

INDIAN NATIONAL BIOLOGY OLYMPIAD- 2011

ANSWER SHEET

30th January, 2011

Time: 2 hrs

Roll No.

Centre: _____

- Please write your INBO roll number on the top of this page in the space provided.
- Please fill the top half of the Performance Card attached to this answer sheet. **Do not detach the Performance Card.**
- Please fill in all the data below correctly. The contact details provided here would be used for all further correspondence.

Full Name (Block Letters): _____

Male / Female Date of Birth (dd/mm/yyyy): _____

Residential address (include city and PIN code): _____

Residential Phone No. with STD Code: _____

Mobile number: _____

E-mail address: _____

Class: X / XI / XII

Board: ICSE / CBSE / State Board / Other

I have read the Procedural Rules of INBO and agree to abide by them.

Roll No.:

Signature:

Place:

Date:

HOMI BHABHA CENTRE FOR SCIENCE EDUCATION
Tata Institute of Fundamental Research
V. N. Purav Marg, Mankhurd, Mumbai 400 088.

ANSWER SHEET: SECTION A

Q. No.	a	b	c	d	Q. No.	a	b	c	d
1					22				
2					23				
3					24				
4					25				
5					26				
6					27				
7					28				
8					29				
9					30				
10					31				
11					32				
12					33				
13					34				
14					35				
15					36				
16					37				
17					38				
18					39				
19					40				
20					41				
21									

Signature of Invigilator: _____

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

ANSWER SHEET: SECTION B**CELL BIOLOGY (15)**

42. (2 points)

Answer: _____ 25

43. (1 x 3 = 3 points)

No.	Cell type	Carry out oxidative phosphorylation	Contain genetic material	Can grow in size	Can undergo cell division
1	RBCs	-	-	-	-
2	Neurons	√	√	√	-
3	Sperms	√	√	-	-

44. (0.5 x 4 = 2 points)

A: _____ 5

B: _____ 7

C: _____ 1

D: _____ 4

45. (2 x 2 = 4 points)

i. Duration of one complete cell cycle: _____ 10 hrs

ii. Duration of the S phase: _____ 6 hrs

46. (2 points)

a.	b.	c.	d.
	√		

47. (2 points)

a.	b.	c.	d.
		√	

PLANT SCIENCES (6)

48. (2 points)

a.	b.	c.	d.
	√		

49. (2 points)

Answer: _____ 198.41 gm

50. (2 points)

a.	b.	c.	d.
	√		

ANIMAL SCIENCES (5)

51. (1.5 x 2 = 3 points)

A: _____ I, III, IV

B: _____ II, V, VI

52. (2 points)

a.	b.	c.	d.
√			

GENETICS & EVOLUTION (14)

53. (0.5 x 4 = 2 points)

a. _____ A

b. _____ H

c. _____ A

d. _____ H

54. (0.5 x 4 = 2 points)

No.	Genotype of offspring	Number of offspring
I.	$\frac{p^+ \quad q^+ \quad r^+}{p \quad q \quad r}$	678
II.	$\frac{p^+ \quad q \quad r}{p \quad q \quad r}$	97
III.	$\frac{p \quad q \quad r^+}{p \quad q \quad r}$	197
IV.	$\frac{p^+ \quad q \quad r^+}{p \quad q \quad r}$	28

55. (3 points)

a.	b.	c.	d.	e.
	√			

56. (2 points)

a.	b.	c.	d.
		√	

57. (2 points)

a.	b.	c.	d.	e.
			√	

58. (0.5 x 6 = 3 points)

Genotype	Constitutively formed	Synthesis repressed	Synthesis Induced
$lacI^+ lacO^+ lacZ^+$			√
$lacI^- lacO^+ lacZ^+$	√		
$lacI^+ lacO^C lacZ^+$	√		
$lacI^- lacO^+ lacZ^+ / lacI^+$			√
$lacI^S lacO^+ lacZ^+$		√	
$lacI^S lacO^+ lacZ^+ / lacI^+$		√	

ETHOLOGY (2)

59. (2 points)

a.	b.	c.	d.
√			

ECOLOGY (7)

60. (2 points)

a.	b.	c.	d.
√			

61. (1 x 2 = 2 points)

a.	b.	c.	d.	e.
			√	√

62. (1 x 3 = 3 points)

Community	Dominance index (high / low)	Productivity (high / low)	Stability (high / low)	Diversity (high / low)	Production/ Respiration Ratio (<1, =1, >1)
Monoculture crop	high	high	low	low	> 1
Rain forest	low	low	high	high	=1
Climax community	low	low	high	high	=1

BIOSYSTEMATICS (10)

63. (0.5 x 4 = 2 points)

I: _____ X

II: _____ Y

III: _____ Z

IV: _____ Z

64. (2 points)

a.	b.	c.	d.
			√

65. (0.5 x 6 = 3 points)

A: _____ Shark

B: _____ Salamander

C: _____ Hagfish

D: _____ Elephant

E: _____ Sparrow

F: _____ Viper

66. (0.5 x 6 = 3 points)

I. _____ Eudicotyledons

II. _____ Monocotyledons

III. _____ Magnolids

IV. _____ Basal angiosperms

VI. _____ Conifers

VII. _____ Pteridophytes
