Zoology (XL-T)

Question Number : 76 **Correct : 1 Wrong : -0.33**

The characteristic feature of deuterostomes is depicted by

(A) coelom formed by the hollowing out of a previously solid cord of mesodermal cells
(B) spiral and determinate cleavage
(C) formation of mouth from blastopore
(D) formation of anus from blastopore

Question Number : 77 **Correct : 1 Wrong : -0.33**

One of the most remarkable features of evolution is the formation of amnion and allantoin. This appeared for the "first time" in evolutionary time scale in

(A) reptiles
(B) birds
(C) fishes
(D) humans

Question Number : 78 **Correct : 1 Wrong : -0.33**

A woman with blood group A gave birth to a baby with blood group AB. The blood group of the father would be

(A) only AB
(B) only B
(C) either AB or B
(D) blood group O

Question Number : 79 **Correct : 1 Wrong : -0.33**

The enzyme amylase can break alpha glycosidic linkages between glucose monomers. Hence, amylase can digest which one of the following carbohydrates?

(A) Cellulose
(B) Starch
(C) Chitin
(D) Xylans

Question Number : 80 **Correct : 1 Wrong : -0.33**

The metabolic pathway which is common to both fermentation and cellular respiration is

(A) the TCA cycle
(B) the electron transport chain
(C) glycolysis
(D) synthesis of acetyl CoA from pyruvate

Question Number : 81 **Correct : 1 Wrong : -0.33**

A female "**Spotted sand piper**" courts males repeatedly. This behavior can be explained by the term

(A) polyandry
(B) polygyny
(C) monogamy
(D) sexual cannibalism

Question Number : 82 **Correct : 1 Wrong : -0.33**

Malaria is caused by *Plasmodium* species, which is a parasite having a complex life cycle. The fusion between male and female gametocytes of *Plasmodium* happens inside

(A) human liver
(B) human RBCs
(C) mosquito midgut
(D) mosquito salivary glands

Question Number : 83 **Correct : 1 Wrong : -0.33**

Aromatase inhibitors are often prescribed for post-menopausal women to treat estrogen receptor positive breast cancer patients, because these class of drugs

(A) reduce prostaglandin biosynthesis
(B) reduce the level of estradiol biosynthesis
(C) inhibit conversion of testosterone to dihydrotestosterone
(D) are non-toxic in post-menopausal women

Question Number : 84 **Correct : 1 Wrong : -0.33**

The covalent modification performed by kinases which regulate proteins in signaling pathways is

(A) glycosylation
(B) methylation
(C) ubiquitination
(D) phosphorylation

Question Number : 85 **Correct : 1 Wrong : -0.33**

Which one of the following statements is NOT correct?

(A) During metaphase, the 2 copies of chromosomal DNA are held together at the centromere
(B) The short arm of chromosomes is referred to as p and the long arm is referred to as q
(C) The terminal structures at the end of the chromatids are referred to as telomeres
(D) The terms heterochromatin and euchromatin refer to the active and repressed regions of the chromosome respectively

Question Number : 86 **Correct : 2 Wrong : 0**

A particular species is found to have 2n=16 chromosomes. The number of linkage groups in this species will be _____

Question Number : 87 **Correct : 2 Wrong : 0**

In the Meselson and Stahl experiment, *E. coli* was grown in a medium containing $^{15}NH_4Cl$. After 24 hours, *E. coli* were transferred to medium containing $^{14}NH_4Cl$. After the fourth generation in medium containing $^{14}NH_4Cl$, the ratio between hybrids ($^{15}N/^{14}N$) and light ($^{14}N/^{14}N$) labeled DNA will be 1: *n*, where the value of *n* is ____

Question Number : 88 **Correct : 2 Wrong : 0**

The population data present in an island is as follows

Genotype	Number
AA	300
Aa	500
aa	200
Total	1000

The allele frequency of *A* (upto two decimals) will be _____

Question Number : 89 **Correct : 2 Wrong : 0**

A cell in G1 phase has 16 chromosomes. The total number of chromatids that would be found per cell during Metaphase II of meiosis are _____

Question Number : 90 **Correct : 2 Wrong : -0.66**

Upon activation of phospholipase C by ligand binding to G-protein coupled receptor, the Ca^{+2} concentration in cytosol will

(A) decrease due to blockage of $InsP_3$ gated channel on endoplasmic reticulum
(B) decrease due to blockage of $InsP_3$ gated channel on plasma membrane
(C) increase due to efflux of Ca^{+2} from $InsP_3$ gated channel on mitochondria
(D) increase due to efflux of Ca^{+2} from $InsP_3$ gated channel on endoplasmic reticulum as well as influx of Ca^{+2} from $InsP_3$ gated channel on plasma membrane

Question Number : 91 **Correct : 2 Wrong : -0.66**

Match the following molecules in Group I with their function in Group II

Group I	**Group II**
P. Transferrin	(i) Uptake of glucose
Q. Insulin	(ii) Binds iron
R. α-macroglobulin	(iii) Substratum for cell attachment
S. Fibronectin	(iv) Proteinase inhibitor
	(v) Binds to oxygen in RBC

(A) P-ii; Q-i; R-iv; S-iii
(B) P-ii; Q-i; R-v; S-iii
(C) P-ii; Q-i; R-iv; S-ii
(D) P-i; Q-iii; R-ii; S-v

Question Number : 92 **Correct : 2 Wrong : -0.66**

If a heavy chain of an antibody molecule weighs 65,000 Daltons (Da) and a light chain weighs 25,000 Da, the approximate calculated weight of an IgM antibody in Da will be

(A) 90,000
(B) 180,000
(C) 360,000
(D) 900,000

Question Number : 93 **Correct : 2 Wrong : -0.66**

MATCH the signaling pathways in Group I with their functions in Group II, during the process of development

Group I	**Group II**
P. Hedgehog signaling	(i) Involved in signaling at 4-cell embryo stage in *C. elegans* through *glp 1* expression
Q. Hox proteins	(ii) Involves frizzled receptor on target cell membrane and establish polarity in insects
R. Wnt signaling	(iii) Plays critical role in facial morphogenesis in vertebrates and its mutation causes cyclopia
S. Notch signaling	(iv) Required for *T-bx* transcription factor expression for vertebrate limb development

(A) P-iii; Q-ii; R-iv; S-i
(B) P-iii; Q-iv; R-ii; S-i
(C) P-iv; Q-iii; R-ii; S-i
(D) P-iii; Q-iv; R-i; S-ii

Question Number : 94 **Correct : 2 Wrong : 0**

In a population which is in Hardy-Weinberg equilibrium, the frequency of the recessive genotype of a certain trait is 0.09. The percentage of individuals with heterozygous genotype is __ %

Question Number : 95 **Correct : 2 Wrong : 0**

An enzyme preparation has activity of 2 Units per 20 µl, and protein concentration 0.4 mg/ml. The specific activity (Units/mg) of this enzyme will be ___

General Aptitude

Question Number : 116 **Correct : 1 Wrong : -0.33**

The event would have been successful if you _____able to come.

(A) are (B) had been (C) have been (D) would have been

Question Number : 117 **Correct : 1 Wrong : -0.33**

There was no doubt that their work was thorough.

Which of the words below is closest in meaning to the underlined word above?

(A) pretty (B) complete (C) sloppy (D) haphazard

Question Number : 118 **Correct : 1 Wrong : -0.33**

Four cards lie on a table. Each card has a number printed on one side and a colour on the other. The faces visible on the cards are 2, 3, red, and blue.

Proposition: If a card has an even value on one side, then its opposite face is red.

The cards which MUST be turned over to verify the above proposition are

(A) 2, red (B) 2, 3, red (C) 2, blue (D) 2, red, blue

Question Number : 119 **Correct : 1 Wrong : -0.33**

What is the value of x when $81 \times \left(\frac{16}{25}\right)^{x+2} \div \left(\frac{3}{5}\right)^{2x+4} = 144$?

(A) 1 (B) -1 (C) -2 (D) Cannot be determined

Question Number : 120 **Correct : 1 Wrong : -0.33**

Two dice are thrown simultaneously. The probability that the product of the numbers appearing on the top faces of the dice is a perfect square is

(A) 1/9 (B) 2/9 (C) 1/3 (D) 4/9

Question Number : 121 **Correct : 2 Wrong : -0.66**

Bhaichung was observing the pattern of people entering and leaving a car service centre. There was a single window where customers were being served. He saw that people inevitably came out of the centre in the order that they went in. However, the time they spent inside seemed to vary a lot: some people came out in a matter of minutes while for others it took much longer.

From this, what can one conclude?

(A) The centre operates on a first-come-first-served basis, but with variable service times, depending on specific customer needs.
(B) Customers were served in an arbitrary order, since they took varying amounts of time for service completion in the centre.
(C) Since some people came out within a few minutes of entering the centre, the system is likely to operate on a last-come-first-served basis.
(D) Entering the centre early ensured that one would have shorter service times and most people attempted to do this.

Question Number : 122 **Correct : 2 Wrong : -0.66**

A map shows the elevations of Darjeeling, Gangtok, Kalimpong, Pelling, and Siliguri. Kalimpong is at a lower elevation than Gangtok. Pelling is at a lower elevation than Gangtok. Pelling is at a higher elevation than Siliguri. Darjeeling is at a higher elevation than Gangtok.

Which of the following statements can be inferred from the paragraph above?

i. Pelling is at a higher elevation than Kalimpong
ii. Kalimpong is at a lower elevation than Darjeeling
iii. Kalimpong is at a higher elevation than Siliguri
iv. Siliguri is at a lower elevation than Gangtok

(A) Only ii (B) Only ii and iii (C) Only ii and iv (D) Only iii and iv

Question Number : 123 Correct : 2 Wrong : -0.66

P, Q, R, S, T and U are seated around a circular table. R is seated two places to the right of Q. P is seated three places to the left of R. S is seated opposite U. If P and U now switch seats, which of the following must necessarily be true?

(A) P is immediately to the right of R
(B) T is immediately to the left of P
(C) T is immediately to the left of P or P is immediately to the right of Q
(D) U is immediately to the right of R or P is immediately to the left of T

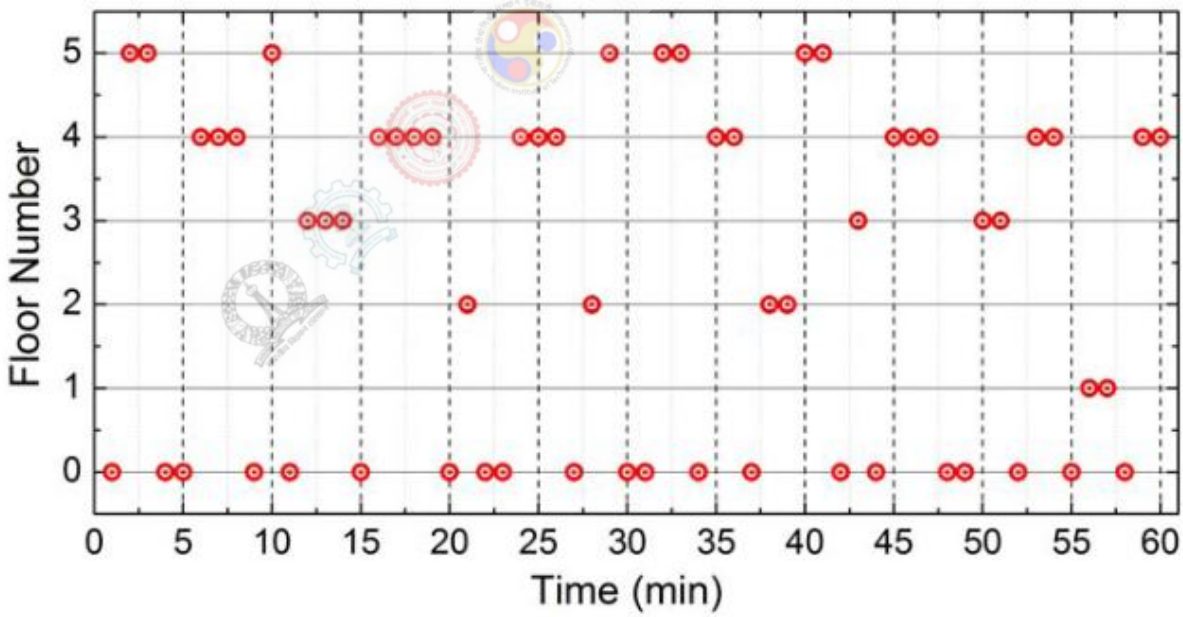
Question Number : 124 Correct : 2 Wrong : -0.66

Budhan covers a distance of 19 km in 2 hours by cycling one fourth of the time and walking the rest. The next day he cycles (at the same speed as before) for half the time and walks the rest (at the same speed as before) and covers 26 km in 2 hours. The speed in km/h at which Budhan walks is

(A) 1 (B) 4 (C) 5 (D) 6

Question Number : 125 Correct : 2 Wrong : -0.66

The points in the graph below represent the halts of a lift for durations of 1 minute, over a period of 1 hour.



Which of the following statements are correct?

i. The elevator never moves directly from any non-ground floor to another non-ground floor over the one hour period
ii. The elevator stays on the fourth floor for the longest duration over the one hour period

(A)) Only i (B) Only ii (C) Both i and ii (D) Neither i nor ii

Q. No.	Type	Section	Key	Marks
1	MCQ	XL-P	A	1
2	MCQ	XL-P	D	1
3	MCQ	XL-P	D	1
4	MCQ	XL-P	B	1
5	MCQ	XL-P	A	1
6	MCQ	XL-P	C	2
7	MCQ	XL-P	B	2
8	MCQ	XL-P	C	2
9	MCQ	XL-P	C	2
10	MCQ	XL-P	B	2
11	MCQ	XL-P	A	2
12	NAT	XL-P	13260 to 13285	2
13	MCQ	XL-P	A	2
14	MCQ	XL-P	C	2
15	MCQ	XL-P	A	2
16	MCQ	XL-Q	A	1
17	MCQ	XL-Q	D	1
18	MCQ	XL-Q	C	1
19	NAT	XL-Q	3.0 to 3.0	1
20	MCQ	XL-Q	B	1
21	MCQ	XL-Q	D	1
22	MCQ	XL-Q	C	1
23	MCQ	XL-Q	A	1
24	MCQ	XL-Q	C	1
25	MCQ	XL-Q	D	1
26	NAT	XL-Q	7575 to 7576	2
27	NAT	XL-Q	722 to 725	2
28	NAT	XL-Q	0.19 to 0.20	2
29	MCQ	XL-Q	D	2
30	NAT	XL-Q	9.0 to 9.0	2
31	MCQ	XL-Q	B	2
32	MCQ	XL-Q	A	2
33	MCQ	XL-Q	A	2
34	MCQ	XL-Q	A	2
35	MCQ	XL-Q	B	2
36	MCQ	XL-R	C	1

37	MCQ	XL-R	B	1
38	MCQ	XL-R	C	1
39	MCQ	XL-R	A	1
40	MCQ	XL-R	D	1
41	MCQ	XL-R	A	1
42	MCQ	XL-R	C	1
43	MCQ	XL-R	D	1
44	MCQ	XL-R	D	1
45	MCQ	XL-R	A	1
46	MCQ	XL-R	A	2
47	MCQ	XL-R	A	2
48	MCQ	XL-R	B	2
49	NAT	XL-R	18.3 to 18.5	2
50	NAT	XL-R	3.2 to 3.2	2
51	MCQ	XL-R	B	2
52	MCQ	XL-R	D	2
53	MCQ	XL-R	C	2
54	MCQ	XL-R	D	2
55	MCQ	XL-R	A	2
56	MCQ	XL-S	A	1
57	MCQ	XL-S	B	1
58	MCQ	XL-S	D	1
59	MCQ	XL-S	C	1
60	MCQ	XL-S	C	1
61	MCQ	XL-S	A	1
62	MCQ	XL-S	A	1
63	MCQ	XL-S	D	1
64	MCQ	XL-S	B	1
65	MCQ	XL-S	C	1
66	MCQ	XL-S	A	2
67	MCQ	XL-S	B	2
68	MCQ	XL-S	A	2
69	MCQ	XL-S	B	2
70	MCQ	XL-S	B	2
71	NAT	XL-S	4550000 to 4650000	2
72	NAT	XL-S	99 to 101	2
73	NAT	XL-S	78000 to 82000	2

74	NAT	XL-S	9990 to 10020	2
75	MCQ	XL-S	A	2
76	MCQ	XL-T	D	1
77	MCQ	XL-T	A	1
78	MCQ	XL-T	C	1
79	MCQ	XL-T	B	1
80	MCQ	XL-T	C	1
81	MCQ	XL-T	A	1
82	MCQ	XL-T	C	1
83	MCQ	XL-T	B	1
84	MCQ	XL-T	D	1
85	MCQ	XL-T	D	1
86	NAT	XL-T	8.0 to 8.0	2
87	NAT	XL-T	7.0 to 7.0	2
88	NAT	XL-T	0.55 to 0.55	2
89	NAT	XL-T	16 to 16	2
90	MCQ	XL-T	D	2
91	MCQ	XL-T	A	2
92	MCQ	XL-T	B or D	2
93	MCQ	XL-T	B	2
94	NAT	XL-T	42.0 to 42.0	2
95	NAT	XL-T	250 to 250	2
96	MCQ	XL-U	B	1
97	MCQ	XL-U	B	1
98	MCQ	XL-U	D	1
99	MCQ	XL-U	B	1
100	NAT	XL-U	1000 to 1000	1
101	MCQ	XL-U	A	1
102	NAT	XL-U	2078 to 2086	1
103	NAT	XL-U	0.80 to 0.90	1
104	MCQ	XL-U	A	1
105	MCQ	XL-U	D	1
106	MCQ	XL-U	C	2
107	MCQ	XL-U	B	2
108	MCQ	XL-U	D	2
109	NAT	XL-U	25550 to 25650	2
110	MCQ	XL-U	D	2

111	NAT	XL-U	53.30 to 55.25	2
112	NAT	XL-U	64.0 to 64.0	2
113	NAT	XL-U	10.80 to 11.20	2
114	NAT	XL-U	9000 to 9000	2
115	NAT	XL-U	0.30 to 0.40	2
116	MCQ	GA	B	1
117	MCQ	GA	B	1
118	MCQ	GA	C	1
119	MCQ	GA	B	1
120	MCQ	GA	B	1
121	MCQ	GA	A	2
122	MCQ	GA	C	2
123	MCQ	GA	C	2
124	MCQ	GA	D	2
125	MCQ	GA	D	2