

Indian National Biology Olympiad (INBO) -2025

Homi Bhabha Centre for Science Education (HBCSE-TIFR)

Answer Booklet

Time: 2 hrs

ROLL NO. - -

Max. Marks: 300

- Please write the last four digits of your roll number on the top of **every page of this answer booklet** in the space provided.
- Before starting, please ensure that you have received a copy of the answer booklet containing a total of 13 numbered sheets.
- **This answer booklet must be returned to the invigilator.**
- Do not write anything on the question paper. All rough work can be done in the space provided at the end of this answer booklet.

Signature of Invigilator: _____

(Do not write anything below this line.)

	X	Y	Not attempted	
Section A				$3X - Y =$
Section B				$3X =$
Total score =				

SECTION A

Q. No.	a	b	c	d	Q. No.	a	b	c	d
1.					15.				
2.					16.				
3.					17.				
4.					18.				
5.					19.				
6.					20.				
7.					21.				
8.					22.				
9.					23.				
10.					24.				
11.					25.				
12.					26.				
13.					27.				
14.									

	X	Y	Not attempted	
Section A				$3X - Y =$

SECTION B

CELL BIOLOGY (18 Points)

28. (2 points)

Answer: _____ kDa

Calculations:

29. (2.5 points)

	a.	b.	c.	d.	e.
True					
False					
Cannot be concluded					

30. (2 points)

	a.	b.	c.	d.
Possible				
Not possible				

31. (2 points)

	a.	b.	c.	d.
True				
False				

32. (3 points)**(A)**

Location of the protein	Cytosolic	Trans membrane	Secretory

(B)

Likely site of phosphorylation	C	S2	N	Y

(C)

Likely site of glycosylation	C	S1	N	Y

33. (2.5 points)

	a.	b.	c.	d.	e.
Correct					
Incorrect					

34. (2 points)

Answer: _____ minutes

Calculations:

35. (2 points)

	a.	b.	c.	d.
True				
False				

PLANT SCIENCES (13.5 points)

36. (2 points)

	a.	b.	c.	d.

37. (2 points)

	a.	b.	c.	d.
Correct				
Incorrect				

38. (2 points)

(i) M: _____

(ii) N: _____

(iii) O: _____

(iv) P: _____

39. (4 points)

Pollination by	Type/s of flower/s
Bat	
Bird	
Insect	
Wind	

40. (3.5 points)

(A)

	Pressure potential (Ψ_p)	Solute potential (Ψ_s)	Water potential (Ψ_w)
Cell P (at equilibrium after immersion)			
Cell Q (at equilibrium after immersion)			

(B)

Answer: _____ MPa

(C)

a.	b.	c.

ANIMAL SCIENCES (11 points)

41. (4 points)

(A) Answer: _____ mL O₂/min

Calculations:

(B) Answer: _____ mL/min

Calculations:

42. (2 points)

	a.	b.	c.	d.
Correct				
Incorrect				

43. (2 points)

a.	b.	c.	d.

44. (3 points)

I: Green Crab: _____

II: Mussel: _____

III: Grass Shrimp: _____

GENETICS & EVOLUTION (11 points)

45. (2 points)

	a.	b.	c.	d.
True				
False				

46. (2 points)

(A)

a.	b.	c.	d.

(B) Answer: _____ %

(C) Answer: _____ %

(D) Answer: _____ %

47. (2 points)

Answer: _____

Calculations:

48. (2 points)

	a.	b.	c.	d.
Correct				
Incorrect				

49. (3 points)

Genetic Map:

ECOLOGY (7 points)**50.** (2 points)

	a.	b.	c.	d.
Has positive effect				
Does not have positive effect				

51. (3 points).

a. Floral induction : _____

b. Both heat and human vision: _____

c. Germicidal: _____

52. (2 points)

	a.	b.	c.	d.
True				
False				

ETHOLOGY (6.5 points)**53.** (4.5 points)

Condition	Relationship 1	Genetic relatedness (r_1)	Preference (>, < or =)	Relationship 2	Genetic relatedness (r_2)
(i)	Queen with her daughter's sons			Queen with her own sons	
(ii)	Non egg laying worker with egg laying sister's sons			Non egg laying worker with brother	
(iii)	Egg laying worker with brother			Egg laying worker with own son	

54. (2 points)

	a.	b.	c.	d.
True				
False				

BIOSYSTEMATICS (6 points)

55. (2 points)

	a.	b.	c.	d.
True				
False				

56. (4 points)

1: _____

2: _____

3: _____

4: _____

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

ROUGH WORK