

# **LAMPIRAN B**

## **INSTRUMEN PENELITIAN**

### **B.1. Kisi-Kisi Instrumen Pilihan Ganda**

### **B.2. Soal Pilihan Ganda**

## LAMPIRAN B.1

### KISI-KISI SOAL PENGUASAAN KONSEP SISTEM PEREDARAN DARAH

Tingkat Satuan Pendidikan : SMP/MTs  
Kelas/Semester : VIII/2  
Jenis Tes : Pilihan Ganda  
Standard Kompetensi :Memahami berbagai sistem dalam kehidupan manusia  
Kompetensi Dasar :Mendeskripsikan sistem peredaran darah pada manusia dan hubungannya dengan kesehatan

No.	Indikator	Jenjang				Jumlah
		C1	C2	C3	C4	
1	Menyebutkan fungsi sistem peredaran darah			2	1	2
2	Menjelaskan struktur jantung manusia		3, 4, 5			3
3	Menjelaskan cara kerja jantung		6		7	2
4	Menjelaskan fungsi pembuluh nadi		8			1
5	Menyebutkan ciri-ciri pembuluh nadi	9	10		11	3
6	Menyebutkankan ciri-ciri pembuluh balik	12		13		2
7	Menyebutkan komponen penyusun darah	14				1
8	Menjelaskan fungsi plasma darah	15				1
9	Menjelaskan fungsi sel darah merah			16		1
10	Menyebutkan ciri-ciri sel darah merah	18	17			2

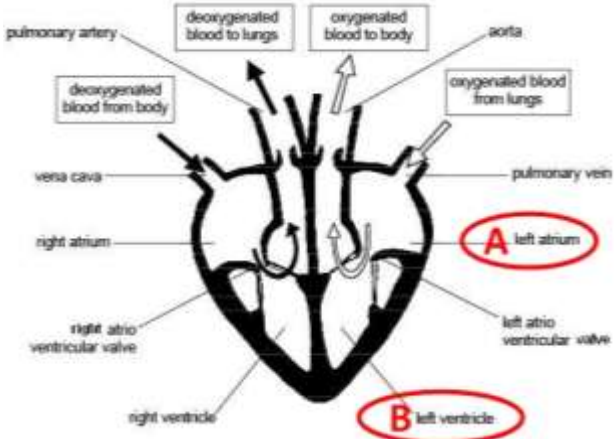
11	Menjelaskan fungsi sel darah putih	19				1
12	Menyebutkan ciri-ciri sel darah putih		20		21	2
13	Membedakan sel darah merah dengan sel darah putih	22				1
14	Menjelaskan fungsi keping darah			23		1
15	Menjelaskan golongan darah	24		25		2
16	Menjelaskan transfusi darah		26, 27, 28	29, 30		5
17	Menjelaskan peredaran darah tertutup pada manusia	31				1
18	Menjelaskan peredaran darah ganda pada manusia	32, 33, 34, 35				4
19	Menjelaskan contoh gangguan peredaran darah	37, 39		40	36, 38	5
Jumlah		15	12	7	6	40

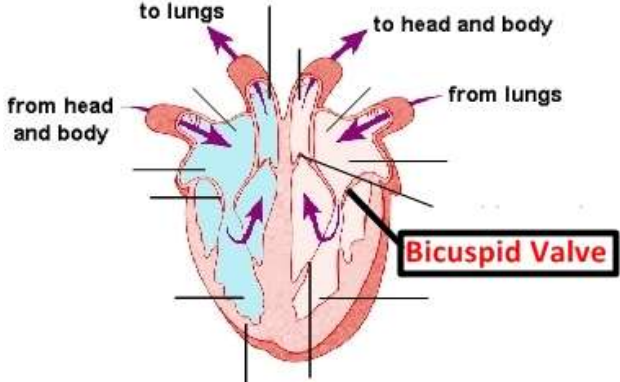
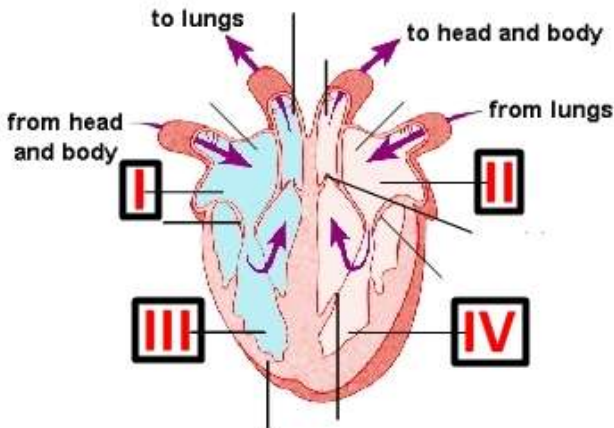
## LAMPIRAN B.2

### SOAL PENGUASAAN KONSEP SISTEM PEREDARAN DARAH

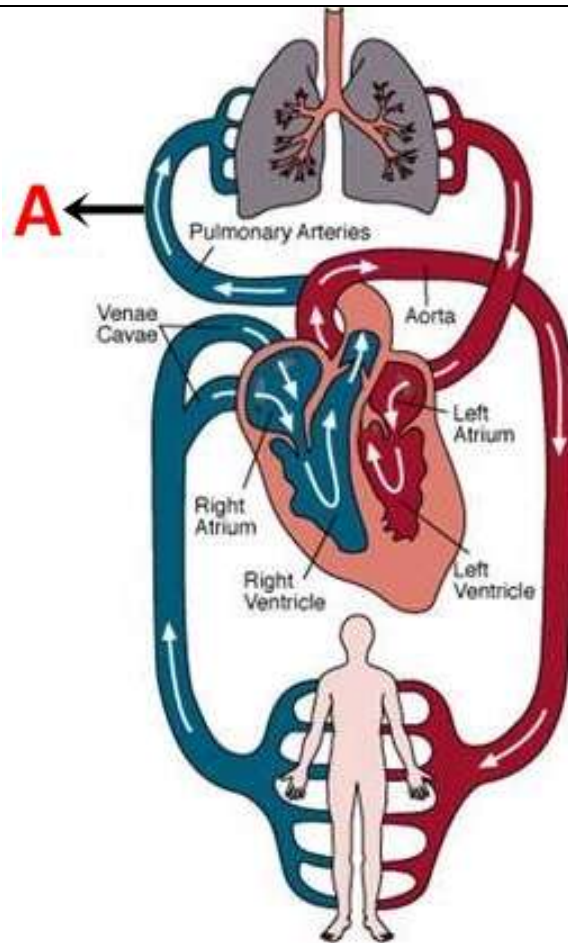
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No	Indicators	Questions	Cognitive Level	Answer Key
1	Mention the functions of the circulatory system	1. What causes someone to be weak/faint when he/she lost a lot of blood? a. Disruption of oxygen and nutrient supply to the body b. The entry of germs/microbes through wounds c. Disruption of heart work d. The fatigue of heart muscle	C4	A
		2. Which statement that is not the function of transportation system? a. Circulating oxygen from lung to entire part of body b. Circulating food essence from intestine to entire part of body	C2	D

		<p>c. Carrying metabolism waste from entire part of body to excretory organ</p> <p>d. Transporting digestion waste from intestine to anus</p>		
2	Explain the structure of human heart	<p>3. Look at the picture below!</p>  <p>Why does the wall of chamber B thicker than wall of chamber A?</p> <ol style="list-style-type: none"> <li>Because chamber B have to pump the oxygen rich blood</li> <li>Because chamber B have to pump the blood to all parts of body</li> <li>Because chamber B get sufficient supply of oxygen</li> <li>Because chamber B get sufficient supply of nutrient</li> </ol>	C2	B
		4. Look at the picture!	C2	C

		 <p>Bicuspid valve is located between left atrium and left ventricle of the heart, based on its location, the function of bicuspid valve is ....</p> <ol style="list-style-type: none"> <li>facilitate the flow of blood from left atrium to the left ventricle</li> <li>prevent the mixing of oxygen-rich blood from the ventricle with the oxygen-poor blood from the atrium</li> <li>prevent the return of blood from the left ventricle into the left atrium</li> <li>prevent the mixing of oxygen-rich blood from the atrium with the oxygen-poor blood from the ventricle</li> </ol>		
		<p>5. Look at the picture below!</p>  <p>Which parts of heart are filled with oxygen-rich blood?</p> <ol style="list-style-type: none"> <li>I and II</li> <li>II and III</li> </ol>	C2	D

		<ul style="list-style-type: none"> <li>c. III and IV</li> <li>d. II and IV</li> </ul>		
3	Explain the work of the heart	6. What happens when the atrium contracts? <ul style="list-style-type: none"> <li>a. Blood is pumped from the atrium into the ventricle</li> <li>b. Blood from the whole parts of body go into the atrium</li> <li>c. Valve that connect the atrium with the ventricle is closed</li> <li>d. Blood from the ventricle is pumped to the arteries</li> </ul>	C2	A
		7. Heart rate during exercise compared with before exercise is ... <ul style="list-style-type: none"> <li>a. almost equal</li> <li>b. less</li> <li>c. more</li> <li>d. equal</li> </ul>	C4	C
4	Explain the function of the arteries	8. Look at the picture below!	C2	B



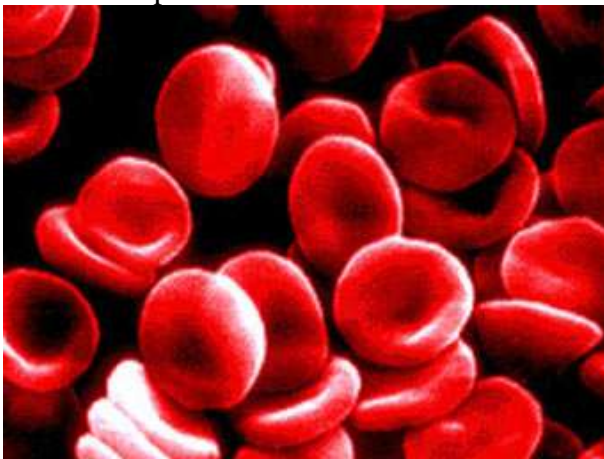
The A on the picture above named pulmonary artery, the pulmonary artery is....

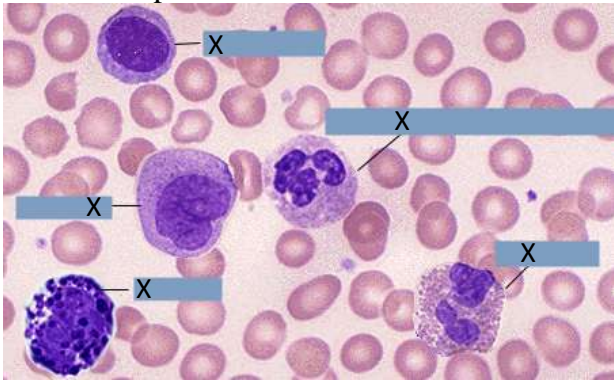
- a. artery that leaves the heart and carries blood rich in oxygen
- b. artery that leaves the heart and carries blood rich in carbon dioxide
- c. artery that goes to the heart and carries blood rich in carbon dioxide
- d. artery that goes to the heart and carries blood rich in oxygen

		<p>The A on the picture above named pulmonary artery, the pulmonary artery is....</p> <ol style="list-style-type: none"> <li>a. artery that leaves the heart and carries blood rich in oxygen</li> <li>b. artery that leaves the heart and carries blood rich in carbon dioxide</li> <li>c. artery that goes to the heart and carries blood rich in carbon dioxide</li> <li>d. artery that goes to the heart and carries blood rich in oxygen</li> </ol>		
5	Mention the characteristics of the arteries	<p>9. Arteries are blood vessels that are always passed by ....</p> <ol style="list-style-type: none"> <li>a. blood from the lungs</li> <li>b. blood toward the heart</li> <li>c. blood that contains lots of O<sub>2</sub></li> <li>d. blood that leaving the heart</li> </ol>	C1	D
		<p>10. Arteries have a pulse due to contraction of</p>	C2	C



		<p>ventricle. Because it has a pulse, the arterial vessels have morphological characteristics such as ....</p> <ol style="list-style-type: none"> <li>far from skin surface</li> <li>the direction of blood is flow out of the heart</li> <li>thick-walled vessels and elastic</li> <li>have valves along the vessel</li> </ol>																											
		<p>11. Blood will come out with a heavy flow, if the injury occur in ....</p> <ol style="list-style-type: none"> <li>veins</li> <li>arteries</li> <li>capillary</li> <li>pulmonary vein</li> </ol>	C4	B																									
6	Mention the characteristics of veins	<p>12. The characteristics of veins are ....</p> <table border="1"> <thead> <tr> <th></th> <th>Vessel wall</th> <th>Bloodstream</th> <th>Location</th> <th>Beat</th> </tr> </thead> <tbody> <tr> <td>a.</td> <td>Thin, less elastic</td> <td>Toward the heart</td> <td>Near the body surface</td> <td>Not felt</td> </tr> <tr> <td>b.</td> <td>Thick, elastic</td> <td>From the heart</td> <td>Hidden</td> <td>Felt</td> </tr> <tr> <td>c.</td> <td>Thin, elastic</td> <td>Toward the heart</td> <td>Hidden</td> <td>Not felt</td> </tr> <tr> <td>d.</td> <td>Thick, less elastic</td> <td>From the heart</td> <td>Near the body surface</td> <td>Felt</td> </tr> </tbody> </table>		Vessel wall	Bloodstream	Location	Beat	a.	Thin, less elastic	Toward the heart	Near the body surface	Not felt	b.	Thick, elastic	From the heart	Hidden	Felt	c.	Thin, elastic	Toward the heart	Hidden	Not felt	d.	Thick, less elastic	From the heart	Near the body surface	Felt	C1	A
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		<p>13. Blood that enters the body through the transfusion process is injected on ....</p> <ol style="list-style-type: none"> <li>muscle</li> <li>arteries</li> <li>veins</li> <li>capillary</li> </ol>	C3	C																									
7	Mention the composition of blood	<p>14. Substances in the body:</p> <ol style="list-style-type: none"> <li>Erythrocyte</li> <li>Hormone</li> <li>Leukocytes</li> <li>Lymph</li> <li>Platelets/Trombocyte</li> <li>Blood plasma</li> </ol> <p>Human blood is composed of numbers ...</p> <ol style="list-style-type: none"> <li>1, 2, 3, 5</li> </ol>	C1	D																									

		<ul style="list-style-type: none"> <li>b. 1, 2, 4, 6</li> <li>c. 1, 3, 4, 6</li> <li>d. 1, 3, 5, 6</li> </ul>		
8	Explain the function of blood plasma	<p>15. Part of the blood that has a function in transport of food extract/nutrient is ....</p> <ul style="list-style-type: none"> <li>a. platelets/trombocyte</li> <li>b. blood plasma</li> <li>c. red blood cells</li> <li>d. white blood cell</li> </ul>	C1	B
9	Explain the function of red blood cells	<p>16. People who live in the highland have more erythrocytes in their body than people who live in the lowland. This is because the air pressure in the high places is lower than the air pressure in the low places, so, during inspiration (breathing in) the amount of air into the lungs in the highland is less. In order to take as much as possible oxygen from the little amount of air that enter the lungs, more erythrocytes are needed, so, what is the function of erythrocyte?</p> <ul style="list-style-type: none"> <li>a. Binds oxygen</li> <li>b. Increases air pressure</li> <li>c. Absorbs carbondioxide</li> <li>d. Decreases air pressure</li> </ul>	C3	A
10	Mention the characteristics of red blood cells	<p>17. Look at the picture!</p>  <p>Based on the picture above, it can be seen that what is meant by the image is ....</p> <ul style="list-style-type: none"> <li>a. unstable shape and have a nucleus; red blood cells</li> <li>b. unstable shape and have a nucleus; white blood cells</li> </ul>	C2	D

		<p>c. unstable and have no nucleus; white blood cell</p> <p>d. round shape, concave in the middle, and have no nucleus; red blood cells</p>		
		<p>18. Part of the blood that the function is to transports oxygen is ....</p> <p>a. platelets/trombocyte</p> <p>b. leukocytes</p> <p>c. erythrocyte</p> <p>d. blood plasma</p>	C1	C
11	Explain the function of white blood cells	<p>19. Part of blood that has a function to fight disease-causing germs/microbes is ....</p> <p>a. blood plasma</p> <p>b. white blood cell</p> <p>c. red blood cells</p> <p>d. serum</p>	C1	B
12	Mention the characteristics of white blood cells	<p>20. Look at the picture below!</p>  <p>Cells that are marked by X letter are ....</p> <p>a. White blood cells, because they have unstable shape and have no nucleus</p> <p>b. Red blood cells, due to the round and biconcave shape and have no nucleus</p> <p>c. Red blood cells, due to the round and biconcave shape and have a nucleus</p> <p>d. White blood cells, because they have unstable shape, and have one nucleus or more (nuclei)</p>	C2	D
		<p>21. Pus (<i>nanah</i>) in the wound is actually ....</p> <p>a. decayed muscle that leach into white blood cells</p> <p>b. damage white blood cells and red blood</p>	C4	C

		<p>cells</p> <p>c. dead skin cells, dead and live white blood cells, and dead and live germs</p> <p>d. frozen platelets/trombocyte</p>																	
13	Distinguish red blood cells with white blood cells	<p>22. Which shows the difference of red blood cells and white blood cells?</p> <table border="1"> <thead> <tr> <th></th> <th>Red blood cells</th> <th>White blood cell</th> </tr> </thead> <tbody> <tr> <td>a.</td> <td>Has no core, flat round, containing hemoglobin</td> <td>Has core, unstable shape, kill/fight foreign substances</td> </tr> <tr> <td>b.</td> <td>unstable shape, not cored</td> <td>Fixed shape, cored</td> </tr> <tr> <td>c.</td> <td>Play a role in blood clotting process</td> <td>Kills germs</td> </tr> <tr> <td>d.</td> <td>Containing O<sub>2</sub> and CO<sub>2</sub></td> <td>Not binding CO<sub>2</sub></td> </tr> </tbody> </table>		Red blood cells	White blood cell	a.	Has no core, flat round, containing hemoglobin	Has core, unstable shape, kill/fight foreign substances	b.	unstable shape, not cored	Fixed shape, cored	c.	Play a role in blood clotting process	Kills germs	d.	Containing O <sub>2</sub> and CO <sub>2</sub>	Not binding CO <sub>2</sub>	C1	A
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14	Explain the function of blood platelets	<p>23. If we get hurt and bleed, the wound will gradually stop bleeding and dry. This is because blood contains ....</p> <p>a. red blood cells/erythrocytes</p> <p>b. platelets/trombocytes</p> <p>c. white blood cells/leukocytes</p> <p>d. blood plasma</p>	C3	B															
15	Explain the blood type	<p>24. If in his red blood cell is not found agglutininogen but in his blood plasm contains agglutinins <math>\alpha</math> and <math>\beta</math>, then the blood type of that person is....</p> <p>a. A</p> <p>b. B</p> <p>c. AB</p> <p>d. O</p>	C1	D															
		<p>25. Doni who want to know his blood type checked his blood in the laboratory. Doni's blood turns to clot when it's spilled by aglutinin <math>\alpha</math>/anti-A and does not clot when it's spilled by aglutinin <math>\beta</math>/anti B. What is Doni's blood type?</p> <p>a. A</p>	C3	A															

		<ul style="list-style-type: none"> <li>b. B</li> <li>c. AB</li> <li>d. O</li> </ul>								
16	Explain blood transfusion	<p>26. Based on the presence of agglutigen and agglutinin in the blood, people with blood type 0 can donate blood to the blood type ....</p> <ul style="list-style-type: none"> <li>a. A and B</li> <li>b. A, B, and 0</li> <li>c. A, B, AB, and 0</li> <li>d. A, B, AB, BA, and 0</li> </ul>	C2	C						
		<p>27. Based on the presence of agglutigen and agglutinin in the blood, blood type AB are called universal recipients because ....</p> <ul style="list-style-type: none"> <li>a. can receive only blood types A and B</li> <li>b. can receive only blood type AB</li> <li>c. can receive only blood type A</li> <li>d. can receive blood types A, B, AB, and O</li> </ul>	C2	D						
		<p>28. Based on the presence of agglutigen and agglutinin in the blood, blood type A can be given to ....</p> <ul style="list-style-type: none"> <li>a. type A and B</li> <li>b. type A, and AB</li> <li>c. type B and AB</li> <li>d. type A and O</li> </ul>	C2	B						
		<p>29. Rahmi had an accident and lost a lot of blood so it should be given a blood transfusion. When tested in the laboratory, the blood clot when it's spilled by agglutinin <math>\beta</math>/anti-B, so, based on the presence of agglutigen and agglutinin in the blood, Rahmi can be transfused by donor with blood type ....</p> <ul style="list-style-type: none"> <li>a. A and O</li> <li>b. AB and O</li> <li>c. B and O</li> <li>d. A and B</li> </ul>	C3	C						
		<p>30. Consider the blood type table of some student below!</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Name of Student</th> <th>Blood group</th> </tr> </thead> <tbody> <tr> <td>Dina</td> <td>O</td> </tr> <tr> <td>Riki</td> <td>B</td> </tr> </tbody> </table>	Name of Student	Blood group	Dina	O	Riki	B	C3	A
Name of Student	Blood group									
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		<table border="1"> <tr> <td>Desta</td> <td>AB</td> </tr> <tr> <td>Nuni</td> <td>B</td> </tr> <tr> <td>Ratih</td> <td>A</td> </tr> <tr> <td>Bobi</td> <td>O</td> </tr> </table> <p>Based on the presence of agglutigen and agglutinin in the blood, if Nuni had an accident and need help, whose blood can be transfused to Nuni?</p> <ol style="list-style-type: none"> <li>Dina, Riki, and Bobi</li> <li>Desta, Riki, and Dina</li> <li>Riki, Bobi, and Ratih</li> <li>Dina, Bobi, and Ratih</li> </ol>	Desta	AB	Nuni	B	Ratih	A	Bobi	O		
Desta	AB											
Nuni	B											
Ratih	A											
Bobi	O											
17	Describes a closed blood circulation in human	<p>31. Human blood circulation is called a closed blood circulation because the blood....</p> <ol style="list-style-type: none"> <li>circulate outside the vessel</li> <li>circulate through the vessel</li> <li>pumped to the heart</li> <li>circulate through the heart twice</li> </ol>	C1	B								
18	Explain the double blood circulation in human	<p>32. The proper sequence for the double blood circulation in humans is ....</p> <ol style="list-style-type: none"> <li>body—left ventricle—left atrium—lungs—right ventricle—right atrium—body</li> <li>body—left atrium—left ventricle—lungs—right atrium—right ventricle—body</li> <li>body—right ventricle—right atrium—lungs—left ventricle—left atrium—body</li> <li>body—right atrium—right ventricle—lungs—left atrium—left ventricle—body</li> </ol>	C1	D								
		<p>33. The human circulatory system called the double blood circulatory system because ...</p> <ol style="list-style-type: none"> <li>in one circulation, blood through the heart twice</li> <li>the heart consists of two atrium and two ventricle</li> <li>circulated through the heart and lungs</li> <li>having two kinds of blood vessels</li> </ol>	C1	A								
		<p>34. Circulation of blood from the heart to the lungs, back again to the heart is ...</p> <ol style="list-style-type: none"> <li>large circulation/systemic circulation</li> <li>small circulation/pulmonary circulation</li> <li>open circulation</li> </ol>	C1	B								

		d. closed circulation		
		35. Blood circulation from the left ventricle to the entire of body, returning again to the right atrium of heart is .... a. open circulation b. small circulation/pulmonary circulation c. closed circulation d. large circulation/systemic circulation	C1	D
19	Describes examples of circulatory disorders	36. Deni went to the doctor with dizziness and weakness complaints, the doctor said that Deni has a condition where the blood is unable to carry enough oxygen for the body. In your opinion, what the name of Deni's disease, and what causes it? a. Anemia, blood volume decreases b. Hypotension, deficiency of blood plasma c. Anemia, deficiency of red blood cells or deficiency of hemoglobin d. Hypotension, blood pressure decreases	C4	C
		37. Dilation of veins in the legs often seen protruding. The disorder is named .... a. varicose veins (varises) b. hemophilia c. hemorrhoid (ambeien) d. anemia	C1	A
		38. Here is what might happen when there are fat deposits in the inner wall of artery, <i>except</i> .... a. plaque in artery → constriction in brain artery → disturbance of nutrient and oxygen supply in brain → stroke b. plaque in artery → unsmooth blood circulation toward heart → blood gather in artery → widen artery → varices c. plaque in artery → constriction in heart artery → disturbance of nutrient and oxygen supply in heart → cardiac muscle die → heart attack d. plaque in artery → constriction in heart artery → disturbance of nutrient and oxygen supply in heart → angina	C4	B
		39. A patient in the hospital undergoing blood tests. Based on laboratory data, his white blood cell	C1	C

		<p>count of less than 8000 per mm<sup>3</sup> blood so it was diagnosed ....</p> <ol style="list-style-type: none"> <li>Anemia</li> <li>Leukaemia</li> <li>Leukopenia</li> <li>Hemophilia</li> </ol>		
		<p>40. Someone has died only because a slash wound in her fingertip. The size of the wound is only about 1 cm, but the blood doesn't stop come out of the finger, so she died from blood loss. The disease is called hemophilia. In your opinion, what caused the hemophilia disease?</p> <ol style="list-style-type: none"> <li>Abnormalities of blood platelets/trombocytes</li> <li>Abnormalities of red blood cells</li> <li>Abnormalities of white blood cell</li> <li>Deficiency of red blood cells</li> </ol>	C3	A