ANSWER KEY : SECTION A

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

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

SECTION B: ANSWER KEY

<u>CELL BIOLOGY</u> (16 points)

35. (2 points)

(A) Answer: _____5_____

(B)

Sample	Muscular dysfunction	Cardiac dysfunction	Normal profile
P			✓
Q	✓		
R		✓	

36. (5 points)

No.	Condition	Final outcome			Reason
		Favour re-association	Not favour re-association	No effect on re-association	
1.	Solution with high ionic strength	✓			II
2.	Temperature just below the melting temperature	✓			I

3.	Temperature much below the melting temperature		✓		V
4.	Low concentration of DNA		✓		III
5.	Small size of fragments	✓			IV

37. (4 points)

Features	**Processes**			
	Glycolysis	**Kreb's cycle**	**Oxidative phosphorylation**	**Photosynthesis**
Evolution of CO_2	**X**	✓	**X**	**X**
Synthesis of ATP	✓	✓	✓	✓
Utilization of ATP	✓	**X**	**X**	✓
Utilization of O_2	**X**	**X**	✓	**X**
Formation of NADH	✓	✓	**X**	**X**

38. (5 points)

Source of fibroblasts	Source of LDL	Expected outcome / interpretation
Normal individual	Normal individual	LDL is internalized by receptor-mediated endocytosis
Normal individual	Affected individual	III,IV
Affected individual	Normal individual	I, II
Affected individual	Affected individual	V

PLANT SCIENCES (7 points)

39. (4 points)

Features	Red algae	Green algae	Mosses	Gymnosperms	Angiosperms
Apical meristem	X	X	X	✓	✓
Alternation of generation	✓	✓	✓	✓	✓
Double fertilization	X	X	X	X	✓
Presence of chlorophyll a and b	X	✓	✓	✓	✓

40. (3 points)

Answers:

X: _____ II, VII

Y: _____ IV

Z: _____ III

ANIMAL SCIENCES (12.5 points)

41. (2 points)

Answers:

Graph A: ____ II

Graph B: ____ III

Graph C: ____ I

Graph D: ____ IV

42. (2 points)

	Description	**Yes**	**No**
a.	Cellular dehydration	✓	
b.	Decreased extracellular osmotic pressure		✓
c.	Increased renal glucose reabsorption		✓
d.	Polyuria (excessive urine output)	✓	

43. (2 points)

Statements	True	False
1. Secretion of ACTH from anterior pituitary gland will be high.	✓	
2. Adrenal glands will be enlarged.	✓	
3. Secretion of Corticotropin Releasing Hormone from hypothalamus will be low.		✓
4. Precursors for Cortical hormone synthesis will accumulate and may be secreted from adrenal gland.	✓	

44. (4 points)

a. Sponge 1

b. Hydra 1

c. Octopus 4

d. Planarian 1

e. Round worm 2

f. Bony fish 4

g. Prawn 3

h. Earthworm 4

45. (2 points)

No.	A	B
1.	Ciliary locomotion	IV
2.	Looping movements	VI
3.	Alternate movements of multiple limbs	II
4.	Alternate contraction circular and longitudinal muscles in the body	I

GENETICS & EVOLUTION (11.5 points)

46. (2 points) Options ‘a’ and /or ‘c’ have been marked as correct.

a.	b.	c.	d.	e.	f.
✓		✓			

47. (2 points)

Answer: _____32%

48. (2 points)

Answer: _____1/3000 or 0.0003 or 0.03% _____

49. (1+2+1+2 = 6 points)

(A)

a.	b.	c.	d.
✓			

(B)

(B.1) Answer: _____1blue:1red:2white_____

(B.2.) Answer: _____25% or ¼ or 0.25_____

(C)

White precursor → _____red colour_____ → ____blue colour_____ → _____ → _____.

50. (0.5+0.5+1+0.5+1 = 3.5 points)

(A)

a.	b.	c.	d.
	✓		

(B)

a.	b.	c.	d.
	✓		

(C) Value of the statistic: _____5.17_____

(D) Degrees of freedom:_____2_____

(E) Answer: ____0.90_____

ETHOLOGY (4.5 points)

51. (4.5 points)

(A)

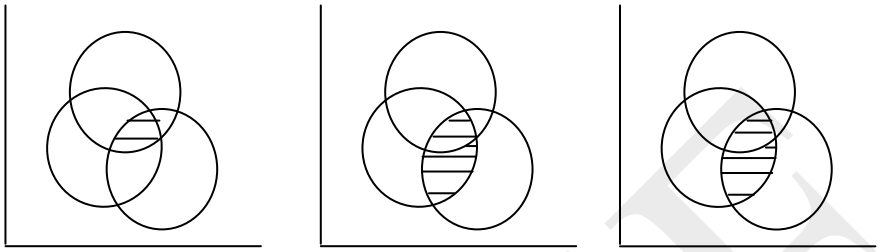
Statements	True	False
a. Larger the bivalve size, greater will be the effort to carry it to a height and hence profitability of the prey will always decrease.		✓
b. Smaller the size of the bivalve, easier it is to capture. Also carrying it to a height is energetically less demanding. Hence profitability of such a prey is always greater than the larger bivalve.		✓
c. Camouflaged bivalves will show greater profitability as compared to the non-camouflaged ones.		✓
d. Harder the shells of the bivalve, more will be the energy content and thus more will be the profitability.		✓
e. Larger bivalves will always show greater profitability provided they do not require extra efforts to break and open the shells.	✓	

(B)

a.	b.	c.	d.
		✓	

ECOLOGY (9 points)

52. (3 points)



Realised niche of A Realised niche of B Realised niche of C

53. (2 points)

Answers:

1: ___D

2: ___A

3: ___B

4: ___C

54. (2 points)

Answer:

r ⟶ k

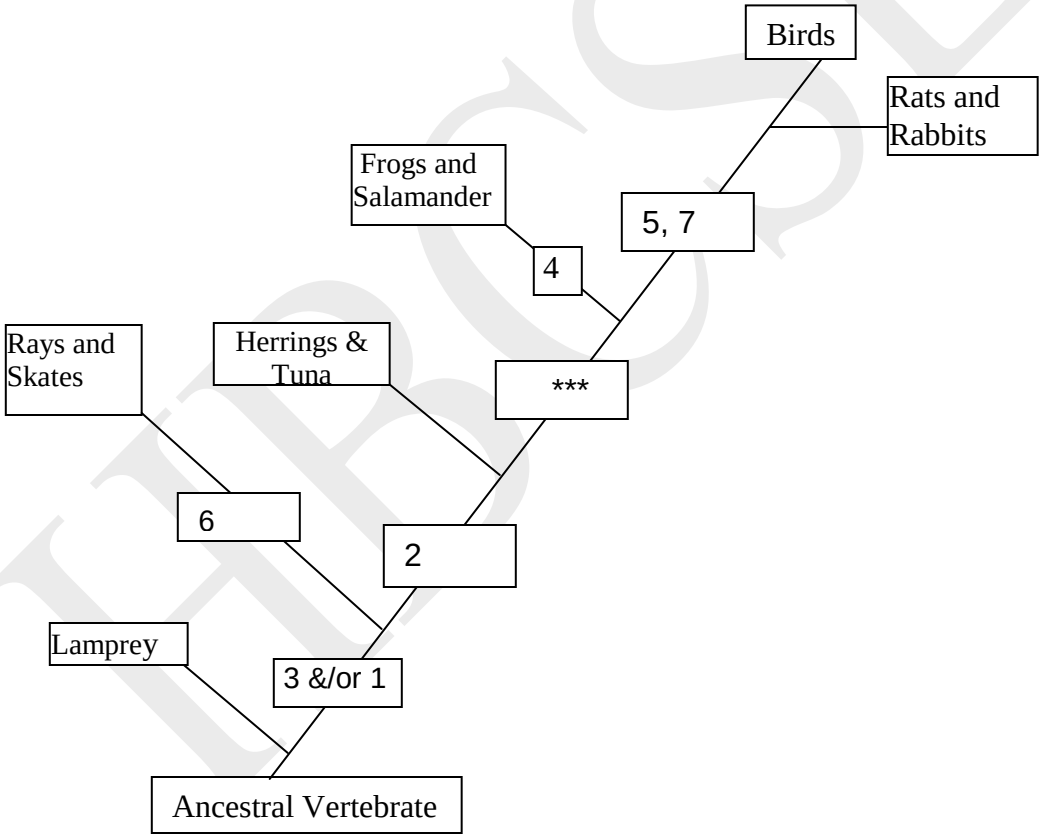
B C A D

55. (2 points)

Statement	1	2	3	4
Conclusion	✓	✓	**X**	**X**

BIOSYSTEMATICS (3.5 points)

56. (3.5 points)



*** 1 or blank (if 1 has already been written in the lowermost box).

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