

CSIR 15th Dec 2019

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Test Date	15/12/2019
Test Time	9:30 AM - 12:30 PM
Subject	Life Sciences

Section : Part A Life Sciences

Q.1 What day of the week will it be 61 days from a Friday?

- (1) Saturday
- (2) Sunday
- (3) Friday
- (4) Wednesday

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MSQ**

Question ID : **1879801420**

Option 1 ID : **1879805677**

Option 2 ID : **1879805678**

Option 3 ID : **1879805679**

Option 4 ID : **1879805680**

Status : **Answered**

Chosen Option : **4**

Q.2 A bag contains 8 red balls, 10 blue balls, 17 green balls. What is the minimum number of balls that needs to be taken out from the bag to ensure getting at least one ball of each colour?

- (1) 19
- (2) 18
- (3) 28
- (4) 27

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MSQ**

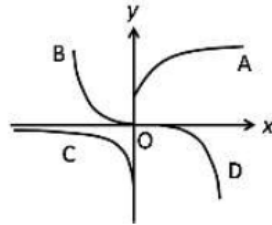
Question ID : **1879801405**

Option 1 ID : **1879805617**

Option 2 ID : **1879805618**

Option 3 ID : **1879805619**

Q.3 Which is the curve in the figure whose points satisfy the equation $y = \text{const} \times e^x$?



- (1) A
- (2) B
- (3) C
- (4) D

Options 1. 1
 2. 2
 3. 3
 4. 4

Question Type : MSQ
 Question ID : 1879801411
 Option 1 ID : 1879805641
 Option 2 ID : 1879805642
 Option 3 ID : 1879805643
 Option 4 ID : 1879805644
 Status : Not Answered
 Chosen Option : --

Q.4 Given that $K! = 1 \times 2 \times 3 \times \dots \times K$, which is the largest among the following numbers?

- (1) $(2!)^{1/2}$
- (2) $(3!)^{1/3}$
- (3) $(4!)^{1/4}$
- (4) $\frac{(3!)}{2}$

Options 1. 1
 2. 2
 3. 3
 4. 4

Question Type : MSQ
 Question ID : 1879801410
 Option 1 ID : 1879805637
 Option 2 ID : 1879805638
 Option 3 ID : 1879805639
 Option 4 ID : 1879805640
 Status : Answered
 Chosen Option : 3

Q.5

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801404**

Option 1 ID : **1879805613**

Option 2 ID : **1879805614**

Option 3 ID : **1879805615**

Option 4 ID : **1879805616**

Status : **Not Answered**

Chosen Option : --

Q.6

In a college admission where applicants have to choose only one subject, $\frac{1}{4}$ th of the applicants opted for Biology, $\frac{1}{6}$ th for Chemistry, $\frac{1}{8}$ th for Physics and $\frac{1}{12}$ th for Maths. 18 applicants did not opt for any of the above four subjects. How many applicants were there?

(1) 22

(2) 24

(3) 36

(4) 48

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801406**

Option 1 ID : **1879805621**

Option 2 ID : **1879805622**

Option 3 ID : **1879805623**

Option 4 ID : **1879805624**

Status : **Not Answered**

Chosen Option : --

Q.7

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801402**
Option 1 ID : **1879805605**
Option 2 ID : **1879805606**
Option 3 ID : **1879805607**
Option 4 ID : **1879805608**
Status : **Answered**
Chosen Option : **3**

Q.8 An ice cube of volume 10 cm^3 is floating over a glass of water of 10 cm^2 cross-section area and 10 cm height. The level of the water is exactly at the brim of the glass. Given that the density of ice is 10% less than that of water, what will be the situation when ice melts completely?

- (1) The level falls by 10% of the side of the cube.
(2) The level falls by 10% of the original height of the water column.
(3) The level increases by 10% of the side of the cube and water spills out.
(4) There is no change in the level of the water.

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801415**
Option 1 ID : **1879805657**
Option 2 ID : **1879805658**
Option 3 ID : **1879805659**
Option 4 ID : **1879805660**
Status : **Not Answered**
Chosen Option : **--**

Q.9

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801407**
Option 1 ID : **1879805625**
Option 2 ID : **1879805626**
Option 3 ID : **1879805627**
Option 4 ID : **1879805628**
Status : **Answered**
Chosen Option : **1**

Q.10 Which of the following 7-digit numbers CANNOT be perfect squares?
A = 45xyz26, B = 2xyz175, C = xyz3310

- (1) Only A.
(2) Only B.
(3) Only C.
(4) All three.

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801409**
Option 1 ID : **1879805633**
Option 2 ID : **1879805634**
Option 3 ID : **1879805635**
Option 4 ID : **1879805636**
Status : **Not Answered**
Chosen Option : **--**

Q.11

- Options
1. 1
 2. 2
 3. 3
 4. 4

Question Type : **MSQ**
Question ID : **1879801417**
Option 1 ID : **1879805665**
Option 2 ID : **1879805666**
Option 3 ID : **1879805667**
Option 4 ID : **1879805668**
Status : **Answered**
Chosen Option : **4**

Q.12 A multiple choice exam has 4 questions, each with 4 answer choices. Every question has only one correct answer. The probability of getting all answers correct by independent random guesses for each one is

- (1) $1/4$
- (2) $(1/4)^4$
- (3) $(3/4)$
- (4) $(3/4)^4$

- Options
1. 1
 2. 2
 3. 3
 4. 4

Question Type : **MSQ**
Question ID : **1879801403**
Option 1 ID : **1879805609**
Option 2 ID : **1879805610**
Option 3 ID : **1879805611**
Option 4 ID : **1879805612**
Status : **Answered**
Chosen Option : **1**

Q.13 Karan's house is 20 m to the east of Rahul's house. Mehul's house is 25 m to the North-East of Rahul's house. With respect to Mehul's house in which direction is Karan's house?

- (1) East
- (2) South
- (3) North-East
- (4) West

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801408**
Option 1 ID : **1879805629**
Option 2 ID : **1879805630**
Option 3 ID : **1879805631**
Option 4 ID : **1879805632**
Status : **Answered**
Chosen Option : **1**

Q.14 What is the ratio of the surface area of a cube with side 1 cm to the total surface area of the cubes formed by breaking the original cube into identical cubes of side 1 mm?

- (1) 1/6
(2) 1/10
(3) 1/100
(4) 1/36

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801401**
Option 1 ID : **1879805601**
Option 2 ID : **1879805602**
Option 3 ID : **1879805603**
Option 4 ID : **1879805604**
Status : **Not Answered**
Chosen Option : **--**

Q.15 A cyclist covers a certain distance at a constant speed. If a jogger covers half the distance in double the time as the cyclist, the ratio of the speed of the jogger to that of the cyclist is

- (1) 1:4
(2) 4:1
(3) 1:2
(4) 2:1

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801418**
Option 1 ID : **1879805669**
Option 2 ID : **1879805670**
Option 3 ID : **1879805671**
Option 4 ID : **1879805672**
Status : **Answered**
Chosen Option : **4**

Q.16 A four-wheeled cart is going around a circular track. Which of the following statements is correct, if the four wheels are free to rotate independent of each other, and the cart negotiates the track stably?

- (1) All wheels rotate at the same speed.
- (2) The four wheels have different speeds each.
- (3) The wheels closer to the inside of the track move slower than the outer-side wheels.
- (4) The wheels closer to the inside of the track move faster than the outer-side wheels.

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801416**

Option 1 ID : **1879805661**

Option 2 ID : **1879805662**

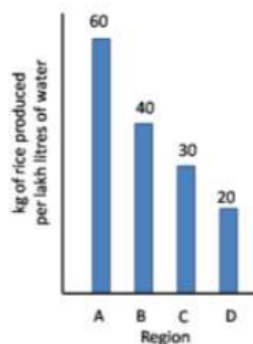
Option 3 ID : **1879805663**

Option 4 ID : **1879805664**

Status : **Answered**

Chosen Option : **3**

Q.17 Based on the bar chart shown here, which of the following inferences is correct?



- (1) Region A uses maximum water per kg of rice.
- (2) Average water consumption of the four regions is 37.5 lakh litres.
- (3) Region D uses thrice the amount of water used by region A per kg of rice.
- (4) Region B uses 20 lakh litres of less water than region A.

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801419**

Option 1 ID : **1879805673**

Option 2 ID : **1879805674**

Option 3 ID : **1879805675**

Option 4 ID : **1879805676**

Status : **Answered**

Chosen Option : **3**

Q.18 In a very old, stable forest, a particular species of plants grows to a maximum height of 3 m. In a large survey, it is found that 30% of the plants have heights less than 1 m, and 50% have heights more than 2 m. From these observations we can say that the height of the plants increases

- (1) at the slowest rate when they are less than 1 m tall.
- (2) at the fastest rate when they are between 1 m and 2 m tall.
- (3) at the fastest rate when they are more than 2 m tall.
- (4) at the same rate at all stages.

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MSQ**
Question ID : **1879801413**
Option 1 ID : **1879805649**
Option 2 ID : **1879805650**
Option 3 ID : **1879805651**
Option 4 ID : **1879805652**
Status : **Not Answered**
Chosen Option : --

Q.19 Of three children, Uma plays all three of cricket, football and hockey. Iqbal plays cricket but not football, and Tarun plays hockey but neither football nor cricket. The number of games played by at least two of the children is

- (1) one.
- (2) two.
- (3) three.
- (4) zero.

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MSQ**
Question ID : **1879801412**
Option 1 ID : **1879805645**
Option 2 ID : **1879805646**
Option 3 ID : **1879805647**
Option 4 ID : **1879805648**
Status : **Answered**
Chosen Option : **3**

Q.20

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801414**
Option 1 ID : **1879805653**
Option 2 ID : **1879805654**
Option 3 ID : **1879805655**
Option 4 ID : **1879805656**
Status : **Not Answered**
Chosen Option : --

Section : **Part B Life Sciences**

Q.1 Vascular wilts are wide spread and destructive plant diseases. The symptoms of this disease are primarily caused by the clogging of

- (1) xylem vessels
(2) phloem vessels
(3) stomata
(4) hydathodes

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801444**
Option 1 ID : **1879805773**
Option 2 ID : **1879805774**
Option 3 ID : **1879805775**
Option 4 ID : **1879805776**
Status : **Answered**
Chosen Option : **3**

Q.2

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801429**
Option 1 ID : **1879805713**
Option 2 ID : **1879805714**
Option 3 ID : **1879805715**
Option 4 ID : **1879805716**
Status : **Not Answered**
Chosen Option : --

Q.3 Which one of the following lipid-soluble hormones can interact with a cell surface receptor?

- (1) Progesterone
(2) Estradiol
(3) Thyroxine
(4) Prostaglandin

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801435**
Option 1 ID : **1879805737**
Option 2 ID : **1879805738**
Option 3 ID : **1879805739**
Option 4 ID : **1879805740**
Status : **Answered**
Chosen Option : **1**

Q.4

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801441**

Option 1 ID : **1879805761**

Option 2 ID : **1879805762**

Option 3 ID : **1879805763**

Option 4 ID : **1879805764**

Status : **Not Answered**

Chosen Option : --

Q.5 Two strains of mice which are genetically identical except for a single genetic locus or region are said to be:

(1) Syngenic

(2) Allogenic

(3) Congenic

(4) Heterogenic

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801434**

Option 1 ID : **1879805733**

Option 2 ID : **1879805734**

Option 3 ID : **1879805735**

Option 4 ID : **1879805736**

Status : **Not Answered**

Chosen Option : --

Q.6 Which one of the following was recently reported to be the first mammal to have become extinct as a result of climate change?

(1) Bramble Cay melomys – *Melomys rubicola*

(2) Gangetic river dolphin – *Platanista gangetica*

(3) Malaga giant rat – *Hypogeomys antimena*

(4) Tapanuli orangutan – *Pongo tapanuliensis*

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801458**
Option 1 ID : **1879805829**
Option 2 ID : **1879805830**
Option 3 ID : **1879805831**
Option 4 ID : **1879805832**
Status : **Answered**
Chosen Option : **2**

Q.7 What is the probability of getting a sum of 9 from simultaneously throwing two dice?

- (1) 1/6
(2) 1/8
(3) 1/9
(4) 1/12

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801450**
Option 1 ID : **1879805797**
Option 2 ID : **1879805798**
Option 3 ID : **1879805799**
Option 4 ID : **1879805800**
Status : **Answered**
Chosen Option : **1**

Q.8 Which one of the following plants has a bisporic, 8-nucleate, bipolar embryo sac development?

- (1) *Oenothera*
(2) *Penaea*
(3) *Plumbago*
(4) *Allium*

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801454**
Option 1 ID : **1879805813**
Option 2 ID : **1879805814**
Option 3 ID : **1879805815**
Option 4 ID : **1879805816**
Status : **Not Answered**
Chosen Option : **--**

Q.9

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801433**
Option 1 ID : **1879805729**
Option 2 ID : **1879805730**
Option 3 ID : **1879805731**
Option 4 ID : **1879805732**
Status : **Answered**
Chosen Option : **4**

Q.10 In a neuron, proteins and membranes are primarily synthesized in the cell body. These materials must be transported down the axon to the synaptic region using microtubules in an anterograde fashion. Such axonal transport is directed by

- (1) Dynein
(2) Kinesin I
(3) Dynein and Kinesin I
(4) Myosin

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801470**
Option 1 ID : **1879805877**
Option 2 ID : **1879805878**
Option 3 ID : **1879805879**
Option 4 ID : **1879805880**
Status : **Not Answered**
Chosen Option : **--**

Q.11

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801432**
Option 1 ID : **1879805725**
Option 2 ID : **1879805726**
Option 3 ID : **1879805727**
Option 4 ID : **1879805728**
Status : **Not Answered**
Chosen Option : --

Q.12 For bacterial growth, a single cell elongates in size before it divides into two, in a process called binary fission. During cell growth,

- (1) new peptidoglycan synthesis is required along with the hydrolysis of bonds linking the old peptidoglycan chains.
- (2) new peptidoglycan synthesis is required but no hydrolysis of the old peptidoglycan occurs.
- (3) the old peptidoglycan is completely degraded and replaced with the newly synthesized longer polymer.
- (4) newly synthesized peptidoglycan is utilized to deposit a new layer of the peptidoglycan in the cell wall.

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801425**
Option 1 ID : **1879805697**
Option 2 ID : **1879805698**
Option 3 ID : **1879805699**
Option 4 ID : **1879805700**
Status : **Not Answered**
Chosen Option : --

Q.13

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801461**
Option 1 ID : **1879805841**
Option 2 ID : **1879805842**
Option 3 ID : **1879805843**
Option 4 ID : **1879805844**
Status : **Not Answered**
Chosen Option : --

Q.14 Which one of the following hormones is responsible for mobilizing calcium from the bone and increasing urinary excretion of phosphate?

- (1) Calcitonin
(2) Angiotensin II
(3) Parathormone
(4) Vasopressin

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801448**
Option 1 ID : **1879805789**
Option 2 ID : **1879805790**
Option 3 ID : **1879805791**
Option 4 ID : **1879805792**
Status : **Answered**
Chosen Option : **2**

Q.15 Which one of the following show complete metamorphosis in all three orders?

- (1) Coleopterans, Dipterans and Hymenopterans
(2) Coleopterans, Hymenopterans and Orthopterans
(3) Dipterans, Lepidopterans and Hemipterans
(4) Hymenopterans, Lepidopterans and Orthopterans

- Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MSQ**
Question ID : **1879801455**
Option 1 ID : **1879805817**
Option 2 ID : **1879805818**
Option 3 ID : **1879805819**
Option 4 ID : **1879805820**
Status : **Not Answered**
Chosen Option : --

Q.16 In a lake, reducing the population of a fish which feeds on plankton was followed by a decline in the rate of primary productivity. This is consistent with which one of the following hypotheses regarding the regulation of primary productivity?

- (1) Bottom-up control
- (2) Eutrophication
- (3) Top-down control
- (4) Trophic pyramid

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801457**
Option 1 ID : **1879805825**
Option 2 ID : **1879805826**
Option 3 ID : **1879805827**
Option 4 ID : **1879805828**
Status : **Answered**
Chosen Option : **2**

Q.17 While screening an EMS-mutagenized population of a plant, a researcher identified a mutant with reduced gibberellic acid sensitivity. Which one of the following proteins is most likely to be defective in this mutant?

- (1) Sucrose non-fermenting related kinase 2 (SnRK2)
- (2) Constitutive triple response 1 (CTR1)
- (3) Phytochrome interacting factor (PIF)
- (4) Coronative-insensitive 1 (COI1)

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801443**
Option 1 ID : **1879805769**
Option 2 ID : **1879805770**
Option 3 ID : **1879805771**
Option 4 ID : **1879805772**
Status : **Not Answered**

Chosen Option : --

Q.18 *Agrobacterium tumefaciens* is frequently used as a vector to create transgenic plants. Under laboratory conditions *Agrobacterium* – mediated plant transformation does not require

- (1) host plant genes
- (2) bacterial type IV secretion system
- (3) *vir* genes
- (4) opine catabolism genes

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801464**

Option 1 ID : **1879805853**

Option 2 ID : **1879805854**

Option 3 ID : **1879805855**

Option 4 ID : **1879805856**

Status : **Not Answered**

Chosen Option : --

Q.19 Which one of the following plants has this combination of key plant traits: sporophyte dominant in the lifecycle, vascular tissue, lack of seeds?

- (1) Mosses
- (2) Ferns
- (3) Cycads
- (4) Monocots

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801453**

Option 1 ID : **1879805809**

Option 2 ID : **1879805810**

Option 3 ID : **1879805811**

Option 4 ID : **1879805812**

Status : **Not Answered**

Chosen Option : --

Q.20

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**

Question ID : **1879801426**

Option 1 ID : **1879805701**

Option 2 ID : **1879805702**

Option 3 ID : **1879805703**

Option 4 ID : **1879805704**

Status : **Not Answered**

Chosen Option : --

Q.21

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801421**
Option 1 ID : **1879805681**
Option 2 ID : **1879805682**
Option 3 ID : **1879805683**
Option 4 ID : **1879805684**
Status : **Not Answered**
Chosen Option : --

Q.22 In electron microscopy, to detect specific macromolecule or structure such as spindle pole body (SPB), the frequently used procedure is to couple secondary antibody with

- (1) Alexa 568
- (2) Cy5
- (3) Gold particle
- (4) Osmium tetroxide

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801466**
Option 1 ID : **1879805861**
Option 2 ID : **1879805862**
Option 3 ID : **1879805863**
Option 4 ID : **1879805864**
Status : **Answered**
Chosen Option : **3**

Q.23 Which one of the following synaptic vesicle proteins is involved in tethering of the vesicle to the cytoskeletal system in the nerve terminus?

- (1) Synaptotagmin
- (2) Synapsin
- (3) Synaptophysin
- (4) Synaptobrevin

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801447**
Option 1 ID : **1879805785**
Option 2 ID : **1879805786**
Option 3 ID : **1879805787**
Option 4 ID : **1879805788**
Status : **Not Answered**
Chosen Option : **--**

Q.24 Interacting genes which are involved in producing continuous variation in phenotypes in a population are known as/constitute

- (1) codominant genes
- (2) pseudogenes
- (3) alleles
- (4) QTLs

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801452**
Option 1 ID : **1879805805**
Option 2 ID : **1879805806**
Option 3 ID : **1879805807**
Option 4 ID : **1879805808**
Status : **Answered**

Q.25 An interaction where the actor and the recipient both suffer a cost is referred to as

- (1) Altruism
- (2) Cooperation
- (3) Mutualism
- (4) Spite

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801460**

Option 1 ID : **1879805837**

Option 2 ID : **1879805838**

Option 3 ID : **1879805839**

Option 4 ID : **1879805840**

Status : **Answered**

Chosen Option : 2

Q.26 Centrolecithal eggs show

- (1) superficial cleavage
- (2) displaced radial cleavage
- (3) bilateral cleavage
- (4) discoidal cleavage

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801437**

Option 1 ID : **1879805745**

Option 2 ID : **1879805746**

Option 3 ID : **1879805747**

Option 4 ID : **1879805748**

Status : **Answered**

Chosen Option : 1

Q.27

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801459**
Option 1 ID : **1879805833**
Option 2 ID : **1879805834**
Option 3 ID : **1879805835**
Option 4 ID : **1879805836**
Status : **Not Answered**
Chosen Option : --

Q.28 The sodium-independent iodide/chloride transporter is named as

- (1) megalin
- (2) pendrin
- (3) transthyretin
- (4) prestin

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801446**
Option 1 ID : **1879805781**
Option 2 ID : **1879805782**
Option 3 ID : **1879805783**
Option 4 ID : **1879805784**
Status : **Answered**
Chosen Option : **2**

Q.29

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801422**
Option 1 ID : **1879805685**
Option 2 ID : **1879805686**
Option 3 ID : **1879805687**
Option 4 ID : **1879805688**
Status : **Answered**
Chosen Option : **3**

Q.30 Cnidarians are

- (1) triploblastic animals with bilateral symmetry.
- (2) diploblastic animals with medusa as one of the basic body forms.
- (3) monoblastic organisms with tube feet.
- (4) asymmetric organisms with tentacles containing poison glands.

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801456**
Option 1 ID : **1879805821**
Option 2 ID : **1879805822**
Option 3 ID : **1879805823**
Option 4 ID : **1879805824**
Status : **Not Answered**
Chosen Option : **--**

Q.31 The interaction energy between two opposite charges separated by $3\text{\AA}$ in vacuum is -500 kJmol^{-1} . The interaction energy between these two charges in water will be closest to

- (1) -1500 kJmol^{-1}
- (2) -166 kJmol^{-1}
- (3) -55 kJmol^{-1}
- (4) -6 kJmol^{-1}

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**

Question ID : **1879801424**

Option 1 ID : **1879805693**

Option 2 ID : **1879805694**

Option 3 ID : **1879805695**

Option 4 ID : **1879805696**

Status : **Answered**

Chosen Option : **1**

Q.32 The T-DNA region of the Ti plasmid of *Agrobacterium tumefaciens* harbours two genes: X and Y. Mutation of gene 'X' produces a rooty tumour while mutation of gene 'Y' produces shoots in the tumor. Based on the above information, which one of the following statements is correct?

- (1) Gene 'X' encodes auxins and gene 'Y' encodes cytokinins
- (2) Gene 'X' encodes cytokinins and gene 'Y' encodes auxins
- (3) Gene 'X' and gene 'Y' both encode auxins
- (4) Gene 'X' encodes opines while gene 'Y' encodes cytokinins

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801465**

Option 1 ID : **1879805857**

Option 2 ID : **1879805858**

Option 3 ID : **1879805859**

Option 4 ID : **1879805860**

Status : **Answered**

Chosen Option : **1**

Q.33 In context of DNA methylation, which one of the following statements is **FALSE**?

- (1) Generally, methylation occurs at the 3rd carbon position of cytosine and converts it to 3-methylcytosine
- (2) Maintenance methyltransferase acts constitutively on hemimethylated sites and converts them to fully methylated sites
- (3) During mammalian gametogenesis, the genomic methylation patterns are erased in primordial germ cells
- (4) Replication converts a fully methylated site to hemimethylated site

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801451**

Option 1 ID : **1879805801**

Option 2 ID : **1879805802**

Option 3 ID : **1879805803**

Option 4 ID : **1879805804**

Status : **Not Answered**

Chosen Option : **--**

Q.34

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801462**
Option 1 ID : **1879805845**
Option 2 ID : **1879805846**
Option 3 ID : **1879805847**
Option 4 ID : **1879805848**
Status : **Answered**
Chosen Option : **4**

Q.35 If you inject a mouse with radioactive material of current activity of 256 Bq, what will be the activity after completion of 6 half-lives?

- (1) 4 Bq
- (2) 8 Bq
- (3) 16 Bq
- (4) 24 Bq

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801468**
Option 1 ID : **1879805869**
Option 2 ID : **1879805870**
Option 3 ID : **1879805871**
Option 4 ID : **1879805872**
Status : **Answered**
Chosen Option : **2**

Q.36

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801439**
Option 1 ID : **1879805753**
Option 2 ID : **1879805754**
Option 3 ID : **1879805755**
Option 4 ID : **1879805756**
Status : **Answered**
Chosen Option : **4**

Q.37 Match the following vitamins with the corresponding pathological conditions arising from their deficiencies.

Vitamin		Disease	
(i)	A	(a)	Pernicious anaemia
(ii)	B ₁₂	(b)	Subdermal haemorrhaging
(iii)	D	(c)	Night blindness
(iv)	K	(d)	Rickets

- (1) i – c; ii – a; iii – d; iv – b
(2) i – c; ii – b; iii – d; iv – a
(3) i – c; ii – a; iii – b; iv – d
(4) i – d; ii – a; iii – b; iv – d

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801423**
Option 1 ID : **1879805689**
Option 2 ID : **1879805690**
Option 3 ID : **1879805691**
Option 4 ID : **1879805692**
Status : **Answered**
Chosen Option : **3**

Q.38

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801467**

Option 1 ID : **1879805865**

Option 2 ID : **1879805866**

Option 3 ID : **1879805867**

Option 4 ID : **1879805868**

Status : **Not Answered**

Chosen Option : --

Q.39

In summer squash, white colour fruit (*W*) is dominant over yellow colour (*w*) and disc-shaped phenotype (*D*) is dominant over sphere-shaped phenotype (*d*). Determine the genotype of the parents if the cross between white, sphere crossed with white, sphere gives $\frac{3}{4}$ white, sphere and $\frac{1}{4}$ yellow, sphere.

(1) $WWDD \times wwdd$

(2) $Wwdd \times Wwdd$

(3) $WwDd \times wwdd$

(4) $wwDD \times WWdd$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801449**

Option 1 ID : **1879805793**

Option 2 ID : **1879805794**

Option 3 ID : **1879805795**

Option 4 ID : **1879805796**

Status : **Not Answered**

Chosen Option : --

Q.40

Which one of the following is NOT true in the process of acclimatization to high altitude?

(1) Respiratory alkalosis

(2) Increased 2, 3-DPG in RBC

(3) Rise in pH of cerebrospinal fluid

(4) Increased cytochrome oxidase in tissues

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801445**
Option 1 ID : **1879805777**
Option 2 ID : **1879805778**
Option 3 ID : **1879805779**
Option 4 ID : **1879805780**
Status : **Answered**
Chosen Option : **1**

Q.41 Readers of histone modifications include:

- (1) SUN domain proteins
- (2) BAG domain proteins
- (3) PAS domain proteins
- (4) TUDOR domain proteins

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801431**
Option 1 ID : **1879805721**
Option 2 ID : **1879805722**
Option 3 ID : **1879805723**
Option 4 ID : **1879805724**
Status : **Answered**
Chosen Option : **3**

Q.42 Which one of the following parts of root is involved in perceiving gravity?

- (1) Quiescent center
- (2) Endodermis
- (3) Root cap
- (4) Elongation zone

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801442**
Option 1 ID : **1879805765**
Option 2 ID : **1879805766**
Option 3 ID : **1879805767**
Option 4 ID : **1879805768**
Status : **Not Answered**
Chosen Option : **--**

Q.43

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801428**
Option 1 ID : **1879805709**
Option 2 ID : **1879805710**
Option 3 ID : **1879805711**
Option 4 ID : **1879805712**
Status : **Not Answered**
Chosen Option : --

Q.44 Which one of the following does **NOT** use RNA-sequencing?

- (1) Mapping transcription initiation sites
- (2) Long non-coding RNA profiling
- (3) Alternative polyadenylation profiling
- (4) Mammalian epigenome sequencing

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801463**
Option 1 ID : **1879805849**
Option 2 ID : **1879805850**
Option 3 ID : **1879805851**
Option 4 ID : **1879805852**
Status : **Answered**
Chosen Option : **4**

Q.45

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801438**
Option 1 ID : **1879805749**
Option 2 ID : **1879805750**
Option 3 ID : **1879805751**
Option 4 ID : **1879805752**
Status : **Answered**
Chosen Option : **1**

Q.46 Which one of the following regulatory proteins can act as a positive and negative regulator on binding to the same DNA elements?

- (1) Lac repressor (LacI)
- (2) Lambda (cI) repressor
- (3) Ara C protein (AraC)
- (4) Trp repressor (TrpR)

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801430**
Option 1 ID : **1879805717**
Option 2 ID : **1879805718**
Option 3 ID : **1879805719**
Option 4 ID : **1879805720**
Status : **Answered**
Chosen Option : **1**

Q.47

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801436**
Option 1 ID : **1879805741**
Option 2 ID : **1879805742**
Option 3 ID : **1879805743**
Option 4 ID : **1879805744**
Status : **Not Answered**
Chosen Option : --

Q.48 Which of the following factors is known to be involved in postponing programmed cell death in cereal aleurone until endosperm mobilization is complete?

- (1) Gibberellic acid
- (2) Absciscic acid
- (3) Acidic pH of the vacuoles
- (4) cGMP mediated signal transduction pathway

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801440**
Option 1 ID : **1879805757**
Option 2 ID : **1879805758**
Option 3 ID : **1879805759**
Option 4 ID : **1879805760**
Status : **Not Answered**
Chosen Option : --

Q.49

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801469**
Option 1 ID : **1879805873**
Option 2 ID : **1879805874**
Option 3 ID : **1879805875**
Option 4 ID : **1879805876**
Status : **Not Answered**
Chosen Option : --

Q.50 During the exponential phase of growth, if N_0 , N_t , and n define the initial population number, population number at time t , and the number of generations in time t , respectively, then

- (1) $Nt = N_0 \times 2n$
(2) $N_0 = Nt / 2$
(3) $Nt / N_0 = 2^n$
(4) $N_0 / Nt = 2^n$

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801427**
Option 1 ID : **1879805705**
Option 2 ID : **1879805706**
Option 3 ID : **1879805707**
Option 4 ID : **1879805708**
Status : **Not Answered**
Chosen Option : --

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**

Question ID : **1879801477**

Option 1 ID : **1879805905**

Option 2 ID : **1879805906**

Option 3 ID : **1879805907**

Option 4 ID : **1879805908**

Status : **Answered**

Chosen Option : **1**

Q.2

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801501**
Option 1 ID : **1879806001**
Option 2 ID : **1879806002**
Option 3 ID : **1879806003**
Option 4 ID : **1879806004**
Status : **Not Answered**
Chosen Option : --

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : MSQ

Question ID : 1879801540

Option 1 ID : 1879806157

Option 2 ID : 1879806158

Option 3 ID : 1879806159

Option 4 ID : 1879806160

Status : Answered

Chosen Option : 4

- Q.4 Which of the following set of conditions will qualify a species to be considered as endangered (EN) as per IUCN criteria?
- (1)

80% reduction in population size, <100 km² area of occupancy, at least 50% estimated extinction risk in five generations.
- (2)

<2,500 individuals with declining population, <250 mature individuals, at least 20% estimated extinction risk in 10 years.
- (3)

<10,000 individuals with declining population, <1000 mature individuals, at least 10% estimated extinction risk in 10 years.
- (4)

75% reduction in population size, <500 km² area of occupancy, at least 20% estimated extinction risk in five generations

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : MSQ

Question ID : 1879801519

Option 1 ID : 1879806073

Option 2 ID : 1879806074
Option 3 ID : 1879806075
Option 4 ID : 1879806076
Status : Not Answered
Chosen Option : --

- Q.5** Following statements were made about the post-transcriptional processing of RNA in eukaryotes.
- A. Soon after transcription initiation, RNA polymerase II pauses ~30 nucleotides downstream from the site of initiation until the Cap structure is added to the 5' end of the nascent pre-mRNA.
 - B. The 5' splice sites are functionally divergent whereas the 3' sites are functionally equivalent.
 - C. In addition to helping in recognition of the splice sites, the exon definition also functions as a splicing regulator by allowing pairing and linking of adjacent 5' and 3' splice sites.
 - D. The intron definition mechanism applies only to the larger introns (above 500 nucleotides length) and assists in achieving alternate splicing.
 - E. The splicing reactions carried out in vitro have revealed that the first and second transesterification reactions are reversible.

Which one of the following combination of statements is correct?

- (1) A, B and D
- (2) B, C and D
- (3) B, D and E
- (4) A, C and E

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : MSQ
Question ID : 1879801487
Option 1 ID : 1879805945
Option 2 ID : 1879805946
Option 3 ID : 1879805947
Option 4 ID : 1879805948
Status : Not Answered
Chosen Option : --

Q.6

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801476**

Option 1 ID : **1879805901**

Option 2 ID : **1879805902**

Option 3 ID : **1879805903**

Option 4 ID : **1879805904**

Status : **Not Answered**

Chosen Option : --

Q.7

Given below are a few statements on use of plant breeding to develop improved varieties of a crop plant:

- A : Genotypic/phenotypic variation in the desired trait should be available in the germplasm resources of the crop plant.
- B : Availability of molecular markers linked to the trait of interest would decelerate the process of trait introgression into desired varieties.
- C : Breeding procedures to improve plant varieties are generally more successful among sexually compatible species as compared to sexually incompatible species.
- D : Co-dominant molecular markers cannot be used for selection of plants with the desired trait.

Which of the above statement(s) is/are **INCORRECT**?

(1) A and C

(2) B only

(3) C and D

(4) B and D

Options 1. 1

2. 2

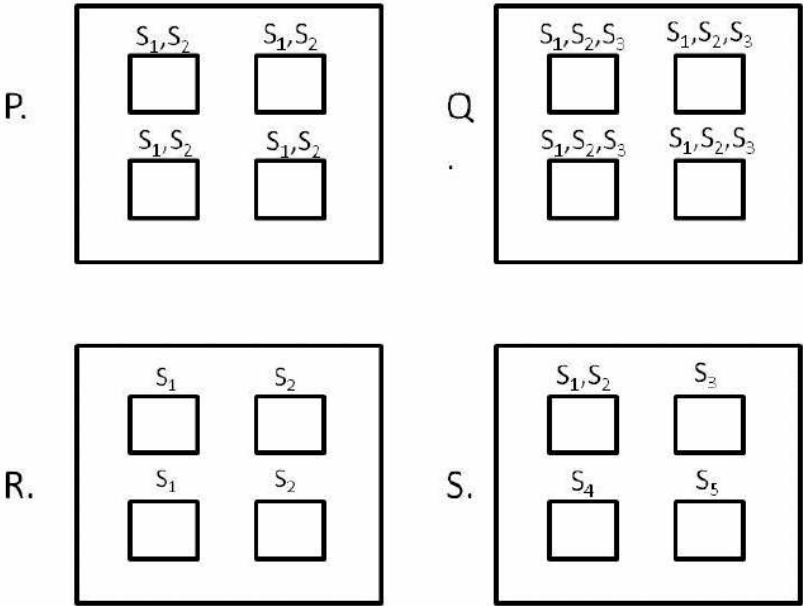
3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801538**

Q.8 In the graph below, large boxes (denoted by P, Q, R, S) represent a region, whereas smaller boxes represent habitats. Labels $S_1, S_2, \dots$ above each small box represent species present in the given habitat denoted by that box.



Given the above graphs, choose the option which correctly depicts the regions which show maximum α and maximum β diversity, respectively.

- (1) Q and S
- (2) P and R
- (3) S and P
- (4) Q and R

Options 1. 1
 2. 2
 3. 3
 4. 4

Q.9

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801498**
Option 1 ID : **1879805989**
Option 2 ID : **1879805990**
Option 3 ID : **1879805991**
Option 4 ID : **1879805992**
Status : **Not Answered**
Chosen Option : --

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**

Question ID : **1879801535**

Option 1 ID : **1879806137**

Option 2 ID : **1879806138**

Option 3 ID : **1879806139**

Option 4 ID : **1879806140**

Status : **Not Answered**

Chosen Option : --

Q.11

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801533**
Option 1 ID : **1879806129**
Option 2 ID : **1879806130**
Option 3 ID : **1879806131**
Option 4 ID : **1879806132**
Status : **Answered**
Chosen Option : **4**

Q.12 In an organism, a^+ allele governs gray body colour, while its mutant allele a gives yellow body colour. Further, presence of b^+ allele gives long and thin hairs while b allele gives rise to short and thick hairs. The alleles a^+ and b^+ are dominant over a and b , respectively. An individual with the genotype

$$\frac{a^+ \quad b^+}{a \quad b}$$

has a patch of yellow cells with short and thick hairs. Which one of the following events is most likely to lead to the above?

- (1) Non disjunction of the homologous chromosomes during mitosis
(2) Somatic recombination involving a and b
(3) Translocation occurring in a few somatic cells
(4) Mutation of both a^+ and b^+ alleles in the somatic cells

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801512**
Option 1 ID : **1879806045**
Option 2 ID : **1879806046**
Option 3 ID : **1879806047**
Option 4 ID : **1879806048**
Status : **Not Answered**
Chosen Option : --

Q.13 A mutant mating type *mt* strain of *Chlamydomonas* that was resistant to the antibiotic kanamycin (*kan^r*) and herbicide PPT (*ppt^r*) was crossed to a wild type mating *mt⁺ kan^s ppt^s* strain that was sensitive to kanamycin and PPT. Twenty tetrads of the progeny were analyzed for mating type and resistance/sensitivity to kanamycin and PPT. The following observations were made:

	Type I	Type II	Type III
	<i>mt kan^r ppt^r</i>	<i>mt kan^r ppt^s</i>	<i>mt kan^r ppt^r</i>
	<i>mt kan^r ppt^r</i>	<i>mt kan^r ppt^s</i>	<i>mt kan^r ppt^s</i>
	<i>mt⁺ kan^r ppt^s</i>	<i>mt⁺ kan^r ppt^r</i>	<i>mt⁺ kan^r ppt^r</i>
	<i>mt⁺ kan^r ppt^s</i>	<i>mt⁺ kan^r ppt^r</i>	<i>mt⁺ kan^r ppt^s</i>
Number of each type observed	8	9	3

The following statements were made to explain the observations:
A. *mt* and *ppt* loci are on two different chromosomes
B. Inheritance of mating type and *ppt*-resistance/sensitivity are demonstrating cytoplasmic inheritance
C. Inheritance of kanamycin-resistance/sensitivity is demonstrating nuclear inheritance
D. Nuclear inheritance is being demonstrated by mating type and *ppt*-resistance/sensitivity analysis
Which one of the combinations of above statements is correct?

- (1) A and B
- (2) A and D
- (3) B and C
- (4) C and D

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801515**
Option 1 ID : **1879806057**
Option 2 ID : **1879806058**
Option 3 ID : **1879806059**
Option 4 ID : **1879806060**
Status : **Not Answered**
Chosen Option : --

Q.14

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801536**
Option 1 ID : **1879806141**
Option 2 ID : **1879806142**
Option 3 ID : **1879806143**
Option 4 ID : **1879806144**
Status : **Answered**
Chosen Option : **4**

Q.15 Female fiddler crabs prefer male fiddler crabs with larger claws over males with smaller claws. If the selection pressure exerted is strong resulting in a skewed distribution of claw size, which of the following statements is true about the population's mean, median and mode ?

- (1) Mean > Median > Mode
(2) Mean < Median < Mode
(3) Mean = Mode < Median
(4) Mean = Median = Mode

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801532**
Option 1 ID : **1879806125**
Option 2 ID : **1879806126**
Option 3 ID : **1879806127**
Option 4 ID : **1879806128**
Status : **Not Answered**
Chosen Option : **--**

Q.16

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801481**

Option 1 ID : **1879805921**

Option 2 ID : **1879805922**

Option 3 ID : **1879805923**

Option 4 ID : **1879805924**

Status : **Not Answered**

Chosen Option : --

Q.17

A “morphogen” can determine the fate of a cell by its concentration. Given below are some statements on the experiment performed to study the gradient-dependent effect of the morphogen, activin on cell fate by placing activin (4 nm)-secreting beads on unspecified cells from an early *Xenopus* embryo:

- A. Beads without activin did not elicit expression of either *Xbra* or *goosecoid* genes.
- B. Cells nearest to the beads getting highest concentration of activin induced *goosecoid* gene whose product is a transcription factor, specifies the frog’s dorsal-most structures.
- C. Cells nearest to the beads getting highest concentration of activin induced *Xbra* gene whose product is a transcription factor, specifies the frog’s dorsal-most structures.
- D. Cells farthest from the beads getting negligible activin activate *Xbra* gene and become blood vessels and heart.
- E. Cells farthest from the beads getting negligible activin, activated neither *Xbra* nor *goosecoid* and the ‘default’ gene expression instructed the cells to become blood vessels and heart.

Which of the above observations and conclusions drawn are correct?

(1) A, B and C

(2) B, C and D

(3) C, D and E

(4) A, B and E

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801496**

Option 1 ID : **1879805981**

Option 2 ID : **1879805982**

Option 3 ID : **1879805983**

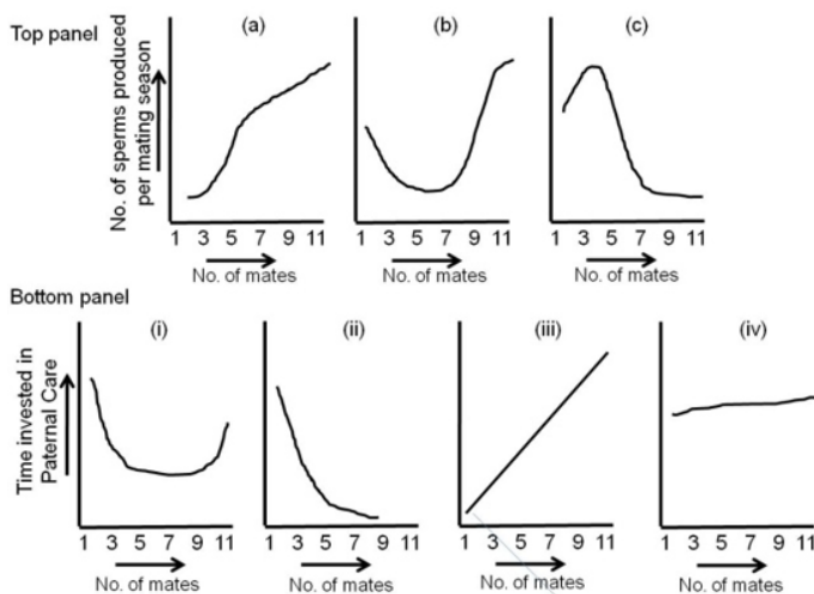
Q.18 Which of the following is NOT a mechanism for species coexistence?

- (1) Niche differentiation
- (2) Niche complementarity
- (3) Niche overlap
- (4) Amount of limiting resources is greater than the number of species

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : MSQ
Question ID : 1879801528
Option 1 ID : 1879806109
Option 2 ID : 1879806110
Option 3 ID : 1879806111
Option 4 ID : 1879806112
Status : Answered
Chosen Option : 4

Q.19 The top panel (graphs a-c) represents trends of number of sperms produced per mating season with respect to number of mates, while the bottom panel (graphs i-iv) represents trends of time invested in paternal care with respect to number of mates in birds.



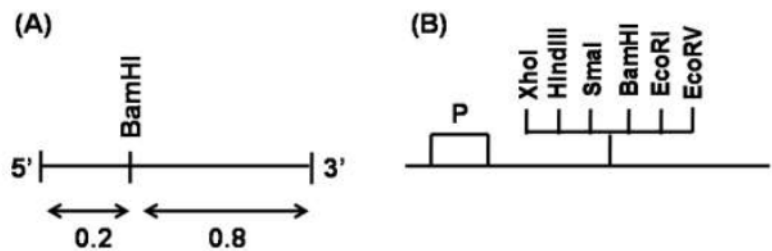
Select the correct trend from each panel.

- (1) c, iv
- (2) a, ii
- (3) b, iii
- (4) a, i

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801534**
Option 1 ID : **1879806133**
Option 2 ID : **1879806134**
Option 3 ID : **1879806135**
Option 4 ID : **1879806136**
Status : **Not Answered**
Chosen Option : --

Q.20 In an experiment, a 1 kb fragment with a single BamHI site (as shown below in figure 'A') is to be cloned in the SmaI (CCC ↓ GGG) site of a cloning vector of 3kb length (figure 'B'). None of the other enzymes of the multiple cloning site are present in the fragment to be cloned.



Based on the information given above, a series of digestions were set up for the potential clones and their fragment profiles are given below:

- A. BamHI : 200bp + 3.8 kb
- B. BamHI : 800bp + 3.2 kb
- C. HindIII+EcoRI : ~1kb + ~3kb
- D. XhoI+BamHI : ~200bp + ~800bp + ~3kb

Which one of the above digestion profiles confirms successful cloning of the fragment in the vector in an orientation wherein the 5' end of the cloned fragment is towards 'P'?

- (1) A only
- (2) B only
- (3) A and C
- (4) C and D

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801543**
Option 1 ID : **1879806169**
Option 2 ID : **1879806170**
Option 3 ID : **1879806171**
Option 4 ID : **1879806172**
Status : **Not Answered**
Chosen Option : --

Q.21

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**

Question ID : **1879801479**

Option 1 ID : **1879805913**

Option 2 ID : **1879805914**

Option 3 ID : **1879805915**

Option 4 ID : **1879805916**

Status : **Not Answered**

Chosen Option : --

Q.22

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801516**

Option 1 ID : **1879806061**

Option 2 ID : **1879806062**

Option 3 ID : **1879806063**

Option 4 ID : **1879806064**

Status : **Not Answered**

Chosen Option : --

Q.23

Consider the following facts:

A. Chlorophyll absorbs more in the red region of the visible spectrum than in far-red.

B. The phytochrome photoreceptor (P) of plants occurs in two inter convertible forms, P_r and P_{fr} where red light converts P_r to P_{fr} and far-red light converts P_{fr} to P_r .

C. Growing a sun plant under the canopy shed causes increased stem elongation

Which one of the following combination of statements is correct for the plants growing under the canopy as compared to those growing above the canopy?

(1) Red:far-red ratio is lower; P_r : P_{fr} ratio is higher; P_{fr} inhibits stem elongation.

(2) Red: far-red ratio is higher; P_r : P_{fr} ratio is higher; P_r inhibits stem elongation.

(3) Red: far-red ratio is lower; P_r : P_{fr} ratio is lower; P_{fr} promotes stem elongation.

(4) Red: far-red ratio is higher; P_r : P_{fr} ratio is lower; P_r promotes stem elongation.

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**Question ID : **1879801505**Option 1 ID : **1879806017**Option 2 ID : **1879806018**Option 3 ID : **1879806019**Option 4 ID : **1879806020**Status : **Not Answered**

Chosen Option : --

Q.24

Given below are some physicochemical properties (column X) and their manifestations (column Y).

	X		Y
A.	Pauling electronegativity	(i)	Charge separation
B.	Isolated π -orbital overlap	(ii)	Solvation of atoms
C.	Aromaticity	(iii)	Restricted rotation
D.	Dielectric constant	(iv)	Planarity of molecules

Which one of the following is the most appropriate match?

(1) A = i, B – iv, C – ii, D – iii

(2) A = iii, B – ii, C – iv, D – i

(3) A = ii, B – iii, C – iv, D – i

(4) A = iv, B – ii, C – i, D – iii

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**Question ID : **1879801473**Option 1 ID : **1879805889**Option 2 ID : **1879805890**Option 3 ID : **1879805891**Option 4 ID : **1879805892**Status : **Answered**Chosen Option : **3****Q.25**

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**

Question ID : **1879801525**

Option 1 ID : **1879806097**

Option 2 ID : **1879806098**

Option 3 ID : **1879806099**

Option 4 ID : **1879806100**

Status : **Not Answered**

Chosen Option : --

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801500**
Option 1 ID : **1879805997**
Option 2 ID : **1879805998**
Option 3 ID : **1879805999**
Option 4 ID : **1879806000**
Status : **Answered**
Chosen Option : **4**

Q.27 Match the following taxa with the genus of the microorganism

Taxa		Genus	
A	Ascomycota	i	<i>Rhizopus</i>
B	Basidiomycota	ii	<i>Erysiphe</i>
C	Zygomycota	iii	<i>Pythium</i>
D	Oomycota	iv	<i>Ustilago</i>

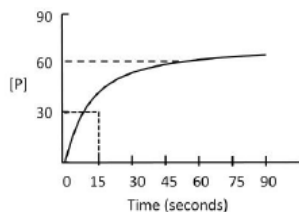
- (1) A – ii; B – iv; C – i; D – iii
(2) A – ii; B – iii; C – ii; D – iv
(3) A – iii; B – iv; C – iii; D – i
(4) A – i; B – ii; C – iv; D – ii

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801521**
Option 1 ID : **1879806081**

Option 2 ID : 1879806082
Option 3 ID : 1879806083
Option 4 ID : 1879806084
Status : Answered
Chosen Option : 4

Q.28 Given below is the [P] vs time plot of an enzymatic reaction carried out by the enzyme 'X'



Which one of the following statements is the correct interpretation of the data?

- (1) The K_m and V_{max} of the enzyme 'X' are 15 and 60 units, respectively.
- (2) The V_{max} is 60 but the K_m cannot be determined
- (3) The K_m is 15 but the V_{max} cannot be determined
- (4) Neither the K_m nor the V_{max} of the enzyme 'X' can be determined from these data

Options 1. 1
2. 2
3. 3
4. 4

Question Type : MSQ
Question ID : 1879801472
Option 1 ID : 1879805885
Option 2 ID : 1879805886
Option 3 ID : 1879805887
Option 4 ID : 1879805888
Status : Not Answered
Chosen Option : --

Q.29 A form and Z form of double stranded DNA differ in the handedness of their helices, nucleotide sequences, and configuration of base to sugar. Based on these properties, which one of the following statements defines a correct combination for A and Z forms of DNA?

- (1) Right handed double helix and *anti*-configuration for the base to sugar arrangement in A DNA; and left handed double helix with alternating sequence of G and C (as a general pattern), and alternating *syn*- and *anti*- configurations for the base to sugar arrangement in the Z DNA.
- (2) Right handed double helix and *syn*-configuration for the base to sugar arrangement in A DNA; and left handed double helix with alternating A and G sequence (as a general pattern), and *anti*-configurations for base to sugar arrangement in the Z DNA.
- (3) Left handed double helix and *anti*-configuration for base to sugar arrangement in the A form DNA and right handed double helix and *syn*-configuration for base to sugar arrangement in the Z form DNA.
- (4) Left handed double helix and *syn*-configuration for base to sugar arrangement in the A form DNA and right handed double helix and *anti*-configuration for the base to sugar arrangement for the Z form DNA.

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**

Question ID : **1879801471**

Option 1 ID : **1879805881**

Option 2 ID : **1879805882**

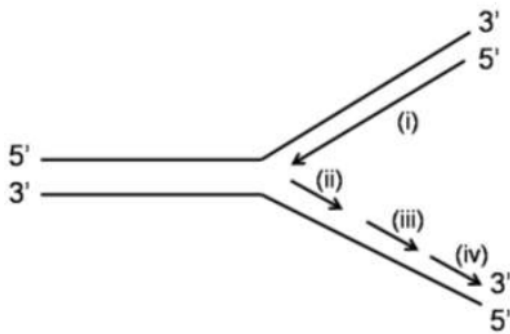
Option 3 ID : **1879805883**

Option 4 ID : **1879805884**

Status : **Answered**

Chosen Option : **1**

Q.30 The figure below shows the structure of a replication fork.



Based on this information, following statements are made:

- A. (i) represents the leading strand while (ii), (iii) and (iv) represent the Okazaki fragments.
- B. Among the Okazaki fragments, synthesis of (iv) occurs prior to the synthesis of (iii) and (ii).
- C. Among the Okazaki fragments, synthesis of (ii) occurs prior to the synthesis of (iii) and (iv).

Which one of the following options represents the correct statement(s)?

- (1) A only
- (2) B only
- (3) A and B
- (4) A and C

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801484**

Option 1 ID : **1879805933**

Option 2 ID : **1879805934**

Option 3 ID : **1879805935**

Option 4 ID : **1879805936**

Status : **Not Answered**

Chosen Option : **--**

Q.31

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801485**
Option 1 ID : **1879805937**
Option 2 ID : **1879805938**
Option 3 ID : **1879805939**
Option 4 ID : **1879805940**
Status : **Not Answered**
Chosen Option : --

Q.32 Individuals in a population are divided into various blood groups (in column ‘X’) based on the set of enzymes they have (in column ‘Y’):

Column X	Column Y
A	(i) Fucose transferase
B	(ii) GalNAc transferase
AB	(iii) Gal transferase
O	

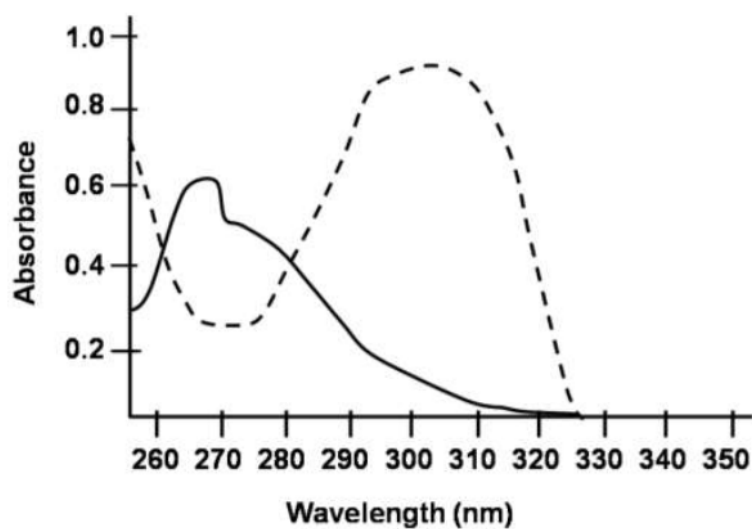
Which one of the following combinations is **NOT** correct for the blood group type and the set of enzymes a person has?

- (1) A - (i) and (ii)
(2) B - (i) and (iii)
(3) AB - (i), (ii) and (iii)
(4) O - (i), (ii) and (iii)

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801511**
Option 1 ID : **1879806041**
Option 2 ID : **1879806042**
Option 3 ID : **1879806043**
Option 4 ID : **1879806044**
Status : **Not Answered**
Chosen Option : --

Q.33 Absorption spectra of L-tyrosine in acidic (continuous line) and basic (dotted line) medium was estimated and plotted on a graph as depicted below:



Following interpretations were made:

- A. Change in the pH from acidic to basic results in shift in the lowest energy absorption maximum and decrease in the molar absorptivity.
- B. Shifting of the absorption band to longer wavelength signifies a shift to lower energy, also known as red shift.
- C. Shifting of the absorption band to shorter wavelength signifies a shift to higher energy, also known as blue shift.
- D. Wavelength shift is always accompanied by change in intensity of the absorption band.

Select the combination with correct interpretations.

- (1) A and B
- (2) A and C
- (3) B and C
- (4) B and D

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801545**
Option 1 ID : **1879806177**
Option 2 ID : **1879806178**
Option 3 ID : **1879806179**
Option 4 ID : **1879806180**
Status : **Not Answered**
Chosen Option : --

Q.34

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801517**

Option 1 ID : **1879806065**

Option 2 ID : **1879806066**

Option 3 ID : **1879806067**

Option 4 ID : **1879806068**

Status : **Answered**

Chosen Option : **3**

Q.35 Bacterial infections are generally divided into two broad classes: intracellular and extracellular bacterial infections. Given below are some of the properties which are applicable for bacterial infections.

- A. Humoral immune response is the main protective response against extracellular bacteria.
- B. Innate immunity is not effective against intracellular bacterial pathogens.
- C. Bacterial endotoxins do not induce an innate immune response.
- D. Intracellular bacterial infections generally induce a cell-mediated immune response resulting in secretion of cytokines which activate macrophages.

Which one of the following combination of statements is correct?

- (1) A and B
- (2) B and C
- (3) C and D
- (4) A and D

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**
Question ID : **1879801489**
Option 1 ID : **1879805953**
Option 2 ID : **1879805954**
Option 3 ID : **1879805955**
Option 4 ID : **1879805956**
Status : **Not Answered**
Chosen Option : --

Q.36 Cells are physically linked to one another and to extracellular matrix through their cytoskeleton and this imparts strength and rigidity of tissues and organs. Most of the animal cells have three types of cytoskeletal filaments, which are listed in Column A. The possible functions are listed in Column B.

Column A		Column B	
A	Intermediate filaments	i	Determine the shape of cell surface and are necessary for cell locomotion
B	Microtubules	ii	Maintain the position of membrane- enclosed organelles and provide intracellular transport
C	Actin filaments	iii	Provide mechanical strength of a cell

Which one is the correct match?

- (1) A – i; B – ii; C – iii
- (2) A – ii; B – i; C – iii
- (3) A – iii; B – ii; C – i
- (4) A – iii; B – i; C – ii

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801491**
Option 1 ID : **1879805961**
Option 2 ID : **1879805962**
Option 3 ID : **1879805963**
Option 4 ID : **1879805964**
Status : **Answered**
Chosen Option : **2**

Q.37

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801518**
Option 1 ID : **1879806069**
Option 2 ID : **1879806070**
Option 3 ID : **1879806071**
Option 4 ID : **1879806072**
Status : **Not Answered**
Chosen Option : --

Q.38 In the table below Column A lists ligands and Column B lists classes of receptors

Column A		Column B	
A	Serotonin	i	Binding activates a G-protein which activates or inhibits an enzyme that generates a specific second messenger and opens ion channel
B	Interferons	ii	Binding causes receptor monomers to dimerize. Dimeric receptor then interacts with and activates one or more cytosolic tyrosine protein kinases
C	Glycine	iii	Binding changes the conformation of the receptor so that specific ions flow through it
D	Insulin	iv	Binding leads to activation of intrinsic tyrosine kinase activity

Which one is the correct match?

- (1) A – i; B – ii; C – iii; D – iv
(2) A – ii; B – iii; C – iv; D – i
(3) A – iii; B – iv; C – i; D – ii
(4) A – iv; B – i; C – ii; D – iii

- Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MSQ**
Question ID : **1879801490**
Option 1 ID : **1879805957**
Option 2 ID : **1879805958**
Option 3 ID : **1879805959**
Option 4 ID : **1879805960**
Status : **Not Answered**
Chosen Option : --

Q.39 Following statements are being made regarding specification/determination during animal development:

A. During the course of commitment, the cell may not appear different from its nearest or most distant neighbours in the embryo and show no visible signs of differentiation; but its developmental fate is restricted.

B. At the stage of specification, cell commitment is not labile.

C. A cell or tissue is determined when it is capable of differentiating autonomously even when placed into another region of the embryo, or a cluster of differently specified cells in a petri-dish.

D. Cytoskeletal arrangements maintain positioning of nuclei in the syncytium, which enables specification of these nuclei by opposing morphogen gradients namely Bicoid and Caudal in *Drosophila*.

E. Capacity for “mosaic” development allows cells to acquire different functions as a result of interactions with neighbouring cells.

Which of the above statements are correct?

(1) A, B and C

(2) B, C and D

(3) C, D and E

(4) A, C and D

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

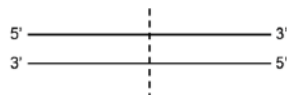
Question Type : **MSQ**
Question ID : **1879801495**
Option 1 ID : **1879805977**
Option 2 ID : **1879805978**
Option 3 ID : **1879805979**
Option 4 ID : **1879805980**
Status : **Not Answered**
Chosen Option : --

Q.40

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801503**
Option 1 ID : **1879806009**
Option 2 ID : **1879806010**
Option 3 ID : **1879806011**
Option 4 ID : **1879806012**
Status : **Not Answered**
Chosen Option : --

Q.41 In the diagram below, the dotted line marks the point of initiation of bidirectional replication.



- A. On the right side of the dotted line, leading strand synthesis occurs using the upper strand as the template.
B. On the right side of the dotted line, leading strand synthesis occurs using the lower strand as the template.
C. A ligase deficient (lig^-) mutant would affect replication of the upper strand on the left side of the dotted line.
D. A ligase deficient (lig^-) mutant would affect replication of the lower strand on the left side of the dotted line.

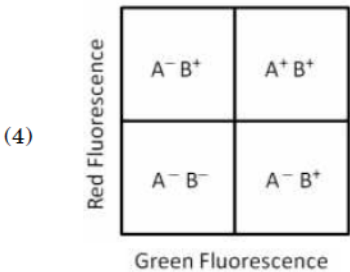
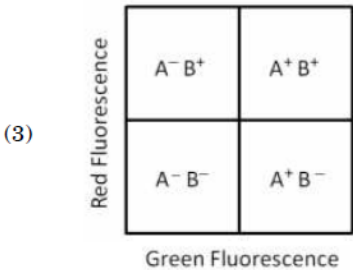
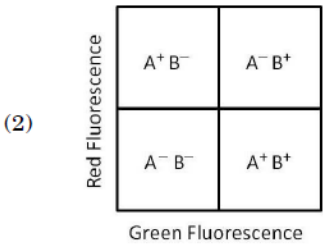
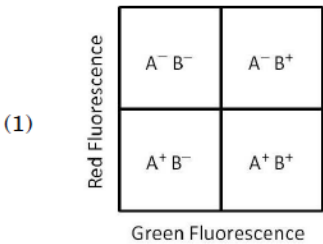
Which one of the following options represents the combinations of the correct statements?

- (1) A and D
(2) B and C
(3) B and D
(4) A and C

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801488**
Option 1 ID : **1879805949**

Q.42 A mixed cell population was stained with two antibodies, one specific for cell surface antigen A and the other specific for cell surface antigen B. Anti-A antibody was labelled with fluorescein and anti-B antibody was labelled with rhodamine. The cell population was then analysed for the presence of antigens by flow cytometry. Which one of the following is the correct outcome for this cell population?



- Options 1. 1
2. 2
3. 3
4. 4

Q.43

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801542**
Option 1 ID : **1879806165**
Option 2 ID : **1879806166**
Option 3 ID : **1879806167**
Option 4 ID : **1879806168**
Status : **Answered**
Chosen Option : **2**

Q.44

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : MSQ

Question ID : 1879801482

Option 1 ID : 1879805925

Option 2 ID : 1879805926

Option 3 ID : 1879805927

Option 4 ID : 1879805928

Status : Not Answered

Chosen Option : --

Q.45 During fertilization in mammals proteins Izumo and Juno are required for recognition of sperm and egg. Izumo and Juno are found specifically in sperm and egg, respectively. Which one of the following *in vivo* experiments will demonstrate that Izumo and Juno interact with each other?

- (1)

If sperms from a male mouse where Izumo has been knocked out is used to fertilize eggs from a normal female and no fertilization occurs.
- (2)

Whole mount immunostaining for Izumo and Juno shows its presence on the sperm and egg, respectively.
- (3)

If a CFP fused Izumo protein is mixed with YFP fused Juno protein in a tube, FRET occurs, i.e., when CFP is excited, emission of YFP is observed.
- (4)

Two independent kidney cell lines are developed, one expressing Izumo and the other Juno. If the two cells are mixed, they tend to aggregate with each other.

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801499**
Option 1 ID : **1879805993**
Option 2 ID : **1879805994**
Option 3 ID : **1879805995**
Option 4 ID : **1879805996**
Status : **Not Answered**
Chosen Option : --

- Q.46** Following statements were made with respect to transcription in eukaryotes:
- A. RNA polymerase III synthesises mRNAs in the nucleoplasm
 - B. The target promoter for RNA polymerase III is usually represented by a bipartite sequence downstream of the transcription start site.
 - C. The assembly factors TFIIIA and TFIIIC assist the binding of the positioning factor TFIIIB at the precise location.
 - D. TFIIIB is the last factor that joins the initiation complex.
 - E. Phosphorylated Ser residues in the C-terminal domain (CTD) of RNA polymerase II serve as binding sites for mRNA processing enzymes.

Which one of the following options represents the correct combination of the statements?

- (1) A, B and C
- (2) B, C and E
- (3) B, D and E
- (4) A, C and E

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801483**
Option 1 ID : **1879805929**
Option 2 ID : **1879805930**
Option 3 ID : **1879805931**
Option 4 ID : **1879805932**
Status : **Not Answered**
Chosen Option : --

Q.47

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801523**
Option 1 ID : **1879806089**
Option 2 ID : **1879806090**
Option 3 ID : **1879806091**
Option 4 ID : **1879806092**
Status : **Answered**
Chosen Option : **4**

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801506**
Option 1 ID : **1879806021**
Option 2 ID : **1879806022**
Option 3 ID : **1879806023**
Option 4 ID : **1879806024**
Status : **Not Answered**
Chosen Option : --

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801514**
Option 1 ID : **1879806053**
Option 2 ID : **1879806054**
Option 3 ID : **1879806055**
Option 4 ID : **1879806056**
Status : **Not Answered**
Chosen Option : --

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801537**
Option 1 ID : **1879806145**
Option 2 ID : **1879806146**
Option 3 ID : **1879806147**
Option 4 ID : **1879806148**
Status : **Not Answered**
Chosen Option : --

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801510**
Option 1 ID : **1879806037**
Option 2 ID : **1879806038**
Option 3 ID : **1879806039**
Option 4 ID : **1879806040**
Status : **Not Answered**
Chosen Option : --

Q.52 Hormones act by producing/activating a variety of effectors intracellularly. Below are given a variety of effectors in column ‘X’ and hormones in column ‘Y’

Column X	Column Y
A Inositol triphosphate (IP ₃)	(i) Leptin
B cGMP	(ii) IGF-1
C cAMP	(iii) Oxytocin
D Receptor Kinase	(iv) Somatostatin
E Associated Kinase	(v) ANF

Which one of the following combinations of effector and the specific hormone is correct?

- (1) A (i) and B (ii)
(2) B (iv) and A (iii)
(3) C (iv) and D (ii)
(4) E (ii) and C (i)

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801509**

Option 1 ID : **1879806033**

Option 2 ID : **1879806034**

Option 3 ID : **1879806035**

Option 4 ID : **1879806036**

Status : **Not Answered**

Chosen Option : --

Q.53

The following statements are made

- A. B form of DNA has ~10 base pairs/turn and A form of DNA has ~2.3Å helix rise per base pair
- B. Both the A and B form of DNA have wider major groove and narrow minor groove
- C. The crystalline nature of cellulose is brought about by α (1→4) linkage between the glucose subunits.
- D. The double bonds in natural lipids are always *cis*, which provides fluidity to the plasma membrane.

Which of the following combinations represent the correct statements?

(1) A and C

(2) B and C

(3) A and D

(4) C and D

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801475**

Option 1 ID : **1879805897**

Option 2 ID : **1879805898**

Option 3 ID : **1879805899**

Option 4 ID : **1879805900**

Status : **Answered**

Chosen Option : **1**

Q.54

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801541**
Option 1 ID : **1879806161**
Option 2 ID : **1879806162**
Option 3 ID : **1879806163**
Option 4 ID : **1879806164**
Status : **Answered**
Chosen Option : **2**

Q.55 A small number (approximately 10) of mice are introduced into an uninhabited island. Their population grows exponentially initially and after 3 years, reaches a population size of 520 after which the population becomes stable. At what point would you expect their population to attain their highest growth rate?

- (1) When the mice population was first introduced.
- (2) When the population size is 260.
- (3) Their population growth rate remains constant throughout.
- (4) When the population size reaches 520.

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801529**
Option 1 ID : **1879806113**
Option 2 ID : **1879806114**
Option 3 ID : **1879806115**
Option 4 ID : **1879806116**
Status : **Not Answered**
Chosen Option : **--**

Q.56

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801544**
Option 1 ID : **1879806173**
Option 2 ID : **1879806174**
Option 3 ID : **1879806175**
Option 4 ID : **1879806176**
Status : **Not Answered**
Chosen Option : --

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801480**
Option 1 ID : **1879805917**
Option 2 ID : **1879805918**
Option 3 ID : **1879805919**
Option 4 ID : **1879805920**
Status : **Not Answered**
Chosen Option : --

Q.58 Area of patch 1 is 2000 m² with a resource density of 5 units/m². Area of patch 2 is 3000 m² with a resource density of 10 units/m². As per the theory of ideal-free distribution, organisms distribute themselves such that the expected ratio of abundance of organisms in the two patches (patch 1: patch 2) is

- (1) 1:2
(2) 2:3
(3) 1:3
(4) 3:2

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801530**
Option 1 ID : **1879806117**
Option 2 ID : **1879806118**
Option 3 ID : **1879806119**
Option 4 ID : **1879806120**
Status : **Not Answered**
Chosen Option : --

Q.59

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**

Question ID : **1879801486**

Option 1 ID : **1879805941**

Option 2 ID : **1879805942**

Option 3 ID : **1879805943**

Option 4 ID : **1879805944**

Status : **Not Answered**

Chosen Option : --

Q.60 The individuals considered in this question are having two haploid sets of autosomes and no Y-chromosome. The X:A ratio of the individuals, the type of organisms chosen, their primary sex and number of Barr bodies expected in their cells are shown in the table below:

X: A ratio	Organism	Primary Sex	Number of Barr bodies
i. 0.5	A. Human	I. Male	a. Zero
ii. 2	B. <i>Drosophila</i>	II. Female	b. One
		III. Metafemale	c. Two
			d. Three

Select the option below with all correct matches:

- (1) i-A-II-a; ii-A-II-d; i-B-I-a; ii-B-III-a
- (2) i-A-I-a; ii-A-II-c; i-B-II-a; ii-B-I-a
- (3) i-A-II-c; ii-A-I-d; i-B-I-c; ii-B-II-b
- (4) i-A-II-a; ii-A-II-d; i-B-III-a; ii-B-I-a

- Options
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801513**
Option 1 ID : **1879806049**
Option 2 ID : **1879806050**
Option 3 ID : **1879806051**
Option 4 ID : **1879806052**
Status : **Not Answered**
Chosen Option : --

- Q.61** Following statements were made about the events occurring during chick development.
- A. The fertilized chick egg undergoes discoidal meroblastic cleavage, however the cleavage does not extend into the yolk cytoplasm.
 - B. Development of primary hypoblast is mediated by localized migration of a group of highly specified and connected cluster of 30-40 cells.
 - C. By the stage XIII of chick embryogenesis and little prior to primitive streak formation, the formation of the hypoblast is just complete.
 - D. Hensen's node of the chick embryo signifies a region at the anterior end of the primitive streak with regional thickening of cells.
 - E. Inhibition of Wnt planar cell polarity pathway in the epiblast causes the mesoderm and endoderm to form centrally instead of peripherally.

Which one of the following combinations represents all correct statements?

- (1) A, B and D
- (2) A, C and E
- (3) A, B and C
- (4) A, C and D

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801497**
Option 1 ID : **1879805985**
Option 2 ID : **1879805986**
Option 3 ID : **1879805987**
Option 4 ID : **1879805988**
Status : **Not Answered**
Chosen Option : --

Q.62

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801478**
Option 1 ID : **1879805909**
Option 2 ID : **1879805910**
Option 3 ID : **1879805911**
Option 4 ID : **1879805912**
Status : **Not Answered**
Chosen Option : --

Q.63 Match the following plant diseases with the name of pathogen associated with the disease

Disease		Pathogen	
A	Powdery mildew	i	<i>Erwinia amylovora</i>
B	Rice blast	ii	<i>Pseudomonas syringae pv. syringae</i>
C	Bacterial canker	iii	<i>Magnaporthe oryzae</i>
D	Fire blight	iv	<i>Erysiphe cichoracearum</i>

- (1) A – ii; B – iii; C – i; D – iv
(2) A – i; B – iv; C – ii; D – iii
(3) A – iv; B – iii; C – ii; D – i
(4) A – iii; B – ii; C – iv; D – i

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801522**
Option 1 ID : **1879806085**
Option 2 ID : **1879806086**
Option 3 ID : **1879806087**
Option 4 ID : **1879806088**
Status : **Not Answered**

Q.64 The anterior-posterior compartment of each segment of *Drosophila* is defined by *wingless* and *engrailed* genes. The following statements are given towards explaining their regulation:

- A. Wingless is a secretory factor
- B. Engrailed is a secretory factor and forms a long-range concentration gradient
- C. Engrailed regulates Wingless through Hedgehog which forms a short-range concentration gradient
- D. β -catenin homologue is the signalling molecule upstream of Engrailed, which gets cleaved by GSK3 homologue
- E. Cubitus interruptus is an intracellular signalling molecule in the Engrailed expressing cells.

Which one of the following options has all the correct statements towards the regulation of anterior-posterior compartment of segments?

- (1) B only
- (2) C only
- (3) B and E
- (4) A, C and D

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801494**

Option 1 ID : **1879805973**

Option 2 ID : **1879805974**

Option 3 ID : **1879805975**

Option 4 ID : **1879805976**

Status : **Not Answered**

Chosen Option : --

Q.65

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801520**
Option 1 ID : **1879806077**
Option 2 ID : **1879806078**
Option 3 ID : **1879806079**
Option 4 ID : **1879806080**
Status : **Not Answered**
Chosen Option : --

- Q.66** The following observations are made on a 30-residue polypeptide
- (a) Unordered structure is observed in water but a helical conformation is observed in medium of low dielectric constant.
 - (b) The peptide is resistant to degradation by proteases.
 - (c) Red blood cells are lysed by the peptide.
 - (d) β -mercaptoethanol has no effect on peptide structure.

Which of the following statements can be correctly attributed to the above observations?

- (1) The peptide is entirely composed of D-amino acids and is amphipathic.
- (2) The peptide is entirely composed of L-amino acids and is not amphipathic.
- (3) The peptide is rich in disulphide bonds between D-cysteines.
- (4) The peptide is entirely composed of L-aromatic amino acids.

- Options 1. 1
2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801474**

Option 1 ID : **1879805893**

Option 2 ID : **1879805894**

Option 3 ID : **1879805895**

Option 4 ID : **1879805896**

Status : **Not Answered**

Chosen Option : --

Q.67

Acetylcholine is a potent neurotransmitter, which is released from the neurons. After release they diffuse across the synaptic cleft and combine with nicotinic acetylcholine receptor molecules in the membrane of the postsynaptic cell. The interaction of acetylcholine with the nicotinic acetylcholine receptor produces large transient increase in the permeability of the membrane to specialized ions resulting in signal transduction for nerve impulse. Acetylcholine receptor is a

- (1) ligand-gated cation channel
- (2) ligand-gated anion channel
- (3) voltage-gated cation channel
- (4) voltage-gated anion channel

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**

Question ID : **1879801492**

Option 1 ID : **1879805965**

Option 2 ID : **1879805966**

Option 3 ID : **1879805967**

Option 4 ID : **1879805968**

Status : **Not Answered**

Chosen Option : --

Q.68

A disease-resistant plant was crossed with a susceptible plant and the resultant F_1 plants were disease resistant. The F_1 plant was selfed and the F_2 individuals were analyzed for qualitative and quantitative disease resistance. The following statements were hypothesized

- A. Qualitative resistance follows Mendelian ratio.
- B. In the F_2 individuals demonstrating qualitative resistance, "resistance" is dominant
- C. Quantitative resistance is always monogenic
- D. Qualitative resistance can be polygenic

Which one of the following combination of statements is correct?

- (1) A, C and D
- (2) A, B and C
- (3) A, B and D
- (4) B, C and D

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MSQ**
Question ID : **1879801504**
Option 1 ID : **1879806013**
Option 2 ID : **1879806014**
Option 3 ID : **1879806015**
Option 4 ID : **1879806016**
Status : **Not Answered**
Chosen Option : --

Q.69 Certain plant species produce cyanogenic glycosides to protect them from pathogens. A researcher has identified a variant of such a plant that has higher level of cyanogenic glycoside yet it is highly susceptible to a specific fungal pathogen. To interpret this counter-intuitive observation, the researcher hypothesizes that the fungal pathogen has higher level of

- A. β -glucosidase activity
- B. formamide hydrolyase activity
- C. cytochrome P-450 enzyme
- D. cyanide-resistant, alternative oxidase activity

Which one of the following combinations of the above hypotheses is correct?

- (1) A and B
- (2) B and C
- (3) C and D
- (4) B and D

- Options**
- 1. 1
 - 2. 2
 - 3. 3
 - 4. 4

Question Type : **MSQ**
Question ID : **1879801502**
Option 1 ID : **1879806005**
Option 2 ID : **1879806006**
Option 3 ID : **1879806007**
Option 4 ID : **1879806008**
Status : **Not Answered**
Chosen Option : --

Q.70

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801531**
Option 1 ID : **1879806121**
Option 2 ID : **1879806122**
Option 3 ID : **1879806123**
Option 4 ID : **1879806124**
Status : **Not Answered**
Chosen Option : --

Q.71

Condition	Abundance	Predators learn	Resource overlap
A	Mimic>Model	Yes	Yes
B	Model>Mimic	Yes	No
C	Mimic=Model	No	Yes
D	Model ≥ Mimic	No	No

Which among the above sets of conditions are best suited for mimicry to be successful?

- (1) Condition A
(2) Condition B
(3) Condition C
(4) Condition D

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801527**

Option 1 ID : 1879806105
Option 2 ID : 1879806106
Option 3 ID : 1879806107
Option 4 ID : 1879806108
Status : Not Answered
Chosen Option : --

Q.72 Aldosterone increases the reabsorption of Na^+ from the tubular fluid in the thick ascending limb of loop of Henle and in the distal tubule. These effects are explained in the following proposed statements:

- A. Aldosterone increases the number of $\text{Na}^+\text{-Cl}^-$ symporter in the apical membrane of principal cells in the early portion of distal tubule
- B. The number of Na^+ channels (ENaC) is increased in the apical membrane of principal cells in the late portion of distal tubule by aldosterone
- C. The synthesis of Na^+ , $\text{K}^+\text{-ATPase}$ in the basolateral portion of principal cells in distal tubule is decreased by the action of aldosterone
- D. Aldosterone increases the reabsorption of Na^+ across the apical cell membrane in the thick ascending limb of loop of Henle by decreasing Na^+ , $\text{K}^+\text{-ATPase}$ in it

Which one of the following combinations represents both correct statements?

- (1) A and B
- (2) B and C
- (3) C and D
- (4) A and D

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MSQ
Question ID : 1879801508
Option 1 ID : 1879806029
Option 2 ID : 1879806030
Option 3 ID : 1879806031
Option 4 ID : 1879806032
Status : Not Answered
Chosen Option : --

Q.73

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801507**
Option 1 ID : **1879806025**
Option 2 ID : **1879806026**
Option 3 ID : **1879806027**
Option 4 ID : **1879806028**
Status : **Not Answered**
Chosen Option : --

Q.74 Strain A mice were crossed with strain B mice and first generation F_1 mice were obtained, i.e. $(A \times B)F_1$. A scientist then implanted thymectomized and irradiated $(A \times B)F_1$ mice with a B-type thymus and then reconstituted the animal's immune system with an intravenous infusion of $(A \times B)F_1$ bone marrow cells. The chimeric mice were infected with lymphocytic choriomeningitis virus (LCMV) and the spleen T cells were then tested for their ability to kill LCMV-infected target cells from the strain A or strain B mice.

Which one of the following is the correct outcome of the experiment?

- (1) LCMV-infected target cells from strain A only will be killed
(2) LCMV-infected target cells from strain B only will be killed
(3) LCMV-infected target cells from both strain A and B will be killed
(4) Neither cells from strain A nor from strain B will be killed

- Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MSQ**
Question ID : **1879801493**
Option 1 ID : **1879805969**
Option 2 ID : **1879805970**

Q.75 The table below shows photosynthetic type, temperature and sunlight intensity levels.

Photosynthetic Type	Temperature	Sunlight Intensity
A. C ₃ Plant	i High	P. High
B. C ₄ plant	ii Moderate	Q. Moderate
	iii Low	R. Low

Which of the following correctly matches the plant photosynthetic type with the temperature and sunlight conditions in which photosynthetic rate per unit leaf area is maximum for that plant?

- (1) A – i – P ; B – iii – R
(2) A – iii – P ; B – i – Q
(3) A – i – R ; B – ii – Q
(4) A – ii – Q ; B – i – P

Options 1. 1
2. 2
3. 3
4. 4