

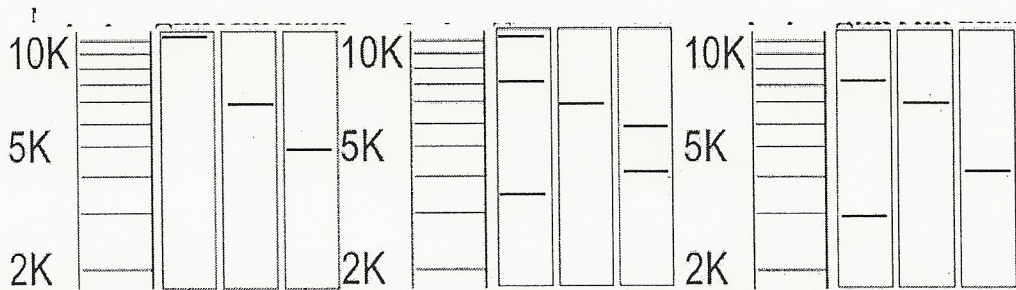
**Theoretical test, part B**  
**ANSWER SHEET**

**Cell biology (10 questions, 51 points).**

**B1. (6 points) (0,5 pt. x 12).**

ER-bound ribosomes	1, 2, 3, 6, 7, 9
Cytoplasmic ribosomes	4, 5, 8, 10, 11, 12
Mitochondrial ribosomes	-

**B2. (9 points) (1 pt. x 9).**



**B2. (3 points) (1 pt. x 3).**

Enzymes:	Chromosome
Glutathione reductase	11
Malate dehydrogenase	15
Galactokinase	7

**B4. (3 points) (0,5 pt. x 6).**

1: A, B, C

2: A, D, G

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B5. (3 points) (0,5 pt. x 6, minus penalty points).

A.	+
B.	+
C.	-
D.	-
E.	+
F.	+

B6. (5 points).

5' UACGCCGAC-3'

B7. (5 points) (0,5 pt. x 8 + 1 pt.- pH=5).

pH	Net charge	Migrates toward
1	+1	A
5	0	C
9	-1	B
12	-2	B

B8. (8 points) (0,5 pt. x 16, minus penalty points).

A	7
B	11
C	3
D	9
E	1,4
F	2,12
G	1
H	5,10
I	1,6
J	9
K	8,11



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**B9. (4 points) (0,5 pt. x 8).**

Strain	Genotype	lactose absent	lactose present
1	$I^- O^c Z^+ Y^-$	0	0
2	$I^+ O^c Z^- / I^+ O^+ Z^+$	x	0
3	$I^- P^+ O^c Z^+ Y^+ / I^+ P^- O^+ Z^+ Y^-$	0	0
4	$I^+ P^+ O^+ Z^+ Y^- / I^- P^+ O^c Z^- Y^+$	x	x

**B10. (5 points) (0,5 pt. x 10).**

1	2	3	4	5	6	7	8	9	10
B	E	K	D	F	I	J	A	C	G

**Plant anatomy and physiology (6 questions, 29 points).**

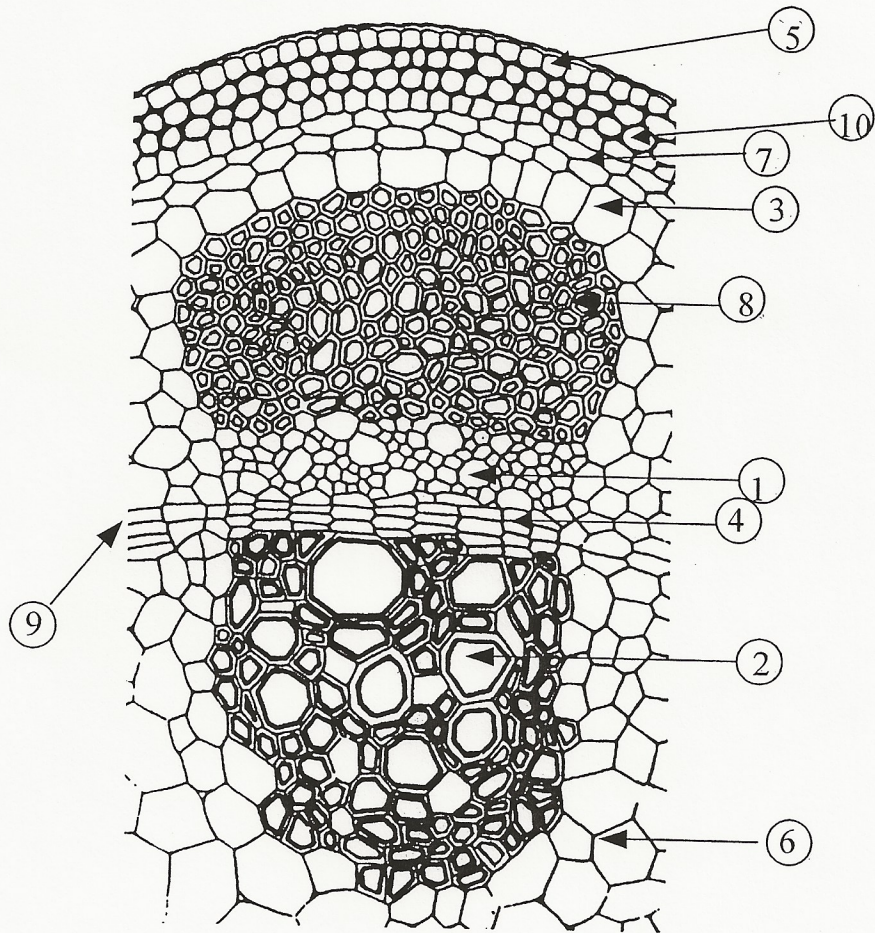
**B11. (45 points) (0,5 pt. x 10, minus penalty points).**

1.	-
2.	+
3.	+
4.	-
5.	+
6.	-
7.	-
8.	-
9.	+
10.	+

**B12. (5 баллов) (0,5pt. x 10).**



CODE:



B13. (5 points) (0,5 pt x 10, minus penalty points).

A.	+
B.	-
C.	-
D.	-
E.	+
F.	-
G.	+
H.	+
I.	-



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J.	-
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B14. (2,5 points) (0,5 pt. x 5, minus penalty points).

A.	-
B.	+
C.	+
D.	-
E.	+

B15. (6,5 points)

01. (2 points) (1 pt. x 2).

	Solution in the beaker	Solution in the membrane
Colorless		
Orange-brown	X	
Pink-red		
Greenish-yellow		
Blue-black		X

02. (2,5 points) (0,5 pt. x 5, minus penalty points).

Experiment	A	B	C	D	E
Hypotonic solution		X	X		

03. (2 points)

Answer: A D E C B



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B16. (5 points) (1 pt. x 5, minus penalty points).

Phylum	Plant number
<i>Bryophyta</i>	I
<i>Lycopodiophyta</i>	III, V
<i>Equisetophyta</i>	IV
<i>Polypodiophyta</i>	II

Anymal anatomy & physiology.(6 questions, 26 points).

B17. (5 points).

.01. (2 points) ( 0,5 pt. x 4, minus penalty points).

A.	-
B.	+
C.	-
D.	+

.02. (1 point).

A.	+
B.	
C.	
D.	
E.	

.03. (2 points) (0,5 x4, minus penalty points).

1,5

A.	-
B.	-



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C.	+
<del>D.</del>	<del>+</del>

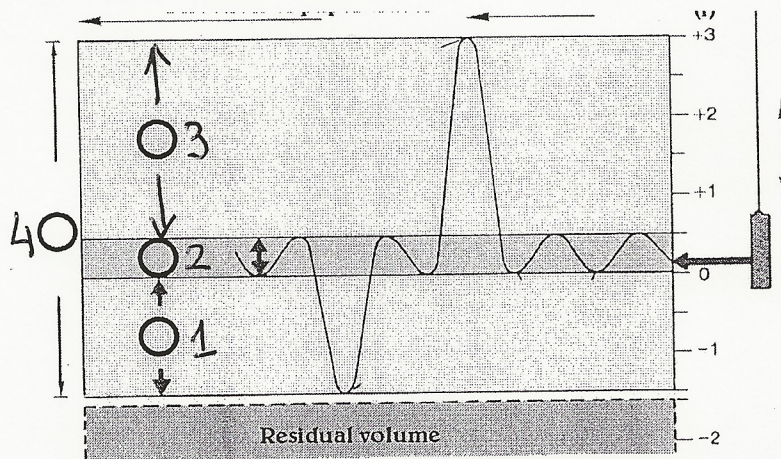
B18. (3 points) (0,5 x 6, minus penalty points).

A.	1
B.	1
C.	1
D.	2
E.	3
F.	3

B19. (3 points).

1.	2.	3.	4.	5.	6.
D	A	E	B	F	C

B20. (4 points)(0,5 pt. x 8).



Respiratory volumes	
Number in the picture and curve	Term letter
1.	A
2.	B
3.	C
4.	D

B21. (7 points).

01. (6 points).

Nistatin ( $\text{Na}^+$ -ionophore\*): \_\_\_\_\_ 3  
Tetradoxin (inhibitor of  $\text{Na}^+$ -channels): \_\_\_\_\_ 1  
Valinomycin ( $\text{K}^+$ -ionophore): \_\_\_\_\_ 2

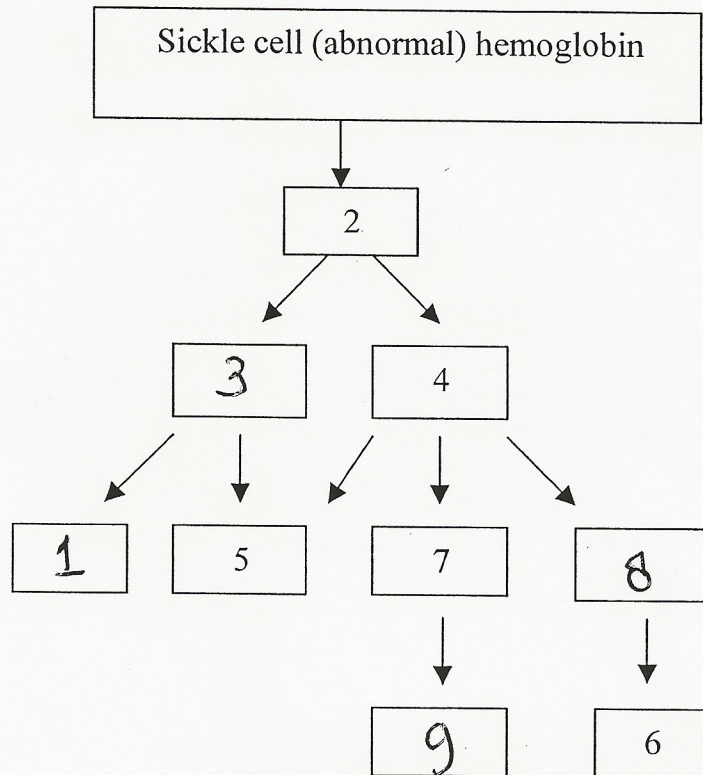


02. (1 points).

2 - \_\_\_\_\_ A \_\_\_\_\_

3 - \_\_\_\_\_ B \_\_\_\_\_

B22. (4 points) (1 pt. x 4).



Ethology (1 question , 8 points ).

B23. SKIPPED



B24. (8 points).

<u>01.</u> (1 point).	2
<u>02.</u> (1 point).	$s = 1,7$
<u>03.</u> (1 point).	$t = 2,9$
<u>04.</u> (1 point).	4
<u>05.</u> (1 point).	$\chi^2 \approx 6,0$
<u>06.</u> (1 point).	5
<u>07.</u> (1 point).	30 %
<u>08.</u> (1 point).	1

Genetics (7 questions, 26 points).

B25. (7,6 points) (0,1 pt. x 77, minus penalty points).

Object	Statement number(s)										
	1	2	3	4	5	6	7	8	9	10	11
<i>Zea mays</i>	X	X	X	X	X	X	X	X			X
<i>Drosophila melanogaster</i>	X	X	X	X	X	X	X				X
<i>Saccharomyces cerevisiae</i>	X	X	X	X	X	X	X				X
<i>Caenorhabditis elegans</i>	X	X	X	X	X	X	X				X
<i>Escherichia coli</i>	X		X						X	X	X
<i>Bacteriophage λ</i>	X		X						X		X
<i>Priones</i>											

B26. (5 points).

01. (4 points) (1 pt. x 4).

		Blood type of each parent	Blood type of a baby
parent 1	Father	AB	B
	Mother	O	
parent 2	Father	A	A
	Mother	O	
parent 3	Father	Unknown	AB
	Mother	A	
parent 4	Father	O	O
	Mother	O	



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**02.** (1 point) (0,5 pt. x 2).

AB or B

**B27.** (3 points) (0,5 pt. x 6).

Term	1	2	3	4	5	6
Answers	D	F	A	E	C	B

**B28.** (4 points) (0.5 x 8).

Group	Peoples number	(%)
O	3024	36
A	3780	45
B	1092	13
AB	504	6

**B29.** (4 points).

**01.** (1 point). F1: 18 cm

**02.** (1 point). F2: 9

**03.** (1 point).

10 cm 12 cm 14cm 16cm 18cm 20cm 22cm 24cm 26cm

**04.** (1 point).

Answer:

70 or 70/256 or 27 %

**B30.** (4 points).

	Expression pattern of Q gene
Mutant A	IV
Mutant B	III
Mutant C	I
Mutant D	II



**Theoretical test, part B**

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**B31. (2 points).**

01. (1 point). : \_\_\_\_\_ **2** \_\_\_\_\_

02. (1 point). : \_\_\_\_\_ **1 & 6** \_\_\_\_\_

**Ecology (5 questions, 17 points).**

**B32. (3 points) (1 pt. x 3).**

Pond	Statement
1.	<b>C</b>
2.	<b>E</b>
3.	<b>G</b>

**B33. (2,5 points) (0,5 pt. x 5).**

Producer	D
Herbivore	B
Omnivore	C
Carnivore	E & A

**B34. (8,5 points).**

01. (2,5 points) (0,5 pt. x 5)

	Lotic water systems	Lenitic water systems
rapid decrease of the light density with the depth		X
normaly staggered water temperature		X
occurence of long-lasting plankton communities		X
streamline body of the animals	X	
animals with suction cups (suckers)	X	



**02.** (3 points) (0,5 pt. x 6).

A.	+
B.	-
C.	+
D.	+
E.	+
F.	-

**03.** (3 points).

A.	from 3-4 to 7-8
B.	from 1 to 3-4
C.	all

**B35.** (1 point).

64 (or 65)

**B36.** (2 points).

**01.** (1 point).

PS + R

**02.**

**02.1.** (1 point).

4

**Biosystematics** (4 questions, 16 points).

**B37.** (3 points).

**01.** (1,8 points) (0,2 pt. x 9).

Australia	6
North America	1
India	5
Africa	3

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Europe	1
Asia	1,4,5
South America	2

**02.** (1.2 points) (0,2 pt. 6).

Marsupialia	6
Proboscidea	5
Carnivora	1
Primates	2,3,4

**B38 skipped B39 skipped**

**B40.** (7 points).

**01.** (1,0 points).

Kingdom	1
Phylum:	2
Classis:	7
Order:	19
Genus:	21

**02.** (1 point).

**03.** (1,2 point).

**04.** (1 point).

**05.** (1 point).

**06.** (0,8 points).

**07.** (1 point).

5			
D,C,A,B,E			
<u>2</u> /4			
6			
A	B	C	D
5	2	4	7
3			