1-ое задание:

1. повышение давления и/или объема крови

2. уменьшение давления и/или объема крови

3. повышение осмолярности крови

4. реабсорбция натрия (Na) и воды

5. сужение артериол

6. реабсорбция NaCl

7. реабсорция воды

Y. ренин

Z. антидиуретический гормон / АДГ / вазопрессин

2 задание

A)

1. НВ
2. НВ
3. В
4. НВ

B)
Ответ: гистидил-аргинин

C)
Ответ: +3

D)
Ответ:-1

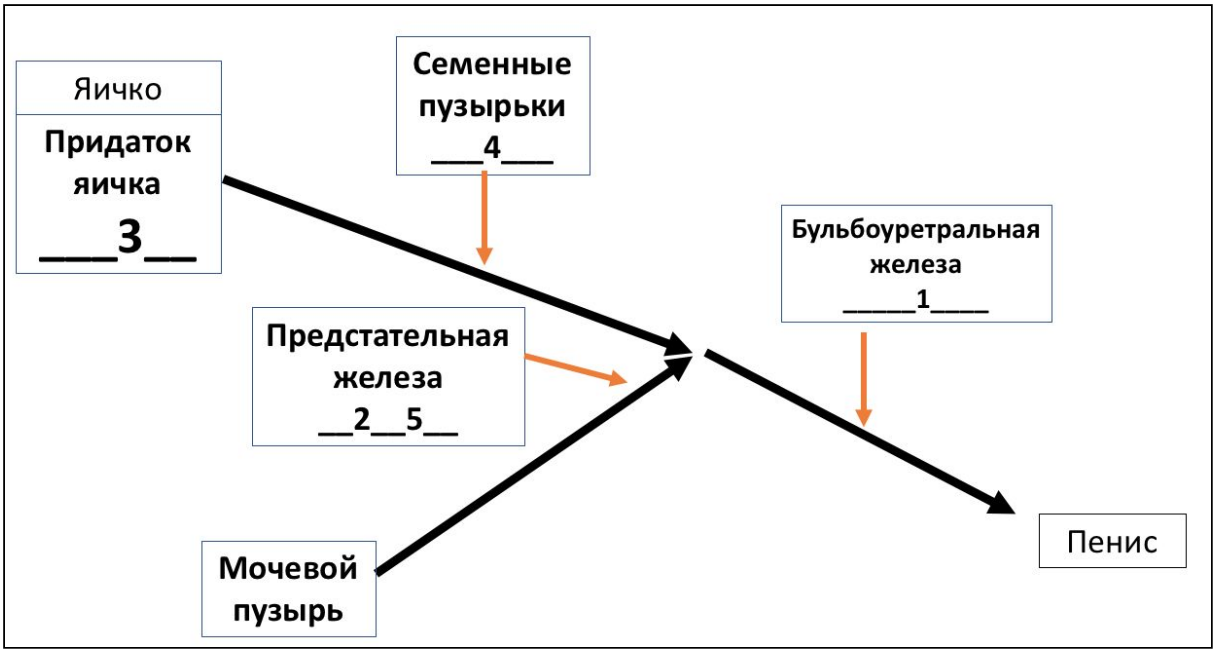
3 задание

A)
Ответ 66,8 кDa

B)

$$M_r = RTS/D(1 - \rho p),$$

4 задание



5 задание
A. 1
B. x
C. x

6 задание

Ответ: 4, 6, 7, 9, 12 (https://www.bsmu.by/downloads/kafedri/k_pat_fiz/26.pdf)

7 задание

	A	B	C	D
середина марта				☑
середина августа		☑	☑	
начало декабря				
конец июля		☑	☑	

4, 6, 7, 14, 15

8 задание

а) 2593
б) 300 minutes
в) They are not equal because some flashes might have been simultaneous, which could not have been seen with a naked eye. This means that the number of cells in the M phase has been underestimated. Therefore, the time of cell cycle has been overestimated. The percentage error is 50%

9 задание.

а.
CEU _____CEU-1 & CEU-4 (еще можно добавить CEU-2)_____

(By examining the data in the column that is second from the left, we can see how many times a haplotype was found in each population. Three of the 6 haplotypes found in the CEU population, CEU-1, CEU-2, and CEU-5, account for (41+33+38)/(41+33+ 1+38+1+6)=112/120=93.3% of this population's haplotypes.)
YRI _____YRI-6_____
(In the YRI population, YRI-6 is the most frequent, though YRI-2, YRI-4, and YRI-5, are much more frequent than YRI-1 and YRI-3. The YRI- 6, YRI-2, YRI-4, and YRU-5 haplotypes together account for (18+14+19+67)/(1+18+1+14+ 19+19+33+15)=118/120=98.3% of the haplotypes in this population.)
JBT+CHB _____JBT+CHB-1_____
(In the combined JBT and CHB populations, JPT-CHB-1 is the most frequent, though JBT+CHB-5 and JBT+CHB-7 are much more frequent than the other haplotypes. These 3 haplotypes together account for (104+39+26)/ (104+4+1+3+39+1+26+2)=169/180=93.9% of the haplotypes in this population. Therefore, some haplotypes are more common in each population than others.)

б. To see which haplotypes are identical, examine the color-coding of each row in the table, and then check to be sure that haplotypes with identical color-coding have identical SNP alleles. The following haplotypes are identical:

CEU-1, YRI-4, and JBT+CHB-5;

CEU-2, YRI-5, and JBT+CHB-7;

CEU-3, YRI-6, and JBT+CHB-8;

CEU-4, YRI-2, and JBT+CHB-1;

CEU-5, YRI-1, and JBT+CHB-3;

and CEU-6, YRI-3, and JBT+CHB-4.

Identical haplotypes do not always have similar frequencies. For example, the haplotype represented by CEU-3, YRI-6, and JBT+CHB-8 is rare in the CEU and JBT+CHB populations, even though it is the most common haplotype in the YRI population. Similarly, the haplotype represented by CEU-4, YRI-2, and JBT+CHB-1 is the most common haplotype in the JBT+CHB population (104/180=57.8%), but less frequent in either the YRI (18/120=15%)or CEU (38/120=31.7%) populations.

в. The two haplotypes represented by JBT+CHB-2 and JBT+CHB-6 are found only in the JBT+CHB population, where they are also uncommon.

г. The analyses in parts (b) and (c) show that different haplotypes do not occur equally frequently in one population, and that the same haplotype can be found in very different frequencies in distinct populations. If a study is done in a particular population to associate a gene with a disease, a response to a medication, or an environmental condition, it is important to know what haplotypes are present in that population, so that these specific haplotypes can be evaluated for an association with the disease or condition. It is also important to know the frequency of haplotypes in different populations, as it influences how the results of association studies are interpreted. Suppose a rare haplotype is strongly associated with disease in one population, but is very common in another population and not associated with disease in that population. One hypothesis to explain this finding is that members of the population showing the association and members of the population not showing an association have a genetic difference near the haplotype.

10.

1.

АВ у людей 120000

АВ в случайной популяции 270000

2.

O = 0,5

A = 0,3

11

11.1

1d

2e

3i

4f

5h

6b

7g

8c

9a

11.2

A. Плоские черви

B. Трематода / сосальщики

C. Хордовые

D. Млекопитающие / Mammalia

E. Моллюски

F. Брюхоногие / gastropoda

12.

A. Травянистое

B. Стержневая

C. прерывисто-непарноперисторассечённый

D. Супротивное

E. Прямостоячий

F. Щиток

G. *Ч(5)Л(5)Т5П(2)

H. Клубень

I. Ягода

J. Растения

K. Покрытосеменные

L. Двудольные

M. Паслёновые

N. Ценокарпный

13. The 5'-ATG-3' primer will anneal to each of the templates only at the 3'-TAC-5' sequence present at each of their 3' ends. Consequently, all of the reaction products will have the same length.

a. The reaction with 3'-TACCCCCCCCCCCCC-5' as a template will not be radioactively, labeled, because only G nucleotides and no A nucleotides will be incorporated. The reactions with the 3'-TACGCATGCATGCAT-5' and 3'-TACTTTTTTTTTTTT-5' templates will produce radioactive products because the 32P from the a-32P-dATP will become incorporated into the product. Since the 3'-TACTTTTTTTTTTTT-5' template has four times as many Ts after the priming site as the 3'-TACGCATGCATGCAT-5' template does, the 3'-TACTTTTTTTTTTTT-5' template will pro- duce a product that is four times as radioactive as the 3'-TACGCATGCATGCAT-5' template.

b. DNA polymerase requires deoxyribonucleotide triphosphates as substrates, not deoxyribonucleotide monophosphates, so none of the reactions will produce radioactively labeled products. The products will differ only in their sequence.

c. Though DNA polymerase I can use g-32P-dATP as a substrate, the radioactively labeled phosphate will not be incorporated in the newly synthesized strand. It will be released as inorganic phosphate The products will differ only in their sequence.

14.
14.1) 0.139-0.146
14.2) 50cM
14.3) **That both proteins are required to prevent cancer OR mutation in both proteins leads to cancer**

15.

sc	(7.6)	*ec*	(10.1)	*cv*	(8.3)	*ct*	(15.2)	*v*

16.
А) плесень должна производить химическое вещество, которое убивает бактерии
Б) принята
В) Грибы

Г) Нарушение синтеза клеточной стенки посредством ингибирования синтеза пептидогликана

17.
А) Kraken!
Б) Sasquatch!(бигфут)
В) Yeti!
Г) Chupacabra!
Д) Jackelope!(кролень)
Е) Altamaha-ha!
Ж) Nessie!(лохнесское чудовище)
З) Sasquatch!(бигфут)

18.
Ответ: 0.2

19.

1. а+б
2. А)
   Участок 1: H = − [(0.4)(ln0.4) + (0.3)(ln0.3) + (0.3)(ln0.3)] = −(−0.37 + (−0.36) + (−0.36)) = 1.09
   Участок 2: H = − (−0.25 + −(0.23) + (−0.23) + (−0.23)) = 0.94
   Б) Участок 1 имеет более высокий индекс разнообразия.
3. г
4. 5

20.
А. Стерильный. Потому что нечетное количество хромосом.
Б. Гибрид сможет стать фертильным, только если произойдет мутация полиплоидия, которая приведет к увеличению количества хромосом вдвое.

21.
А. Подпишите органы:

1. желудок
2. плавательный пузырь
3. гонады / половые железы / половые органы
4. кишечник
5. почка
6. печень
7. сердце
8. пилорические отростки (придатки)

Б. Чешуя

1. ктеноидная
2. циклоидная
3. ганоидная

4. плакоидная