from that of skeletal muscles in:

a. it is propagated more slowly .
b. it is shorter in duration
c. it has a higher amplitude
★ it has no plateau
e. all of the above

45. When the bundle of His is completely interrupted,the:

★ Ventricles contract at a rate of 30-40 beats / minutes
b. atria beat irregularly
c. QRS complexes vary in shape from beat to beat
d. P-R interval remains constant from beat to beat
e. S.A node stops discharging.

46. All the following are correct except :

a. the left atrial wall is about the same thickness as the right atrium
b. the left ventricle is separated from the left atrium by a bicuspid valve
c. Purkinje system allows the excitation of all ventricular muscle fibers to occur at nearly the same time
★ the right heart receives oxygenated blood from the four pulmonary veins
e. None of the above

47. It is impossible to tetanize the cardiac muscle because :

a. there is a long mechanical refractory period
★ the refractory period and the mechanical contractile response are of almost equivalent duration
c. the heart muscles do not contain Ca^{2+} .
d. the mechanical contractile event is usually shorter than the duration of the electrical depolarization
e. All the above

48. About the cardiac conductivity, all the following are true except :

a. it is slowest in the A-v node
b. it is maximal in the purkinje fibers .
c. it is slowest in the ventricular muscle.
d. it is decreased by vagal stimulation

a. there is a long mechanical refractory period
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48. About the cardiac conductivity, all the following are true except :
a. it is slowest in the A-v node
b. it is maximal in the purkinje fibers .
c. it is slowest in the ventricular muscle.
d. it is decreased by vagal stimulation
e. it occurs through modified cardiac muscle fibers

49. Propagation of the action potential through the heart is fastest in the :

- SA node
- b. atrial muscle
- c. AV node
- d. purkinje fibers
- e. ventricular muscle .

50. The greatest percentage of blood volume is found in the :

- a. Heart
- b. Aorta
- c. Distributing arteries and arterioles
- d. capillaries
- venules and veins

51. Ventricular pressure is higher than the atrial pressure in all phases of the cardiac cycle except in:

- a. Isovolumetric contraction phase.
- b. atrial systole phase
- c. maximum ejection phase.
- d. reduced ejection phase.

51. Ventricular pressure is higher than the atrial pressure in all phases of the cardiac cycle except in:

a. Isovolumetric contraction phase.
b. atrial systole phase
c. maximum ejection phase.
d. reduced ejection phase.
e. None of the above

52. AV valves are opened in:

a. isometric contraction phase.
b. atrial systole phase.
c. reduced ejection phase.
d. maximum ejection phase.
e. None of the above

53. All cardiac valves are opened in:

a. isometric relaxation phase.
b. isometric contraction phase.
c. maximum filling phase.
d. all of the above.
e. None of the above.

e. None of the above

53. All cardiac valves are opened in:
   a. isometric relaxation phase.
   b. isometric contraction phase.
   c. maximum filling phase.
   d. all of the above.
   e. None of the above.

54. P wave is due to:
   a. atrial depolarization.
   b. atrial repolarization.
   c. atrial systole.
   d. atrial diastole.
   e. AV node depolarization

55. The QRS complex is due to
   a. ventricular repolarization.
   b. ventricular depolarization.
   c. atrial depolarization.
   d. atrial repolarization.

56. First heart sound occurs in:

- ★ isovolumetric metric contraction phase.
- b. atrial systole phase.
- c. isovolumetric relaxation phase.
- d. maximum filling phase.
- e. atrial depolarization

57. The second heart sound is due to:

- a. closure of AV valves.
- ★ closure of semilunar valves.
- c. closure of all valves.
- d. opening of AV valves.
- e. atrial systole phase
- f.

58. During the slow ejection phase, which one of the following is true:

- a. left atrial pressure is falling.
- b. Aortic pressure is falling below left ventricular pressure.
- ★ The A-V valves are closed.
- d. Left ventricular pressure is constant.
- e. The QRS complex terminates just before this phase

61. All cardiac valves are closed in what phase (phases) of the cardiac cycle:

a. isometric relaxation phase.
b. maximum filling phase.
c. reduced filling phase.
d. all of the above.
e. none of the above.

62. As regard the standard limb leads of ECG, lead II represents:

a. the potential difference between the left arm and the right arm.
b. the potential difference between the left leg and the left arm.

e. none of the above.

62. As regard the standard limb leads of ECG, lead II represents:

a. the potential difference between the left arm and the right arm.

b. the potential difference between the left leg and the left arm.

★ the potential difference between the left leg and the right arm.

d. the potential difference between the left leg and the right leg.

e. non of the above.

d. the potential difference between the left leg and the right leg.
e. non of the above.

63. Einthoven's triangle is an equilateral triangle, the sides of which represent:
a. the 3 standard limb leads.
b. the 3 unipolar limb leads.
c. combination of both the standard and unipolar leads.
d. the heart lies at the top of this triangle.
e. non of the above.

64. The exploring electrode of V1 of unipolar chest leads of ECG is placed at:
a. Fourth intercostal space at left sternal border.
b. Fourth intercostal space at right sternal border.
c. Fifth intercostal space at the midclavicular line.
d. Fifth intercostal space at anterior axillary line.
e. Fifth intercostal space at mid axillary line.

65. The primary respiratory function of the lung is for

c. Fifth intercostal space at the midclavicular line.
d. Fifth intercostal space at anterior axillary line.
e. Fifth intercostal space at mid axillary line.

65. The primary respiratory function of the lung is for
★ a. Gas exchange
b. Acid base balance
c. Blood storage
d. Regulation of blood pressure
e. Synthesis of metabolites/chemicals like angiotensin converting enzymes and surfactant.

66. In health, which of the following is the most important determinant of the rate of diffusion
a. area of diffusion barrier
★ b. difference in partial pressure across the blood gas barrier
c. diffusion constant or diffusion coefficient
d. thickness of the blood gas barrier
e. solubility of the gas

67. The most common cause of hypoxemia is

a. area of diffusion barrier
b. difference in partial pressure across the blood gas barrier
c. diffusion constant or diffusion coefficient
d. thickness of the blood gas barrier
e. solubility of the gas

67. The most common cause of hypoxemia is
a. high altitude
b. diffusion problems
c. shunts
★ ventilation perfusion mismatch/abnormalities
e. inspiration of hypoxic mixture

68. A region of the ling where the ventilation perfusion ratio is infinity (ie there is ventilation but no perfusion) is called
a. right to left intra-cardiac shunts
b. physiological shunts
★ alveolar dead space
d. lung apex

c. lung base

69. In humans, pulmonary tuberculosis is much more common at apex of lung because
a. Pulmonary ventilation is highest at the apex
b. Pulmonary perfusion is highest at the apex
c. Ventilation / perfusion ratio is highest at the apex
d. All the above are true
e. None of the above is true

70. The **pulmonary** circulation
a. is a high pressure circulation
b. is a high resistance circulation
c. receives exactly half the cardiac output
d. responds to localized hypoxia in the lung by vasoconstriction
e. is in parallel with the systemic circulation