INBO - 2014 **ROLL NO.**

SECTION A: ANSWER SHEET

Q. No.	a	b	c	d	Q. No.	a	b	c	d
1.				✓	20.	✓			
2.	✓				21.			✓	
3.		✓			22.				✓
4.				✓	23.		✓		
5.		✓			24.		✓		
6.				✓	25.				✓
7.			✓		26.		✓		
8.		✓			27.				✓
9.	✓				28.				✓
10.	✓				29.		✓		
11.				✓	30.		✓		
12.		✓			31.		✓		
13.			✓		32.			✓	
14.	✓				33.		✓		
15.	✓				34.		✓		
16.				✓	35.		✓		
17.				✓	36.		✓		
18.		✓			37.			✓	
19.			✓		38.			✓	

	X	Y	Not attempted	
SECTION A				3X - Y =
SECTION B				3X =
Total score =				

SECTION B: ANSWER SHEET

CELL BIOLOGY (15.5 points)

39. (2 points)

Answer: _____45_____minutes

40. (2 points)

Statement	True	False
a.	✓	
b.		✓
c.		✓
d.		✓

41. (2+2 = 4 points)

(A)

Statement	Consistent	Not Consistent
I	✓	
II	✓	
III		✓
IV	✓	

(B)

Graph	Glucokinase	Hexokinase
I		✓
II		✓
III		✓
IV	✓	

42. (3+2 = 5 points)

(A)

No.	Property	Simple Diffusion	Facilitated Diffusion	Active Transport
1.	Transport along the concentration gradient	✓	✓	X
2.	Metabolic energy required	X	X	✓
3.	Direction of transport can switch from one side of the membrane to the other	✓	✓	X
4.	Membrane protein/carrier required	X	✓	✓
5.	Saturation kinetics observed	X	✓	✓
6.	Competitive inhibition observed	X	✓	✓

(B)

Solute	Simple Diffusion	Facilitated Diffusion	Active Transport
H_2O	✓	✓	**X**
Steroid	✓	**X**	**X**
Ca^{++}	**X**	✓	✓
Glucose	**X**	✓	✓

43. (2.5 points)

Answer: II → VII → IV → III → VI

<u>PLANT SCIENCES</u> (10 points)

44. (2 points)

a.	b.	c.	d.
✓			

45. (2 points)

Answer: 2.5×10^{-8} ml/sec or 10^{-7} / 4 ml/sec

46. (2 points)

a.	b.	c.	d.
✓			

47. (2 points)

a.	b.	c.	d.
✓			

48. (2 points)

a.	b.	c.	d.	e.
		✓	✓	

ANIMAL SCIENCES (10.5 points)

49. (3.5 points)

Answer: ii → v → iv → vi → i → iii → vii

50. (2.5 points)

Answers:

A represents ____ 3

B represents ____ 5

C represents ____ 1

D represents ____ 4

E represents ____ 2

51. (1.5 points)

Column A represents: ___ 3

Column B represents: ___ 4

Column C represents: ___ 2

~~52. (3 points)~~

~~Answers:~~

~~A: _____ 2, 4 and 6~~

~~B: _____ 3 and 5~~

~~C: _____ 1~~

<u>GENETICS & EVOLUTION</u> (10.5 points)

53. (2 points)

Answer: _____0.4_____

54. (2 points)

a.	b.	c.	d.
		✓	

55. (2 points)

	Genotype	Presence of M in growth media	Synthesis	No synthesis
i.	$i^+p^+o^+$	Excess		✓
ii.	$i^-p^+o^+$	Excess	✓	
iii.	$i^+p^-o^+$	Absent		✓
iv.	$i^+p^+o^-$	Excess	✓	

56. (2.5 points)

Statement	True	False
a.	✓	
b.	✓	
c.		✓
d.		✓
e.		✓

57. (2 points)

	Genotypes	**Types**	**No. of gametes produced**
A.	+++ and abc	NCO	336
B.	+bc and a++	SCO1	40
C.	ab+ and ++c	SCO2	20
D.	a+c and +b+	DCO	4

ETHOLOGY (5 points)

58. (5 points)

Predictions	**Hypothesis 1**	**Hypothesis 2**	**Hypothesis 3**	**Hypothesis 4**
Infanticides will occur shortly after takeover and end when the infants of the males that have taken over are born				✓
Infanticides should occur at high population densities	✓	✓		
Females should become sexually receptive again after the new males have taken over				✓
Infanticides will occur shortly after takeover and end when the males have recovered from their energy deficits			✓	
Reverse infanticide by females should be observed for preferential access to males which exhibit parental care				✓

ECOLOGY (8 points)

59. (3 points)

a. __1.2____% (upto one decimal place only)

b. __16.7_____ % (upto one decimal place only)

c. __43.8 or 43.9____ % (upto one decimal place only)

d. _____18787_____

60. (2 points)

Statement	True	False
I.	✓	
II.		✓
III.		✓
IV.	✓	

61. (3 points)

r- selected populations	*K* – selected populations
A	B
C	E
D	F

BIOSYSTEMATICS (2.5 points)

62. (2.5 points)

Statement	True	False
1.		✓
2.	✓	
3.	✓	
4.	✓	
5.		✓

********** END OF SECTION B **********