# CSIR 27th Dec 2019 S1

| | |
|---|---|
| Application No. | |
| | |
| Test Date | 27/12/2019 |
| Test Time | 9:30 AM - 12:30 PM |
| Subject | Earth Sciences |

Section : **Part-A General Aptitude**

**Q.1** A commodity is sold $n$ times, each time at a profit of $p\%$. If the value of the object finally becomes 10 times its original value, then $p$ is

1. $\left(10^{\frac{1}{n}} - 1\right)100$
2. $(10^n - 1)100$
3. $(1 - 10^{-n})100$
4. $\left(1 - 10^{-\left(\frac{1}{n}\right)}\right)100$

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

Question Type : **MCQ**
Question ID : **3398931467**
Option 1 ID : **3398935637**
Option 2 ID : **3398935638**
Option 3 ID : **3398935639**
Option 4 ID : **3398935640**
Status : **Not Answered**
Chosen Option : **--**

**Q.2** A certain radioactive material produces $H$ units of heat per unit volume per unit time. A uniform solid sphere is made of this material. The sphere radiates $S$ units of heat per unit area per unit time. For the sphere to reach a steady temperature, its radius should necessarily be

1. less than or equal to $\frac{3S}{H}$
2. more than $\frac{3S}{H}$
3. less than $\frac{S}{H}$
4. more than $\frac{S}{H}$

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

Question Type : **MCQ**
Question ID : **3398931451**
Option 1 ID : **3398935573**
Option 2 ID : **3398935574**
Option 3 ID : **3398935575**
Option 4 ID : **3398935576**
Status : **Not Answered**
Chosen Option : **--**

Q.3 Fact 1: Seeta said "Geeta and I both have cars".

Fact 2: Geeta said "I don't have a car".

Fact 3: Seeta always tells the truth, but Geeta sometimes lies.

Which of the following statement(s) must be true?

A. Geeta has a car.

B. Seeta has a car.

C. Geeta is lying.

1. A only
2. A and B only
3. A, B and C
4. Only C

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

Question Type : **MCQ**
Question ID : **3398931449**
Option 1 ID : **3398935565**
Option 2 ID : **3398935566**
Option 3 ID : **3398935567**
Option 4 ID : **3398935568**
Status : **Answered**
Chosen Option : **3**

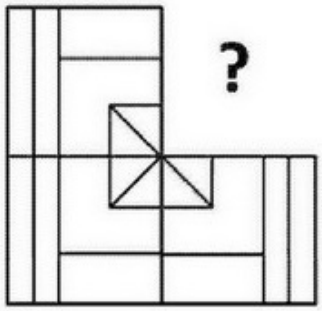
Q.4 Pick the correct statement:

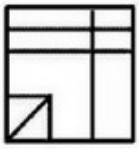
1. The sum of any two sides of a plane triangle is always less than the third side.
2. The sum of squares of two sides of a plane triangle is always equal to the square of the third side.
3. Two internal angles of a scalene plane triangle can be equal.
4. The sum of the internal angles (in radians) of a plane triangle is the same as the ratio of the circumference of a circle to its diameter.

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

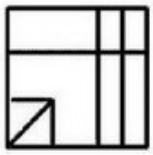
Question Type : **MCQ**
Question ID : **3398931452**
Option 1 ID : **3398935577**
Option 2 ID : **3398935578**
Option 3 ID : **3398935579**
Option 4 ID : **3398935580**
Status : **Not Answered**
Chosen Option : **--**

Q.5 Complete the figure below with the correct block.




1. 

2. 

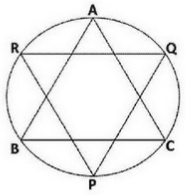
3. 

4. 

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

Question Type : **MCQ**
Question ID : **3398931448**
Option 1 ID : **3398935561**
Option 2 ID : **3398935562**
Option 3 ID : **3398935563**
Option 4 ID : **3398935564**
Status : **Answered**
Chosen Option : **4**

Q.6 ΔABC and ΔPQR are equilateral triangles inscribed in the same circle as shown. If AB is parallel to PQ, BC is parallel to RQ and CA is parallel to PR, then which of the following is true for the hexagon ARBPCQ?




1. No two sides are equal.
2. Adjacent sides are unequal.
3. Only opposite sides are equal.
4. All sides are equal.

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

Question Type : **MCQ**
Question ID : **3398931466**
Option 1 ID : **3398935633**
Option 2 ID : **3398935634**
Option 3 ID : **3398935635**
Option 4 ID : **3398935636**
Status : **Answered**
Chosen Option : **4**

**Q.7** Which of the following is true for the internal angles A, B and C of a plane scalene triangle ?

1. $\tan A + \tan B + \tan C = 0$
2. $\tan A + \tan B + \tan C = 1$
3. $\tan (A + B) = \tan C$
4. $\tan A + \tan B + \tan C = \tan A \tan B \tan C$.

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

Question Type : **MCQ**
Question ID : **3398931461**
Option 1 ID : **3398935613**
Option 2 ID : **3398935614**
Option 3 ID : **3398935615**
Option 4 ID : **3398935616**
Status : **Answered**
Chosen Option : **1**

**Q.8** 10 g of a compound is dissolved in 1 L of water. 50 mL of this solution is replaced by water and the solution is homogenised. The process is repeated once more. Then the concentration (in g/mL) of the final solution is

1. 0.010000
2. 0.009500
3. 0.009025
4. 0.005000

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

Question Type : **MCQ**
Question ID : **3398931450**
Option 1 ID : **3398935569**
Option 2 ID : **3398935570**
Option 3 ID : **3398935571**
Option 4 ID : **3398935572**
Status : **Not Answered**
Chosen Option : **--**

**Q.9** The decay rate of a certain radioisotope is measured to be 6000 decays/second after 2 seconds and 750 decays/second after 5 seconds. What is the half life of the radioisotope?

1. 1 second
2. 0.5 second
3. *e* seconds
4. 1.5 seconds

**Options** 1. 1
2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931457**
Option 1 ID : **3398935597**
Option 2 ID : **3398935598**
Option 3 ID : **3398935599**
Option 4 ID : **3398935600**
Status : **Answered**
Chosen Option : **1**

**Q.10** In a cricket match, team A needed to score 20 runs to win in the last 12 balls, with players $A_1$ and $A_2$ batting. $A_1$ faced 8 out of 12 balls with a strike rate (*defined as number of runs scored per hundred balls faced*) of 75. What is the least strike rate $A_2$ needed to score at, for team A to win (assuming team A did not lose any more wickets or get any extra runs)?

1. 250
2. 300
3. 350
4. 375

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931459**
Option 1 ID : **3398935605**
Option 2 ID : **3398935606**
Option 3 ID : **3398935607**
Option 4 ID : **3398935608**
Status : **Answered**
Chosen Option : **3**

**Q.11** To enter a building a password is needed. When A enters, the sentry says "Five", A replies "4" and is let in. When B enters, the sentry says "Six" and B replies "3" and is let in. When C enters, the sentry says "One" and C replies "3" and is let in. When you try to enter, the sentry says "Three". What should your reply be to gain entry?

**1**. 1

**2**. 2

**3**. 4

**4**. 5

**Options** 1. 1

2. 2

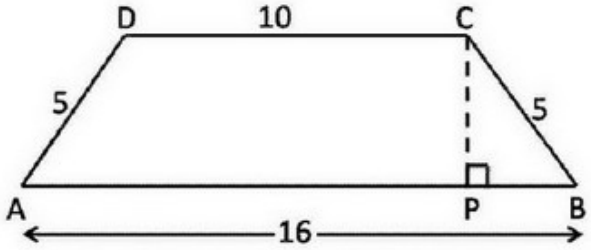
3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931456**
Option 1 ID : **3398935593**
Option 2 ID : **3398935594**
Option 3 ID : **3398935595**
Option 4 ID : **3398935596**
Status : **Not Answered**
Chosen Option : **--**

**Q.12**

In the trapezium ABCD, what is the length of CP?




1. 4
2. $4\sqrt{3}$
3. 3
4. $3\sqrt{3}$

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

Question Type : **MCQ**
Question ID : **3398931455**
Option 1 ID : **3398935589**
Option 2 ID : **3398935590**
Option 3 ID : **3398935591**
Option 4 ID : **3398935592**
Status : **Answered**
Chosen Option : **1**

**Q.13** In order to estimate the number of fish of species B in a pond, 100 fish of a foreign species A were released into the pond. Later, in a catch of 100 fish, the numbers of fish of species A and B were found to be 10 and 90 respectively. Assuming homogeneous distribution of the fish, and no changes in the numbers for either species, the estimated number of fish of species B in the pond is

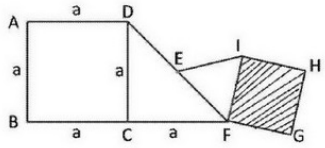
**1**. 900.
**2**. 100.
**3**. 810.
**4**. 1000.

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

Question Type : **MCQ**
Question ID : **3398931465**
Option 1 ID : **3398935629**
Option 2 ID : **3398935630**
Option 3 ID : **3398935631**
Option 4 ID : **3398935632**
Status : **Answered**
Chosen Option : **3**

**Q.14**

In the following figure, E is the mid-point of DF, FGHI is a square and EIF is an equilateral triangle. What is the area of the square FGHI ?




1. $\frac{\sqrt{3}a^2}{2}$
2. $\sqrt{2}a^2$
3. $\frac{a^2}{2}$
4. $\frac{a^2}{\sqrt{2}}$

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

Question Type : **MCQ**
Question ID : **3398931458**
Option 1 ID : **3398935601**
Option 2 ID : **3398935602**
Option 3 ID : **3398935603**
Option 4 ID : **3398935604**
Status : **Answered**
Chosen Option : **3**

**Q.15** What is the maximum number of cubes of side 2 cm each that can be fitted into a cylinder without rising above the brim of a cylinder whose diameter and height are 6 cm and 15 cm, respectively?

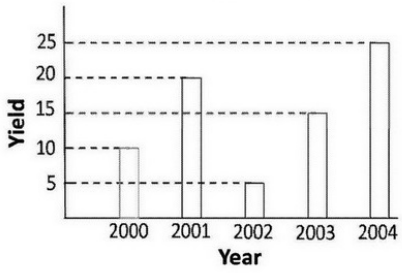
1. 14
2. 21
3. 28
4. 35

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

Question Type : **MCQ**
Question ID : **3398931453**
Option 1 ID : **3398935581**
Option 2 ID : **3398935582**
Option 3 ID : **3398935583**
Option 4 ID : **3398935584**
Status : **Not Answered**
Chosen Option : **--**

**Q.16**

Year-wise yield in tonnes of a product is given in the graph below. Which year had the largest percent variation in the yield compared to the previous year ?

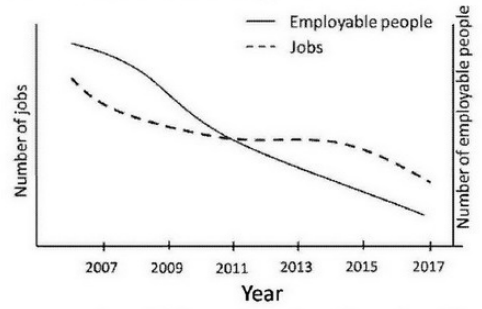



1. 2004
2. 2003
3. 2002
4. 2001

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

Question Type : **MCQ**
Question ID : **3398931460**
Option 1 ID : **3398935609**
Option 2 ID : **3398935610**
Option 3 ID : **3398935611**
Option 4 ID : **3398935612**
Status : **Answered**
Chosen Option : **2**

**Q.17** Which one of the following inferences can definitely be drawn based on the plot shown ?




1. Number of jobs and number of employable people decreased at the same rate from 2007 to 2017.
2. There were surplus jobs from 2012 onwards.
3. Unemployment increased from 2012 onwards.
4. Minimum unemployment was during 2007 and 2011.

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

Question Type : **MCQ**
Question ID : **3398931463**
Option 1 ID : **3398935621**
Option 2 ID : **3398935622**
Option 3 ID : **3398935623**
Option 4 ID : **3398935624**
Status : **Answered**
Chosen Option : **2**

Q.18 If 'DELHI' is coded as 'BCJFG' and 'MADRAS' is coded as 'KYBPYQ', then 'MUMBAI' is coded as:

1. LTLAZH
2. KWNCBG
3. KSKZYG
4. KTKAYH

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

Question Type : **MCQ**
Question ID : **3398931454**
Option 1 ID : **3398935585**
Option 2 ID : **3398935586**
Option 3 ID : **3398935587**
Option 4 ID : **3398935588**
Status : **Answered**
Chosen Option : **3**

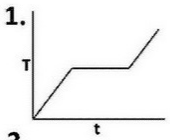
Q.19 If a square is inscribed in the ellipse $\frac{x^2}{25}+\frac{y^2}{16}=1$ with its sides parallel to the axes of the ellipse and its vertices lying on the ellipse, then the area of the square is approximately

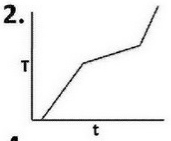
1. 40.
2. 16.
3. 25.
4. 20.

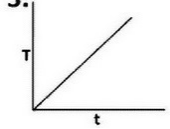
Options 1. 1
2. 2
3. 3
4. 4

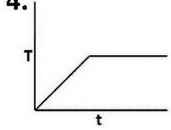
Question Type : **MCQ**
Question ID : **3398931464**
Option 1 ID : **3398935625**
Option 2 ID : **3398935626**
Option 3 ID : **3398935627**
Option 4 ID : **3398935628**
Status : **Answered**
Chosen Option : **4**

Q.20 A piece of iron is heated at a uniform rate. Heating is continued even after it melts. Which one of the following is the correct Temperature-time (T-t) diagram for this process?

1. 


2. 


3. 


4. 


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

Question Type : **MCQ**
Question ID : **3398931462**
Option 1 ID : **3398935617**
Option 2 ID : **3398935618**
Option 3 ID : **3398935619**
Option 4 ID : **3398935620**
Status : **Answered**
Chosen Option : **1**

Section : **Part-B Earth Sciences**

**Q.1** Which one of the following minerals is most likely to dominate ancient carbonate rocks?

1. High-Mg calcite
2. Low-Mg calcite
3. Aragonite
4. Vaterite

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

Question Type : **MCQ**
Question ID : **3398931517**
Option 1 ID : **3398935837**
Option 2 ID : **3398935838**
Option 3 ID : **3398935839**
Option 4 ID : **3398935840**
Status : **Answered**
Chosen Option : **3**

**Q.2** Statement I: The narrow flat surfaces on either side of the river valley at different elevations above the bed level are called terraces.

Statement II: Alluvial terraces are primarily depositional landforms.

Choose the CORRECT option.

1. Both statements are correct
2. I is correct and II is incorrect
3. I is incorrect and II is correct
4. Both statements are incorrect

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

Question Type : **MCQ**
Question ID : **3398931510**
Option 1 ID : **3398935809**
Option 2 ID : **3398935810**
Option 3 ID : **3398935811**
Option 4 ID : **3398935812**
Status : **Answered**
Chosen Option : **1**

**Q.3**

Which one of the following is NOT a structurally controlled landform?

1. Hogback
2. Cuesta
3. Triangular facet
4. Alluvial terrace

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

Question Type : **MCQ**
Question ID : **3398931508**
Option 1 ID : **3398935801**
Option 2 ID : **3398935802**
Option 3 ID : **3398935803**
Option 4 ID : **3398935804**
Status : **Answered**
Chosen Option : **4**

Q.4 Which among the following has the highest value of Poisson's ratio?

1. Seawater
2. Beach sands
3. Alluvium
4. Granite

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

Question Type : **MCQ**
Question ID : **3398931502**
Option 1 ID : **3398935777**
Option 2 ID : **3398935778**
Option 3 ID : **3398935779**
Option 4 ID : **3398935780**
Status : **Answered**
Chosen Option : **1**

Q.5 On transport-limited slopes

1. weathering rates are lower than transport processes
2. weathering rates are more rapid than transport processes
3. there is little or no soil or debris cover on the surface
4. mass movement processes are completely absent

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

Question Type : **MCQ**
Question ID : **3398931515**
Option 1 ID : **3398935829**

Option 2 ID : **3398935830**
Option 3 ID : **3398935831**
Option 4 ID : **3398935832**
Status : **Not Answered**
Chosen Option : **--**

Q.6 The acceleration due to gravity 'g', inside the Earth

1. decreases linearly from surface to zero at the center.
2. remains constant throughout.
3. is maximum at the core-mantle boundary.
4. is maximum in the core.

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

Question Type : **MCQ**
Question ID : **3398931469**
Option 1 ID : **3398935645**
Option 2 ID : **3398935646**
Option 3 ID : **3398935647**
Option 4 ID : **3398935648**
Status : **Answered**
Chosen Option : **4**

Q.7 Two metamorphic rocks have different mineral assemblages. If both have been metamorphosed at the same pressure, temperature and fluid condition, then which one of the following is correct?

1. Both the rocks have same bulk composition
2. Both the rocks have different bulk composition
3. Protolith of both the rocks was same
4. Both have been metamorphosed at different depths

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

Question Type : **MCQ**
Question ID : **3398931474**
Option 1 ID : **3398935665**
Option 2 ID : **3398935666**
Option 3 ID : **3398935667**
Option 4 ID : **3398935668**
Status : **Answered**
Chosen Option : **3**

Q.8 Which of the following does not shed any light on the causal mechanism of K-Pg extinction event?

1. Iridium anomaly
2. Extinction of Coccolithophores
3. Presence of shocked quartz
4. Presence of glassy microspherules

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

Question Type : **MCQ**
Question ID : **3398931468**
Option 1 ID : **3398935641**
Option 2 ID : **3398935642**
Option 3 ID : **3398935643**
Option 4 ID : **3398935644**
Status : **Not Answered**
Chosen Option : **--**

Q.9 The high abundance of komatiite (high-MgO magmas) during the Archaean suggests

1. Higher mantle temperature (>1500 °C)
2. Lower radioactive heat in the mantle
3. Lower degree of mantle differentiation
4. Presence of very high $H_2O$ in the mantle

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

Question Type : **MCQ**
Question ID : **3398931477**
Option 1 ID : **3398935677**
Option 2 ID : **3398935678**
Option 3 ID : **3398935679**
Option 4 ID : **3398935680**
Status : **Answered**
Chosen Option : **3**

Q.10 Mineralogical maturity of sediment can be achieved by

A. long distance transportation
B. quick dumping
C. chemical weathering at source
D. erosion

Which one of the following is CORRECT?

1. A and B
2. A and C
3. A and D
4. B and D

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

Question Type : **MCQ**

Question ID : **3398931514**
Option 1 ID : **3398935825**
Option 2 ID : **3398935826**
Option 3 ID : **3398935827**
Option 4 ID : **3398935828**
Status : **Answered**
Chosen Option : **2**

**Q.11** The depth of penetration of an electromagnetic wave increases with

1. increase in its frequency and the conductivity of the medium
2. increase in its frequency and decrease in the conductivity of the medium
3. decrease in its frequency and increase in the conductivity of the medium
4. decrease in its frequency and in the conductivity of the medium

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

Question Type : **MCQ**
Question ID : **3398931501**
Option 1 ID : **3398935773**
Option 2 ID : **3398935774**
Option 3 ID : **3398935775**
Option 4 ID : **3398935776**
Status : **Answered**
Chosen Option : **4**

**Q.12** Which one of the following options lists cloud types in ascending order of altitude?

1. cirrocumulus, altocumulus, stratus
2. stratus, altocumulus, cirrocumulus
3. altocumulus, stratus, cirrocumulus
4. cirrocumulus, stratus, altocumulus

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

Question Type : **MCQ**
Question ID : **3398931491**
Option 1 ID : **3398935733**
Option 2 ID : **3398935734**
Option 3 ID : **3398935735**
Option 4 ID : **3398935736**
Status : **Answered**
Chosen Option : **2**

**Q.13** Existence of large active volcanoes on Venus suggests that it

1. is too close to the Sun.
2. has a very hot atmosphere.
3. has an active tectonics.
4. contains a lot of radioactive material.

**Options** 1. 1

2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **3398931472**
Option 1 ID : **3398935657**
Option 2 ID : **3398935658**
Option 3 ID : **3398935659**
Option 4 ID : **3398935660**
Status : **Answered**
Chosen Option : **3**

Q.14 The soil will flow when

1. shear strength > shear force
2. shear force > shear strength
3. shear force = shear strength
4. shear force < normal force

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

Question Type : **MCQ**
Question ID : **3398931513**
Option 1 ID : **3398935821**
Option 2 ID : **3398935822**
Option 3 ID : **3398935823**
Option 4 ID : **3398935824**
Status : **Answered**
Chosen Option : **2**

Q.15 The superimposed drainage is shown by the

1. Bhima river
2. Son river
3. Kosi river
4. Luni river

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

Question Type : **MCQ**
Question ID : **3398931512**
Option 1 ID : **3398935817**
Option 2 ID : **3398935818**
Option 3 ID : **3398935819**
Option 4 ID : **3398935820**
Status : **Answered**
Chosen Option : **2**

Q.16 A line of thunderstorms that forms ahead of an advancing cold front is called a

1. gust front.
2. squall line.
3. dry line.
4. wall cloud.

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

Question Type : **MCQ**
Question ID : **3398931494**
Option 1 ID : **3398935745**
Option 2 ID : **3398935746**
Option 3 ID : **3398935747**
Option 4 ID : **3398935748**
Status : **Not Answered**
Chosen Option : **--**

Q.17 If a planet could be found in the solar system beyond the erstwhile planet Pluto, then its distance from the Sun would be (in astronomical units) around

1. 165
2. 155
3. 135
4. 125

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

Question Type : **MCQ**
Question ID : **3398931503**
Option 1 ID : **3398935781**
Option 2 ID : **3398935782**
Option 3 ID : **3398935783**
Option 4 ID : **3398935784**
Status : **Not Answered**
Chosen Option : **--**

Q.18 When 500 $W/m^2$ of visible light strikes a translucent object, 150 $W/m^2$ bounces back and 100 $W/m^2$ passes through. What is the emissivity of the object?

1. 0.1
2. 0.3
3. 0.5
4. 0.7

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

Question Type : **MCQ**
Question ID : **3398931480**
Option 1 ID : **3398935689**
Option 2 ID : **3398935690**

Option 3 ID : **3398935691**
Option 4 ID : **3398935692**
Status : **Answered**
Chosen Option : **2**

Q.19 $N_2O$ in the ocean is produced due to

1. denitrification only
2. denitrification and nitrification
3. primary production and denitrification
4. calcification and denitrification

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

Question Type : **MCQ**
Question ID : **3398931488**
Option 1 ID : **3398935721**
Option 2 ID : **3398935722**
Option 3 ID : **3398935723**
Option 4 ID : **3398935724**
Status : **Not Answered**
Chosen Option : **--**

Q.20 At what temperature are °C and °F the same?

1. -40
2. 0
3. -25
4. 100

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

Question Type : **MCQ**
Question ID : **3398931492**
Option 1 ID : **3398935737**
Option 2 ID : **3398935738**
Option 3 ID : **3398935739**
Option 4 ID : **3398935740**
Status : **Answered**
Chosen Option : **1**

Q.21

Geodynamo helps in creating earth as a habitable zone by

1. shielding it form greenhouse gases
2. shielding it from solar wind
3. reducing the Earth's heat
4. driving the Earth's ocean current

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

Question Type : **MCQ**
Question ID : **3398931499**
Option 1 ID : **3398935765**
Option 2 ID : **3398935766**
Option 3 ID : **3398935767**
Option 4 ID : **3398935768**
Status : **Answered**
Chosen Option : **2**

**Q.22** Water ceases to exist in super-cooled liquid water state when temperature falls below

1. 0°C
2. – 20°C
3. – 40°C
4. – 30°C

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

Question Type : **MCQ**
Question ID : **3398931498**
Option 1 ID : **3398935761**
Option 2 ID : **3398935762**
Option 3 ID : **3398935763**
Option 4 ID : **3398935764**
Status : **Not Answered**
Chosen Option : **--**

**Q.23** Which of the following grain packing system exhibits the maximum porosity?

1. Cubic
2. Hexagonal
3. Rhombohedral
4. Tetragonal

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

Question Type : **MCQ**
Question ID : **3398931497**

Option 1 ID : **3398935757**
Option 2 ID : **3398935758**
Option 3 ID : **3398935759**
Option 4 ID : **3398935760**
Status : **Answered**
Chosen Option : **1**

**Q.24** A dry air parcel at 20°C temperature initially at sea level moves upward adiabatically to a height of 3000 m. What would be its temperature at this height?

1. 10°C
2. −10°C
3. 20°C
4. −20°C

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

Question Type : **MCQ**
Question ID : **3398931479**
Option 1 ID : **3398935685**
Option 2 ID : **3398935686**
Option 3 ID : **3398935687**
Option 4 ID : **3398935688**
Status : **Answered**
Chosen Option : **3**

**Q.25** The correct ascending order of barophilic marine life forms is

1. piezophobic > piezophilic > piezoduric
2. piezophobic > piezoduric > piezophilic
3. piezophilic > piezophobic > piezoduric
4. piezoduric > piezophilic > piezophobic

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

Question Type : **MCQ**
Question ID : **3398931483**
Option 1 ID : **3398935701**
Option 2 ID : **3398935702**
Option 3 ID : **3398935703**
Option 4 ID : **3398935704**
Status : **Answered**
Chosen Option : **2**

**Q.26** What is the major source of water in Indian Peninsular rivers during dry seasons?

1. Non-seasonal rain
2. Local precipitation
3. Groundwater flow
4. Mineral dehydration

**Options** 1. 1

2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **3398931470**
Option 1 ID : **3398935649**
Option 2 ID : **3398935650**
Option 3 ID : **3398935651**
Option 4 ID : **3398935652**
Status : **Answered**
Chosen Option : **3**

**Q.27** Seawater of salinity 35 psu freezes at

1. $0^{o}C$
2. $-1.9^{o}C$
3. $+1.9^{o}C$
4. $-19^{o}C$

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

Question Type : **MCQ**
Question ID : **3398931484**
Option 1 ID : **3398935705**
Option 2 ID : **3398935706**
Option 3 ID : **3398935707**
Option 4 ID : **3398935708**
Status : **Not Answered**
Chosen Option : **--**

**Q.28** Mountains subjected to erosion disturb isostatic compensation. If an eroded mountain no longer justifies deep root-zones, the topography is isostatically

1. under compensated
2. over compensated
3. not compensated
4. in equilibrium with surrounding

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

Question Type : **MCQ**
Question ID : **3398931507**
Option 1 ID : **3398935797**
Option 2 ID : **3398935798**
Option 3 ID : **3398935799**
Option 4 ID : **3398935800**
Status : **Answered**
Chosen Option : **4**

Q.29 Fluvial deposits in general show

1. Coarsening upward sequence
2. Fining upward sequence
3. Coarsening as well as fining upward sequence
4. Consistency of grain size

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

Question Type : **MCQ**
Question ID : **3398931482**
Option 1 ID : **3398935697**
Option 2 ID : **3398935698**
Option 3 ID : **3398935699**
Option 4 ID : **3398935700**
Status : **Not Answered**
Chosen Option : **--**

Q.30 Which colour of light is least penetrative in seawater?

1. Indigo
2. Red
3. Green
4. Yellow

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

Question Type : **MCQ**
Question ID : **3398931481**
Option 1 ID : **3398935693**
Option 2 ID : **3398935694**
Option 3 ID : **3398935695**
Option 4 ID : **3398935696**
Status : **Not Answered**
Chosen Option : **--**

Q.31 Iron meteorites most likely represent which part of their parent bodies?

1. Crust
2. Upper mantle
3. Core
4. Lower mantle

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

Question Type : **MCQ**
Question ID : **3398931475**
Option 1 ID : **3398935669**
Option 2 ID : **3398935670**
Option 3 ID : **3398935671**
Option 4 ID : **3398935672**
Status : **Answered**
Chosen Option : **3**

**Q.32** Decrease of atmospheric pressure with height can be explained using

1. continuity equation
2. geostrophic equation
3. thermodynamic energy equation
4. hydrostatic equation

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

Question Type : **MCQ**
Question ID : **3398931495**
Option 1 ID : **3398935749**
Option 2 ID : **3398935750**
Option 3 ID : **3398935751**
Option 4 ID : **3398935752**
Status : **Not Answered**
Chosen Option : **--**

**Q.33** Which one of the following equations correctly describes the weathering of carbonate rocks by rain?

1. $CaCO_3 + H_2O + CO_2 \rightarrow HCO_3^- + Ca^{++}$
2. $CaCO_3 + H_2O + CO_2 \rightarrow 2HCO_3^- + Ca^{++}$
3. $CaCO_3 + 2H_2O + CO_2 \rightarrow 2HCO_3^- + Ca^{++}$
4. $CaCO_3 + H_2O + CO_2 \rightarrow HCO_3^- + 2Ca^{++}$

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

Question Type : **MCQ**
Question ID : **3398931473**
Option 1 ID : **3398935661**
Option 2 ID : **3398935662**
Option 3 ID : **3398935663**
Option 4 ID : **3398935664**
Status : **Answered**
Chosen Option : **2**

**Q.34**

The pressure at 1000 m depth in the ocean is

1. 100 bar
2. 101 bar
3. 10 bar
4. 11 bar

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

Question Type : **MCQ**
Question ID : **3398931487**
Option 1 ID : **3398935717**
Option 2 ID : **3398935718**
Option 3 ID : **3398935719**
Option 4 ID : **3398935720**
Status : **Answered**
Chosen Option : **1**

**Q.35** Statement I: A terminal moraine is the end moraine marking the farthest advance of a glacier.

Statement II: A recessional moraine is an end moraine built while the terminus of a receding glacier remains temporarily stationary.

Choose the CORRECT option.

1. Both statements are correct
2. I is correct and II is incorrect
3. I is incorrect and II is correct
4. Both statements are incorrect

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

Question Type : **MCQ**
Question ID : **3398931509**
Option 1 ID : **3398935805**
Option 2 ID : **3398935806**
Option 3 ID : **3398935807**
Option 4 ID : **3398935808**
Status : **Answered**
Chosen Option : **1**

**Q.36** Which one of the following sets is used for measuring ocean's primary production?

1. $^{3}H$, $^{14}C$, $^{15}N$
2. $^{10}Be$, $^{13}C$, $^{14}C$
3. $^{13}C$, $^{14}C$, $^{15}N$
4. $^{15}N$, $^{18}O$, $^{87}Sr$

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

Question Type : **MCQ**
Question ID : **3398931489**
Option 1 ID : **3398935725**
Option 2 ID : **3398935726**
Option 3 ID : **3398935727**
Option 4 ID : **3398935728**
Status : **Not Answered**
Chosen Option : **--**

**Q.37** The major seismic discontinuity at 670 km depth corresponds to which one of the following phase transformations

1. Olivine changes to $\beta$ spinel structure and releasing heat in the process
2. Olivine changes to $\beta$ spinel structure and absorbing heat in the process
3. $\gamma$ spinel structure changes to Perovskite and magnesiowüstite and absorbing heat in the process
4. $\beta$ spinel structure changes to $\gamma$ spinel structure

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

Question Type : **MCQ**
Question ID : **3398931506**
Option 1 ID : **3398935793**
Option 2 ID : **3398935794**
Option 3 ID : **3398935795**
Option 4 ID : **3398935796**
Status : **Not Answered**
Chosen Option : **--**

**Q.38** Which of the following is NOT associated with appearance and evolution of life on the Earth?

1. $CO_2$
2. $O_3$
3. $H_2O$
4. $N_2O$

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

Question Type : **MCQ**
Question ID : **3398931476**
Option 1 ID : **3398935673**
Option 2 ID : **3398935674**
Option 3 ID : **3398935675**
Option 4 ID : **3398935676**
Status : **Answered**
Chosen Option : **4**

**Q.39**

The appearance of molluscs took place in the

1. Triassic.
2. Jurassic.
3. Cretaceous.
4. Tertiary.

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

Question Type : **MCQ**
Question ID : **3398931471**
Option 1 ID : **3398935653**
Option 2 ID : **3398935654**
Option 3 ID : **3398935655**
Option 4 ID : **3398935656**
Status : **Not Answered**
Chosen Option : **--**

Q.40 The most dominant ions in the ionspheric E-region are

1. $N_2^+$ and $O_2^+$
2. $N_2^+$ and $O^+$
3. $N_2^+$ and $NO^+$
4. $NO^+$ and $O_2^+$

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

Question Type : **MCQ**
Question ID : **3398931493**
Option 1 ID : **3398935741**
Option 2 ID : **3398935742**
Option 3 ID : **3398935743**
Option 4 ID : **3398935744**
Status : **Not Answered**
Chosen Option : **--**

Q.41 Which of the following is NOT associated with photochemical smog formation in the troposphere?

1. Low temperature and water vapour
2. Intense sunlight and high temperature
3. Presence of hydrocarbons
4. Presence of nitrogen oxides

Options 1. 1
2. 2
3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931496**
Option 1 ID : **3398935753**
Option 2 ID : **3398935754**
Option 3 ID : **3398935755**
Option 4 ID : **3398935756**
Status : **Answered**
Chosen Option : **4**

**Q.42** Laurasia and Gondwanaland started to split apart in the

1. Early Palaeozoic.
2. Early Mesozoic.
3. Late Palaeozoic.
4. Late Mesozoic.

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

Question Type : **MCQ**
Question ID : **3398931516**
Option 1 ID : **3398935833**
Option 2 ID : **3398935834**
Option 3 ID : **3398935835**
Option 4 ID : **3398935836**
Status : **Not Answered**
Chosen Option : **--**

**Q.43** Which one of the following statement is INCORRECT with reference to waves in the ocean?

1. The orbital diameter of motion of water parcels decreases with increasing depth in shallow water (depth < 1/20 wavelength)
2. The refraction of ocean waves occurs in shallow water
3. Tides are forced waves and rest of the ocean waves are free waves
4. Internal waves form in the pycnocline region

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

Question Type : **MCQ**
Question ID : **3398931490**
Option 1 ID : **3398935729**
Option 2 ID : **3398935730**
Option 3 ID : **3398935731**
Option 4 ID : **3398935732**
Status : **Not Answered**
Chosen Option : **--**

**Q.44**

Carbonate sedimentation in an area experiences

A. early diagenesis

B. in-situ deposition

C. late diagenesis

D. high energy condition

The paucity of primary sedimentary structures in such areas is due to

1. A and B
2. A and C
3. A and D
4. B and D

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931511**
Option 1 ID : **3398935813**
Option 2 ID : **3398935814**
Option 3 ID : **3398935815**
Option 4 ID : **3398935816**
Status : **Answered**
Chosen Option : **2**

**Q.45** If the Earth's core were fully solidified, one would experience a sharp

1. increase in both the Earth's magnetic field and the frequency of earthquakes
2. increase in the Earth's magnetic field, but a decrease in the frequency of earthquakes
3. decrease in the Earth's magnetic field, but an increase in the frequency of earthquakes
4. decrease in both the Earth's magnetic field and the frequency of earthquakes

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931500**
Option 1 ID : **3398935769**
Option 2 ID : **3398935770**
Option 3 ID : **3398935771**
Option 4 ID : **3398935772**
Status : **Answered**
Chosen Option : **4**

**Q.46** In a mantle convection, the quantity that measures the inertial to viscous forces is called

1. Rayleigh number
2. Reynolds number
3. Nusselt number
4. Péclet number

Options 1. 1

2. 2

3. 3
4. 4

Question Type : **MCQ**
Question ID : **3398931504**
Option 1 ID : **3398935785**
Option 2 ID : **3398935786**
Option 3 ID : **3398935787**
Option 4 ID : **3398935788**
Status : **Answered**
Chosen Option : **2**

**Q.47** In a geophysical inverse problem, the unit covariance matrix $[Cov_u m]$ is a measure of ($m$ is model parameter)

1. the ability of the inverse operator to uniquely determine the estimated model parameters
2. the ability of the inverse operator to uniquely determine the data
3. how uncorrelated noise with unit variance in the data is mapped into uncertainties in the estimated model parameters
4. how uncorrelated noise with unit variance in the estimated model parameters is mapped in to uncertainties in the data

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

Question Type : **MCQ**
Question ID : **3398931505**
Option 1 ID : **3398935789**
Option 2 ID : **3398935790**
Option 3 ID : **3398935791**
Option 4 ID : **3398935792**
Status : **Not Answered**
Chosen Option : **--**

**Q.48** Which statement is NOT true?

1. Pacific is the oldest ocean and ringed by subduction zones
2. Indian Ocean is the youngest ocean and has thick sediment cover
3. New oceans may form in a location where the temperature of the mantle below the continent becomes elevated
4. Atlantic Ocean is shrinking as lithospheric plates are converging at Mid Atlantic Ridge

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

Question Type : **MCQ**
Question ID : **3398931486**
Option 1 ID : **3398935713**
Option 2 ID : **3398935714**
Option 3 ID : **3398935715**
Option 4 ID : **3398935716**
Status : **Answered**
Chosen Option : **3**

Q.49 Which of the following is NOT a greenhouse gas?

1. Dimethyl sulfide
2. Water vapour
3. Nitrous oxide
4. Methane

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

Question Type : **MCQ**
Question ID : **3398931485**
Option 1 ID : **3398935709**
Option 2 ID : **3398935710**
Option 3 ID : **3398935711**
Option 4 ID : **3398935712**
Status : **Answered**
Chosen Option : **1**

Q.50 Why is dissolved inorganic carbon the highest in the deep Pacific Ocean?

1. Higher $CaCO_3$ dissolution rates
2. Higher organic carbon decomposition rates
3. Higher sinking organic carbon rates
4. Higher age of water mass

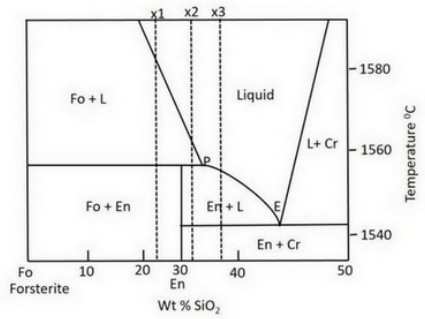
Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **3398931478**
Option 1 ID : **3398935681**
Option 2 ID : **3398935682**
Option 3 ID : **3398935683**
Option 4 ID : **3398935684**
Status : **Answered**
Chosen Option : **1**

Section : **Part-C Earth Sciences**

Q.1

A part of the system Forsterite (Fo) - Silica ($SiO_2$) at 1 atm pressure is given in the diagram. The correct crystallization sequences corresponding to the initial bulk liquid compositions at $x_1$, $x_2$, $x_3$ are




1. $x_1$ : Fo + Enstatite (En), En + Cristobalite (Cr)
   $x_2$ : Fo + En, En + Cr
   $x_3$ : En + Cr
2. $x_1$ : Fo, Fo + En
   $x_2$ : Fo, En + Cr
   $x_3$ : En, En + Cr
3. $x_1$: Fo, En, Cr
   $x_2$ : Fo, En, Cr
   $x_3$ : Cr
4. $x_1$ : Fo
   $x_2$ : En
   $x_3$ : Cr

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

Question Type : **MCQ**
Question ID : **3398931522**
Option 1 ID : **3398935857**
Option 2 ID : **3398935858**
Option 3 ID : **3398935859**
Option 4 ID : **3398935860**
Status : **Not Answered**
Chosen Option : **--**

Q.2 The $X, Y$ and $Z$ components of NRM of a rock specimen collected at 30°N magnetic latitude are in the ratio $3:\sqrt{3}:4$ . This implies that the rock

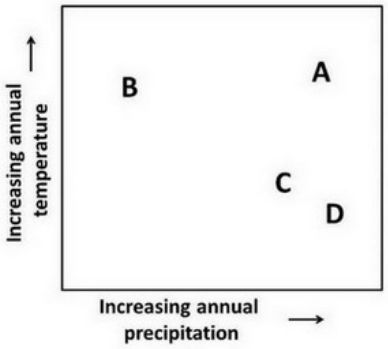
1. has moved northwards by 30° and rotated clockwise by 30°
2. has moved northwards by 30° and has undergone no rotation
3. is static, without any movement/ rotation
4. has not undergone any longitudinal movement, but rotated clockwise by 30°

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

Question Type : **MCQ**
Question ID : **3398931540**
Option 1 ID : **3398935929**
Option 2 ID : **3398935930**

Option 3 ID : **3398935931**
Option 4 ID : **3398935932**
Status : **Not Answered**
Chosen Option : **--**

Q.3 Identify process of soil formation (A, B, C and D) from the given diagram




1. A- Salinization, B- Lateritization, C- Podzolization, D- Gleization
2. A- Lateritization, B- Salinization, C- Gleization, D- Podzolization
3. A- Lateritization, B- Salinization, C-Podzolization, D- Gleization
4. A-Salinization, B- Podzolization, C- Gleization, D- Lateritization

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

Question Type : **MCQ**
Question ID : **3398931555**
Option 1 ID : **3398935989**
Option 2 ID : **3398935990**
Option 3 ID : **3398935991**
Option 4 ID : **3398935992**
Status : **Answered**
Chosen Option : **3**

Q.4 Select the correct order of latitudes over which globally averaged sea surface salinity increases.

1. 45°, 30°, 20°, 0°
2. 0°, 20°, 30°, 45°
3. 45°, 20°, 30°, 0°
4. 0°, 45°, 20°, 30°

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

Question Type : **MCQ**
Question ID : **3398931572**
Option 1 ID : **3398936057**
Option 2 ID : **3398936058**
Option 3 ID : **3398936059**
Option 4 ID : **3398936060**
Status : **Answered**

Chosen Option : **3**

Q.5 Choose the youngest oceanic event among the following:

1. Opening of Tasman Gateway
2. Opening of Drake Passage
3. Closing of Tethys Seaway
4. Closing of Indonesian Seaway

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

Question Type : **MCQ**
Question ID : **3398931579**
Option 1 ID : **3398936085**
Option 2 ID : **3398936086**
Option 3 ID : **3398936087**
Option 4 ID : **3398936088**
Status : **Not Answered**
Chosen Option : **--**

Q.6 The subtropical jet stream over Indian region is a band of

1. easterlies flowing over the peninsula in the southwest monsoon months
2. westerlies flowing over the peninsula in the southwest monsoon months
3. westerlies flowing over the north Indian region having maximum intensity during summer months
4. westerlies flowing over the north Indian region having maximum intensity during winter months

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

Question Type : **MCQ**
Question ID : **3398931596**
Option 1 ID : **3398936153**
Option 2 ID : **3398936154**
Option 3 ID : **3398936155**
Option 4 ID : **3398936156**
Status : **Not Answered**
Chosen Option : **--**

Q.7

In Seismic zoning map (IS:1893, BIS 2002) of India there are four zones II, III, IV and V. Find the correct match between places and seismic zones

| | Places | Zones | |
|---|---|---|---|
| i) | Dehradun | a) | II |
| ii) | Bhuj | b) | III |
| iii) | Bokaro | c) | IV |
| iv) | Ajmer | d) | V |

1. i-a, ii-c, iii-d, iv-b
2. i-c, ii-d, iii-b, iv-a
3. i-b, ii-a, iii-c, iv-d
4. i-d, ii-b, iii-a, iv-c

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

Question Type : **MCQ**
Question ID : **3398931564**
Option 1 ID : **3398936025**
Option 2 ID : **3398936026**
Option 3 ID : **3398936027**
Option 4 ID : **3398936028**
Status : **Answered**
Chosen Option : **4**

Q.8 The sound wave in the atmosphere can be completely eliminated if one

1. assumes the atmosphere to be incompressible
2. assumes the atmosphere to be hydrostatic
3. employs pressure as the vertical coordinate and imposes the condition $\omega = \frac{dp}{dt} = 0$ in the lower boundary
4. assumes the atmosphere to be baroclinic

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

Question Type : **MCQ**
Question ID : **3398931586**
Option 1 ID : **3398936113**
Option 2 ID : **3398936114**
Option 3 ID : **3398936115**
Option 4 ID : **3398936116**
Status : **Not Answered**
Chosen Option : **--**

Q.9 Seafloor spreading leads to formation of new crust. This newly formed crust will be enriched in:

1. K-Al silicates
2. Fe-Mg silicates
3. Carbonates
4. Phosphates

Options 1. 1

2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **3398931577**
Option 1 ID : **3398936077**
Option 2 ID : **3398936078**
Option 3 ID : **3398936079**
Option 4 ID : **3398936080**
Status : **Answered**
Chosen Option : **2**

**Q.10** Given $\phi_D$ - Density porosity, $\phi_N$ -Neutron porosity, $\phi_{NMR}$ - Nuclear Magnetic Resonance porosity, which one of the following is true for a gas saturated sandstone formation?

1. $\phi_D = \phi_N$
2. $\phi_{NMR} = \phi_D$
3. $\phi_{NMR} < \phi_D$
4. $\phi_N > \phi_D$

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

Question Type : **MCQ**
Question ID : **3398931549**
Option 1 ID : **3398935965**
Option 2 ID : **3398935966**
Option 3 ID : **3398935967**
Option 4 ID : **3398935968**
Status : **Answered**
Chosen Option : **4**

**Q.11** Match the following ichnofacies varieties (column I) with their corresponding association (column II)

| column I | | column II | |
|---|---|---|---|
| a) | Trypamite | i) | Sandy sediment with high wave/current energy |
| b) | Teredolite | ii) | Quiet water with oxygen level |
| c) | Skolithos | iii) | Wood grounds |
| d) | Zoophycos | iv) | Rock grounds |

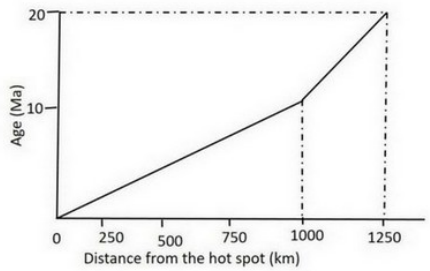
1. a-iv, b-iii, c-i, d-ii
2. a-iv, b-ii, c-i, d-iii
3. a-ii, b-iii, c-i, d-iv
4. a-ii, b-i, c-iii, d-iv

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

Question Type : **MCQ**
Question ID : **3398931518**
Option 1 ID : **3398935841**
Option 2 ID : **3398935842**
Option 3 ID : **3398935843**
Option 4 ID : **3398935844**
Status : **Answered**

Chosen Option : **2**

**Q.12**




The volcanoes of a hotspot trail located on an oceanic plate yield the above age versus distance relationship. Based on this, which one of the inferences can be drawn about the spreading rate of the mid-oceanic ridge?

1. It changed from 2.5 cm/y to 10 cm/y at 10 Ma.
2. It changed from 5.0 cm/y to 20 cm/y at 10 Ma.
3. It remained constant, however the direction of plate motion changed.
4. It changed from 10 cm/y to 2.5 cm/y at 10 Ma.

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

Question Type : **MCQ**
Question ID : **3398931523**
Option 1 ID : **3398935861**
Option 2 ID : **3398935862**
Option 3 ID : **3398935863**
Option 4 ID : **3398935864**
Status : **Answered**
Chosen Option : **4**

**Q.13** Consider three observation wells A, B and C drilled in an unconfined aquifer at the same location. The depth of wells is 10, 20 and 30 m, respectively. Length of screen, placed at the bottom of each well, is 0.3 m. Depth to water level in the wells is recorded as 4.5, 5.5 and 6 m, respectively. Identify the correct statement:

1. Vertical component of ground water flow is negligible
2. The site has scanty annual rainfall
3. It is a ground water discharge site
4. Infiltration through the soil is negligible

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

Question Type : **MCQ**
Question ID : **3398931533**
Option 1 ID : **3398935901**
Option 2 ID : **3398935902**
Option 3 ID : **3398935903**
Option 4 ID : **3398935904**
Status : **Not Answered**
Chosen Option : **--**

**Q.14**

Match items in column I to the corresponding items in column II

| | Column I | | Column II |
|---|---|---|---|
| A | Bouma Sequence | E | Tempestites (Storm deposits) |
| B | Trough cross bedding | F | Turbidites |
| C | Diamictites | G | Traction sedimentation |
| D | Hummocky cross bedding | H | Glacial debris flow |

Identify the correct match

1. A-F, B-G, C-H, D-E
2. A-E, B-F, C-G, D-H
3. A-H, B-G, C-F, D-E
4. A-F, B-F, C-G, D-H

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

Question Type : **MCQ**
Question ID : **3398931527**
Option 1 ID : **3398935877**
Option 2 ID : **3398935878**
Option 3 ID : **3398935879**
Option 4 ID : **3398935880**
Status : **Answered**
Chosen Option : **1**

**Q.15** If P, Q, R and S represent the depths of investigation for the following electromagnetic methods

P – Transient EM method

Q – Geomagnetic depth sounding

R – Magnetotelluric method

S – Slingram method

then,

1. $S < R < P < Q$
2. $S < P < R < Q$
3. $P < S < Q < R$
4. $P < S < R < Q$

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

Question Type : **MCQ**
Question ID : **3398931545**
Option 1 ID : **3398935949**
Option 2 ID : **3398935950**
Option 3 ID : **3398935951**
Option 4 ID : **3398935952**
Status : **Answered**
Chosen Option : **3**

**Q.16**

Statement I: Deterministic forecasts provide prediction of what will happen at a particular time and location.

Statement II: Probabilistic forecasts provide indication of the probability of a particular event within a particular time frame or geographic location.

Which one of the following options is correct based on the above statements?

1. Statement I is true; Statement II is false
2. Statement I is false; Statement II is true
3. Both statements are true
4. Both statements are false

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

Question Type : **MCQ**
Question ID : **3398931593**
Option 1 ID : **3398936141**
Option 2 ID : **3398936142**
Option 3 ID : **3398936143**
Option 4 ID : **3398936144**
Status : **Not Answered**
Chosen Option : **--**

Q.17 Which one of the following represents nitrification process in the ocean?

1. $NO_3^- \rightarrow NO_2^- \rightarrow NO \rightarrow N_2O \rightarrow N_2$
2. $NH_4^+ + NO_2^- \rightarrow N_2 + 2H_2O$
3. $NH_4^+ \rightarrow NO_2^- \rightarrow NO_3^-$
4. $N_2 + 8H^+ \rightarrow 2NH_4^+$

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

Question Type : **MCQ**
Question ID : **3398931569**
Option 1 ID : **3398936045**
Option 2 ID : **3398936046**
Option 3 ID : **3398936047**
Option 4 ID : **3398936048**
Status : **Not Answered**
Chosen Option : **--**

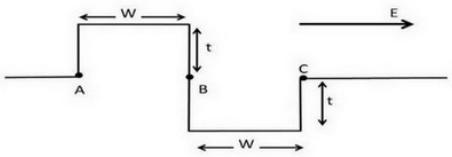
Q.18 Brunt-Vaissala oscillations are observed in

1. Unstable atmosphere
2. Stable atmosphere
3. Neutral atmosphere
4. Inertially unstable atmosphere

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

Question Type : **MCQ**
Question ID : **3398931594**
Option 1 ID : **3398936145**
Option 2 ID : **3398936146**
Option 3 ID : **3398936147**
Option 4 ID : **3398936148**
Status : **Not Answered**
Chosen Option : **--**

**Q.19** $g_A$, $g_B$ and $g_C$ are the observed gravity values at three stations along a E-W profile across a topography (of constant density) resembling a horst followed by a graben, as shown in following figure. Then




1. $g_A = g_B = g_C$
2. $g_A = g_C > g_B$
3. $g_A = g_C < g_B$
4. $g_A > g_C > g_B$

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

Question Type : **MCQ**
Question ID : **3398931537**
Option 1 ID : **3398935917**
Option 2 ID : **3398935918**
Option 3 ID : **3398935919**
Option 4 ID : **3398935920**
Status : **Answered**
Chosen Option : **2**

**Q.20** $S_A$, $S_B$ and $S_C$ are three closed surfaces enclosing one and the same distribution of mass. Their surface areas are in the ratio 1:4:9. If $g_A$, $g_B$ and $g_C$ are the gravitational fields measured normal to their respective surfaces, then

1. $\int_{S_A} g_A \cdot ds = \int_{S_B} g_B \cdot ds = \int_{S_C} g_C \cdot ds$
2. $36\int_{S_A} g_A \cdot ds = 9\int_{S_B} g_B \cdot ds = 4\int_{S_C} g_C \cdot ds$
3. $6\int_{S_A} g_A \cdot ds = 3\int_{S_B} g_B \cdot ds = 2\int_{S_C} g_C \cdot ds$
4. $\int_{S_A} g_A \cdot ds = 4\int_{S_B} g_B \cdot ds = 9\int_{S_C} g_C \cdot ds$

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

Question Type : **MCQ**
Question ID : **3398931535**
Option 1 ID : **3398935909**
Option 2 ID : **3398935910**
Option 3 ID : **3398935911**
Option 4 ID : **3398935912**
Status : **Not Answered**
Chosen Option : **--**

**Q.21** Statement A: Visible imagery is the best imagery for detecting low clouds.

Statement B : Water vapour imagery detects moisture best in the middle and upper layers of atmosphere.

Which one of the following options is correct based on the above statements?

1. Statement A is true; Statement B is false
2. Statement A is false; Statement B is true
3. Both statements are false
4. Both statements are true

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

Question Type : **MCQ**
Question ID : **3398931590**
Option 1 ID : **3398936129**
Option 2 ID : **3398936130**
Option 3 ID : **3398936131**
Option 4 ID : **3398936132**
Status : **Not Answered**
Chosen Option : **--**

**Q.22** Bulk distribution coefficient (D) for an element is 0.01. If a rock containing 1ppm (parts per million) of this element undergoes 10% equilibrium (batch) partial melting, the approximate concentration of this element in the melt in ppm would be

1. 1
2. 5
3. 2
4. 10

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

Question Type : **MCQ**
Question ID : **3398931525**
Option 1 ID : **3398935869**
Option 2 ID : **3398935870**
Option 3 ID : **3398935871**
Option 4 ID : **3398935872**
Status : **Not Answered**
Chosen Option : **--**

**Q.23**

Statement A: Exfoliation is the term for loosening or separation of concentric shells or layers of rock.

Statement B: Corestones are one of the products of exfoliation.

Which one of the following options is correct based on the above statements?

1. Both A and B are correct
2. Both A and B are incorrect
3. A is correct but B is incorrect
4. A is incorrect but B is correct

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

Question Type : **MCQ**
Question ID : **3398931553**
Option 1 ID : **3398935981**
Option 2 ID : **3398935982**
Option 3 ID : **3398935983**
Option 4 ID : **3398935984**
Status : **Not Answered**
Chosen Option : **--**

**Q.24** An object of unit mass initially at rest at 45°N is subjected to an eastward zonal velocity 'u'. Assuming that there are no frictional forces and the Earth's rotation is important, what is the nature of the motion of the object?

1. Object continues to move eastward in a straight line
2. Object undergoes cyclonic circular motion
3. Object undergoes anticyclonic curvature motion which is not closed
4. Object undergoes anticyclonic circular motion

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

Question Type : **MCQ**
Question ID : **3398931587**
Option 1 ID : **3398936117**
Option 2 ID : **3398936118**
Option 3 ID : **3398936119**
Option 4 ID : **3398936120**
Status : **Answered**
Chosen Option : **4**

**Q.25** Mylonites are common along the Main Central Thrust (MCT) whereas breccia and fault gauge are common along the Main Frontal Thrust (MFT). The correct inference is

1. ductile deformation occurs at higher topographic elevation
2. deeper level rocks are exhumed along MCT compared to MFT.
3. breccia and fault gouge are transformed to mylonites along MCT.
4. mylonites are transformed to breccia and fault gauge along MFT.

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

Question Type : **MCQ**
Question ID : **3398931531**

Option 1 ID : **3398935893**
Option 2 ID : **3398935894**
Option 3 ID : **3398935895**
Option 4 ID : **3398935896**
Status : **Answered**
Chosen Option : **2**

**Q.26** The graph used for showing relationship between wet-bulb temperature and relative humidity is called

1. Hythergraph
2. Climograph
3. Barograph
4. Hypsograph

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

Question Type : **MCQ**
Question ID : **3398931556**
Option 1 ID : **3398935993**
Option 2 ID : **3398935994**
Option 3 ID : **3398935995**
Option 4 ID : **3398935996**
Status : **Not Answered**
Chosen Option : **--**

**Q.27** Statement A: Younger Dryas occurred near the end of the last glaciation

Statement B: During Younger Dryas sea surface temperatures in the Atlantic Ocean rose by several degrees

Statement C: Younger Dryas is one of the Dansgaard-Oeschger cycles.

Which one of the following options is correct based on the above statements?

1. All the three are incorrect
2. All the three are correct
3. A is correct, B and C are incorrect
4. A is incorrect, B and C are correct

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

Question Type : **MCQ**
Question ID : **3398931554**
Option 1 ID : **3398935985**
Option 2 ID : **3398935986**
Option 3 ID : **3398935987**
Option 4 ID : **3398935988**
Status : **Not Answered**
Chosen Option : **--**

**Q.28**

The sinuous rilles of the moon originated from

1. Downslope movement of detached rocks
2. Silicic ash flows
3. Tectonics related to impact craters
4. Collapsed lava tubes

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

Question Type : **MCQ**
Question ID : **3398931557**
Option 1 ID : **3398935997**
Option 2 ID : **3398935998**
Option 3 ID : **3398935999**
Option 4 ID : **3398936000**
Status : **Answered**
Chosen Option : **3**

**Q.29** Lower part of a palm tree growing on the bank of a water body is observed to take a J-shaped bend. This can be ascribed to:

1. Phototropism
2. Seasonal fluctuation of water level
3. Creep
4. Lack of root penetration

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

Question Type : **MCQ**
Question ID : **3398931559**
Option 1 ID : **3398936005**
Option 2 ID : **3398936006**
Option 3 ID : **3398936007**
Option 4 ID : **3398936008**
Status : **Answered**
Chosen Option : **3**

**Q.30** Statement I: Rossby wave owe their existence to the variation of Coriolis parameter with latitude.

Statement II: A jet blowing west to east over the Western Ghats drifts northwards. Then conservation of potential vorticity causes jet to meander north and south.

Which one of the following options is correct based on the above statements?

1. Statement I is true; Statement II is false
2. Both Statements are true
3. Statement I is false; Statement II is true
4. Both Statements are false

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

Question Type : **MCQ**
Question ID : **3398931592**
Option 1 ID : **3398936137**
Option 2 ID : **3398936138**
Option 3 ID : **3398936139**
Option 4 ID : **3398936140**
Status : **Not Answered**
Chosen Option : **--**

**Q.31** Under which one of the following conditions does the temperature inversion (warmer water below the colder water) observed in the upper-ocean?

1. High insolation over the sea surface
2. Positive net heat flux at the sea surface
3. Advection of colder water in the upper-ocean
4. Precipitation or low-salinity water advection in the upper-ocean

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

Question Type : **MCQ**
Question ID : **3398931566**
Option 1 ID : **3398936033**
Option 2 ID : **3398936034**
Option 3 ID : **3398936035**
Option 4 ID : **3398936036**
Status : **Not Answered**
Chosen Option : **--**

**Q.32** Which one of the following sequences of the tidal constituents is in CORRECT increasing periodic order?

1. $K_1 > S_2 > M_2 > O_1$
2. $M_2 > S_2 > K_1 > O_1$
3. $S_2 > M_2 > K_1 > O_1$
4. $S_2 > M_2 > O_1 > K_1$

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

Question Type : **MCQ**
Question ID : **3398931576**
Option 1 ID : **3398936073**
Option 2 ID : **3398936074**
Option 3 ID : **3398936075**
Option 4 ID : **3398936076**
Status : **Not Answered**
Chosen Option : **--**

**Q.33**

Which one of the following series of mineral assemblages represents the prograde metamorphism of a metabasic rock under high P/T gradient?

1. prehnite + pumpellyite + albite → glaucophane + lawsonite + albite → garnet + omphacite
2. albite + epidote + actinolite + quartz → glaucophane + lawsonite + albite → orthopyroxene + clinopyroxene + plagioclase + quartz
3. albite + epidote + actinolite + quartz → hornblende + plagioclase + quartz → orthopyroxene + clinopyroxene + plagioclase + quartz
4. prehnite + pumpellyite → hornblende + plagioclase + quartz → garnet + omphacite

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

Question Type : **MCQ**
Question ID : **3398931528**
Option 1 ID : **3398935881**
Option 2 ID : **3398935882**
Option 3 ID : **3398935883**
Option 4 ID : **3398935884**
Status : **Not Answered**
Chosen Option : **--**

**Q.34** A function $y(x)$ satisfies the differential equation $\frac{dy}{dx} = x + y$ in the vicinity of $x = 0$. If $y\ (0) = 1.0$, what is $y(0.1)$ ?

1. 1.11
2. 1.15
3. 1.17
4. 1.21

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

Question Type : **MCQ**
Question ID : **3398931536**
Option 1 ID : **3398935913**
Option 2 ID : **3398935914**
Option 3 ID : **3398935915**
Option 4 ID : **3398935916**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

**Q.35** For which crystal systems the unit face intercepts two axes at the same angle but the third axis at a different angle?

1. Isometric, Tetragonal
2. Orthorhombic, Hexagonal
3. Tetragonal, Hexagonal
4. Tetragonal, Monoclinic

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

Question Type : **MCQ**

Question ID : **3398931520**
Option 1 ID : **3398935849**
Option 2 ID : **3398935850**
Option 3 ID : **3398935851**
Option 4 ID : **3398935852**
Status : **Answered**
Chosen Option : **2**

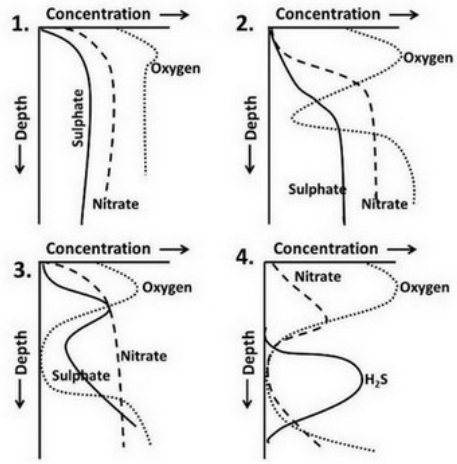
**Q.36** A single point current electrode $(C_1)$ is placed over a homogenous ground of resistivity $\rho$. Another current electrode $(C_2)$ is placed at infinity and a current of magnitude $'I'$ flows though the subsurface. The current density $'J'$ and electrical potential $'U'$, at the surface of the earth at a distance 'r' from current electrode $(C_1)$ will respectively be

1. $\frac{I}{2\pi r^2}$ and $\frac{\rho I}{2\pi r}$
2. $\frac{I}{4\pi r^2}$ and $\frac{\rho I}{4\pi r}$
3. $\frac{I}{2\pi r}$ and $\frac{\rho I}{2\pi r^2}$
4. $\frac{I}{4\pi r}$ and $\frac{\rho I}{4\pi r^2}$

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

Question Type : **MCQ**
Question ID : **3398931544**
Option 1 ID : **3398935945**
Option 2 ID : **3398935946**
Option 3 ID : **3398935947**
Option 4 ID : **3398935948**
Status : **Answered**
Chosen Option : **1**

**Q.37** Which one of the following oceanic profiles represents euxinic conditions?




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

Question Type : **MCQ**
Question ID : **3398931567**
Option 1 ID : **3398936037**
Option 2 ID : **3398936038**

Option 3 ID : **3398936039**
Option 4 ID : **3398936040**
Status : **Not Answered**
Chosen Option : **--**

Q.38 SCATSAT-1 data are primarily used for measuring

1. Water vapour
2. Wind vectors
3. Temperature profiles
4. Sea surface temperatures

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

Question Type : **MCQ**
Question ID : **3398931595**
Option 1 ID : **3398936149**
Option 2 ID : **3398936150**
Option 3 ID : **3398936151**
Option 4 ID : **3398936152**
Status : **Not Answered**
Chosen Option : **--**

Q.39 A continuous monochromatic signal with frequency 60 Hz is sampled at a rate of 100 samples per second. The resulting apparent frequency in the discrete domain is

1. 60 Hz
2. 50 Hz
3. 40 Hz
4. 30 Hz

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

Question Type : **MCQ**
Question ID : **3398931546**
Option 1 ID : **3398935953**
Option 2 ID : **3398935954**
Option 3 ID : **3398935955**
Option 4 ID : **3398935956**
Status : **Not Answered**
Chosen Option : **--**

Q.40 Statement-I: Whether the margin of a glacier is advancing, retreating or remaining stationary depends on the budget of the glacier.

Statement-II: If the ice accumulation equals ablation, the glacial front advances.

Choose the correct option from the following statements

1. Both the statements are correct.
2. Statement-I is correct but Statement-II is incorrect
3. Both the statements are incorrect
4. Both the statements are correct and Statement-II is correct explanation of Statement-I.

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

Question Type : **MCQ**
Question ID : **3398931565**
Option 1 ID : **3398936029**
Option 2 ID : **3398936030**
Option 3 ID : **3398936031**
Option 4 ID : **3398936032**
Status : **Answered**
Chosen Option : **2**

**Q.41** The hypothesis proposing existence of Ferrel cell, the thermally indirect circulation over middle latitudes with rising motion over 60° latitude and sinking motion over 30° latitude is rejected since it violates

1. hydrostatic balance
2. thermal wind relationship
3. geostrophic wind balance
4. gradient wind balance

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

Question Type : **MCQ**
Question ID : **3398931589**
Option 1 ID : **3398936125**
Option 2 ID : **3398936126**
Option 3 ID : **3398936127**
Option 4 ID : **3398936128**
Status : **Not Answered**
Chosen Option : **--**

**Q.42** If phytoplankton consume nutrients in the Redfield proportion, how much nitrogen is required to fix 1.272 g carbon?

1. 224 mg
2. 268 mg
3. 80 mg
4. 12 mg

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

Question Type : **MCQ**
Question ID : **3398931575**
Option 1 ID : **3398936069**
Option 2 ID : **3398936070**
Option 3 ID : **3398936071**
Option 4 ID : **3398936072**
Status : **Not Answered**
Chosen Option : **--**

**Q.43**

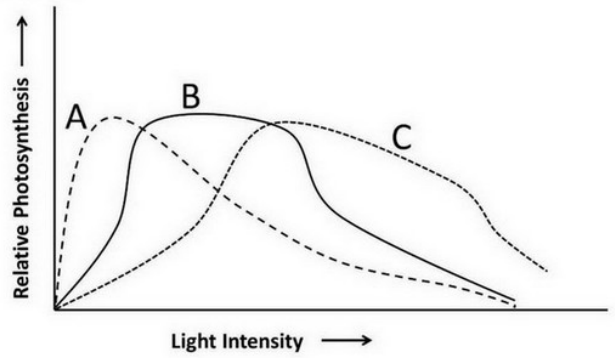
A time-distance plot of a surface focus earthquake recorded at different epicentral distances shows two line segments with ray parameters of 0.5 s/km and 0.25 s/km; and a delay time of 0 s and 1.73 s, respectively. What is the thickness of the first layer?

1. 1 km
2. 2 km
3. 3 km
4. 4 km

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

Question Type : **MCQ**
Question ID : **3398931541**
Option 1 ID : **3398935933**
Option 2 ID : **3398935934**
Option 3 ID : **3398935935**
Option 4 ID : **3398935936**
Status : **Not Answered**
Chosen Option : **--**

**Q.44** Which groups do curves A, B and C represent in the following photosynthesis-light curves?



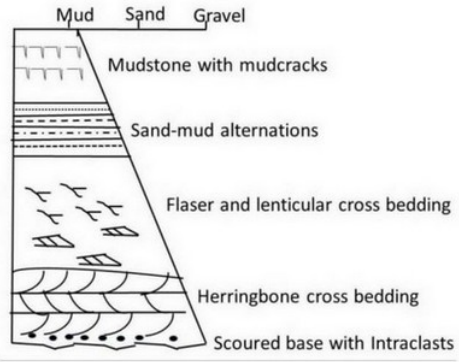

1. A – diatoms, B – dinoflagellates, C – green algae
2. A – green algae, B – diatoms, C – dinoflagellates
3. A – green algae, B – dinoflagellates, C – diatoms
4. A – dinoflagellates, B –diatoms, C – green algae

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

Question Type : **MCQ**
Question ID : **3398931571**
Option 1 ID : **3398936053**
Option 2 ID : **3398936054**
Option 3 ID : **3398936055**
Option 4 ID : **3398936056**
Status : **Answered**
Chosen Option : **4**

**Q.45**

Given below is a facies sequence along with some sedimentary structures. The most probable depositional environment which might generate the sequence is




1. Deep sea fan
2. Fluvial environment
3. Barrier beach setting
4. Tidal setting

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

Question Type : **MCQ**
Question ID : **3398931532**
Option 1 ID : **3398935897**
Option 2 ID : **3398935898**
Option 3 ID : **3398935899**
Option 4 ID : **3398935900**
Status : **Answered**
Chosen Option : **4**

**Q.46** Statement - 1 Laterologs are not used in wells drilled with salt water based mud

Statement - 2 Electrical logs cannot be used when drilling fluids are non-conductive

Which one of the following options is correct based on the above statements?

1. Statement – 1 is true and Statement – 2 is false
2. Statement – 1 is false and Statement – 2 is true
3. Statement – 1 and 2 are false
4. Statement – 1 and 2 are true

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

Question Type : **MCQ**
Question ID : **3398931548**
Option 1 ID : **3398935961**
Option 2 ID : **3398935962**
Option 3 ID : **3398935963**
Option 4 ID : **3398935964**
Status : **Answered**
Chosen Option : **2**

**Q.47**

Arrange these ore deposits according to decreasing temperature of formation.

A. Porphyry type Cu-deposit

B. Ni-Cu-Sulfide deposit

C. Mississippi Valley Type (MVT) Pb-Zn deposit

D. SEDEX type Pb-Zn deposit

1. C, D, A, B
2. A, D, C, B
3. B, A, D, C
4. D, A, C, B

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

Question Type : **MCQ**
Question ID : **3398931530**
Option 1 ID : **3398935889**
Option 2 ID : **3398935890**
Option 3 ID : **3398935891**
Option 4 ID : **3398935892**
Status : **Answered**
Chosen Option : **4**

**Q.48** Find the correct match between items in Column I and items in Column II

| | Column I | | Column II |
|---|---|---|---|
| A. | Uvala | E. | Residual hills with steep sides separated by swamps or alluvial plains |
| B. | Tower karst | F. | Dripstone and flowstone |
| C. | Speleothem | G. | Runnels, flutes, karren |
| D. | Epikarst | H | Compound doline or a chain of intersecting dolines |

1. A-F, B-E, C-G, D-H
2. A-H, B-F, C-E, D-G
3. A-E, B-G, C-F, D-H
4. A-H, B-E, C-F, D-G

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

Question Type : **MCQ**
Question ID : **3398931551**
Option 1 ID : **3398935973**
Option 2 ID : **3398935974**
Option 3 ID : **3398935975**
Option 4 ID : **3398935976**
Status : **Answered**
Chosen Option : **1**

**Q.49**

Identify the FALSE statement

1. Global spectral atmospheric models are more accurate than global grid point atmospheric models
2. Global spectral atmospheric models take care of the 'polar singularity' unlike the global grid point atmospheric models
3. Nonlinear computational instability is easily taken care of in global spectral atmospheric models as compared to global grid point atmospheric models
4. The spectral approximation is based on 'local' functions

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

Question Type : **MCQ**
Question ID : **3398931588**
Option 1 ID : **3398936121**
Option 2 ID : **3398936122**
Option 3 ID : **3398936123**
Option 4 ID : **3398936124**
Status : **Not Answered**
Chosen Option : **--**

**Q.50** On operational basis, estimation of river stage (water level) from satellite is done using:

1. Satellite interferometry
2. Satellite altimetry
3. Multispectral mapping
4. Hyperspectral mapping

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

Question Type : **MCQ**
Question ID : **3398931562**
Option 1 ID : **3398936017**
Option 2 ID : **3398936018**
Option 3 ID : **3398936019**
Option 4 ID : **3398936020**
Status : **Not Answered**
Chosen Option : **--**

**Q.51** Find the correct match between items in Column I and items in Column II

| | Column I | | Column II |
|---|---|---|---|
| A. | In-situ conservation | E. | Tissue culture |
| B. | Ex-situ conservation | F. | Sanctuaries |
| | | G. | Animal translocation |
| | | H. | Sacred forest |

1. A – E & F, B – G & H
2. A – G & H, B – E & F
3. A – F & G, B – E & H
4. A – F & H, B – E & G

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

Question Type : **MCQ**
Question ID : **3398931558**
Option 1 ID : **3398936001**
Option 2 ID : **3398936002**
Option 3 ID : **3398936003**
Option 4 ID : **3398936004**
Status : **Answered**
Chosen Option : **4**

Q.52 Identify the FALSE statement associated with El Nino

1. Weakening of the trade winds over equatorial Pacific Ocean
2. Deepening of the thermocline over West Pacific
3. Weakening of the equatorial upwelling over the Pacific
4. Deepening of the thermocline over East Pacific

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

Question Type : **MCQ**
Question ID : **3398931585**
Option 1 ID : **3398936109**
Option 2 ID : **3398936110**
Option 3 ID : **3398936111**
Option 4 ID : **3398936112**
Status : **Not Answered**
Chosen Option : **--**

Q.53 The fish population remains low in a hyacinth rich pond because hyacinth

1. stops sunlight reaching to depth
2. releases toxic compounds
3. decreases dissolved oxygen
4. lowers the nutrients

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

Question Type : **MCQ**
Question ID : **3398931563**
Option 1 ID : **3398936021**
Option 2 ID : **3398936022**
Option 3 ID : **3398936023**
Option 4 ID : **3398936024**
Status : **Answered**
Chosen Option : **3**

Q.54

Statement I: In the North Atlantic, the lysocline of aragonite occurs around 3500 m, whereas it is 1000 m in the North Pacific.

Statement II: In the North Pacific, $[CO_3^{2-}]$ is lower than that in the North Atlantic.

Choose the correct option based on the above statements

1. Statement I is correct but II is incorrect
2. Both statements are correct and II explains I
3. Both statements are correct but II does not explain I
4. Both statements are incorrect

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

Question Type : **MCQ**
Question ID : **3398931568**
Option 1 ID : **3398936041**
Option 2 ID : **3398936042**
Option 3 ID : **3398936043**
Option 4 ID : **3398936044**
Status : **Not Answered**
Chosen Option : **--**

**Q.55** In a sediment core from the Arabian Sea, a foraminifer test sampled 100 cm below the core top has a $^{14}C/^{12}C$ ratio that is equal to 12.5% of the $^{14}C/^{12}C$ ratio of a foraminifer collected at the core top. What is the age difference ($\Delta t$) between these two foraminifera?

(Given $t_{1/2}$ of $^{14}C$ =5680 yr)

1. $\Delta t$=11360 yr
2. $\Delta t$=5680 yr
3. $\Delta t$=17040 yr
4. $\Delta t$=22720 yr

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

Question Type : **MCQ**
Question ID : **3398931581**
Option 1 ID : **3398936093**
Option 2 ID : **3398936094**
Option 3 ID : **3398936095**
Option 4 ID : **3398936096**
Status : **Not Answered**
Chosen Option : **--**

**Q.56** Which of the following has not provided digital elevation datasets?

1. SRTM
2. ASTER
3. LANDSAT
4. SPOT

Options 1. 1
2. 2
3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931561**
Option 1 ID : **3398936013**
Option 2 ID : **3398936014**
Option 3 ID : **3398936015**
Option 4 ID : **3398936016**
Status : **Not Answered**
Chosen Option : **--**

**Q.57** Which of the following micro-organisms is responsible for production of domoic acid during a harmful algal bloom?

1. *Prochlorococcus*
2. *Synechococcus*
3. *Pseduonitzchia sp*
4. *Alexandrium sp*

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

Question Type : **MCQ**
Question ID : **3398931580**
Option 1 ID : **3398936089**
Option 2 ID : **3398936090**
Option 3 ID : **3398936091**
Option 4 ID : **3398936092**
Status : **Not Answered**
Chosen Option : **--**

**Q.58** Find the correct match between items in Column I and items in Column II

| | Column I | | Column II |
|---|---|---|---|
| A. | Surface winds flowing towards equator between sub-tropical belts | E. | Fohn and Chinook |
| B. | Mountain and valley breezes | F. | Zonal wind |
| C. | Flow of air along a latitude | G. | Deflation |
| D. | A wind flowing parallel to the isobar, with pressure gradient force and the Coriolis force in balance | H. | Geostrophic wind |
| | | I. | Trade winds |

1. A-I, B-E, C-G, D-F
2. A-I, B-E, C-F, D-H
3. A-I, B-E, C-H, D-G
4. A-G, B-E, C-F, D-I

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

Question Type : **MCQ**
Question ID : **3398931550**
Option 1 ID : **3398935969**
Option 2 ID : **3398935970**
Option 3 ID : **3398935971**

Option 4 ID : **3398935972**
Status : **Not Answered**
Chosen Option : **--**

**Q.59** "Accretionary Prism" is formed at which of the following plate boundaries?

1. Ocean-ocean convergence
2. Mid-oceanic Ridge
3. Transform fault
4. Continent-Continent collision

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

Question Type : **MCQ**
Question ID : **3398931578**
Option 1 ID : **3398936081**
Option 2 ID : **3398936082**
Option 3 ID : **3398936083**
Option 4 ID : **3398936084**
Status : **Not Answered**
Chosen Option : **--**

**Q.60** Land and sea breezes are associated with

1. thermal wind
2. atmospheric instability
3. wind shear
4. baroclinicity of the atmosphere

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

Question Type : **MCQ**
Question ID : **3398931583**
Option 1 ID : **3398936101**
Option 2 ID : **3398936102**
Option 3 ID : **3398936103**
Option 4 ID : **3398936104**
Status : **Not Answered**
Chosen Option : **--**

**Q.61** An earthquake of moment magnitude $M_W 8$ took place in a region, resulting in the creation of a rupture area of 40 km × 40 km. If the return period of $M_W 8$ earthquakes for the region is 500 yr, then the slip rate of the causative fault of the event is,

1. 0.024 m/yr
2. 0.083 m/yr
3. 0.042 m/yr
4. 0.12 m/yr

**Options** 1. 1
2. 2
3. 3

4. 4

Question Type : **MCQ**
Question ID : **3398931542**
Option 1 ID : **3398935937**
Option 2 ID : **3398935938**
Option 3 ID : **3398935939**
Option 4 ID : **3398935940**
Status : **Not Answered**
Chosen Option : **--**

**Q.62** A(z) and B(z), two polynomials in z-domain, are defined by A(z) = [2, 3, 1] and B(z) = [2, -3, 1] then the convolution of A(z) and B(z) is given by

1. [1, 0, -5, 1, 1]
2. [3, 1, -1, 2, 1]
3. [4, 0, -5, 0, 1]
4. [6, 0, -5, 0, 2]

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

Question Type : **MCQ**
Question ID : **3398931534**
Option 1 ID : **3398935905**
Option 2 ID : **3398935906**
Option 3 ID : **3398935907**
Option 4 ID : **3398935908**
Status : **Not Answered**
Chosen Option : **--**

**Q.63** Despite water vapor being most abundant in the atmosphere, the global warming of Planet Earth is attributed to $CO_2$ (Carbon dioxide) rather than water vapor because of the following reason

1. Vertical distribution of $CO_2$ is uniform while that of water vapor is not
2. Water vapor molecule has much less residence time as compared to $CO_2$ molecule
3. Molecular weight of $CO_2$ is more than the molecular weight of water vapor
4. $CO_2$ has higher global warming potential than water vapor

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

Question Type : **MCQ**
Question ID : **3398931591**
Option 1 ID : **3398936133**
Option 2 ID : **3398936134**
Option 3 ID : **3398936135**
Option 4 ID : **3398936136**
Status : **Not Answered**
Chosen Option : **--**

**Q.64**

Reflection point smearing in a seismic common mid-point gather acquired over a dipping reflector is more pronounced for

1. near offsets and low dip angles
2. far offsets and high dip angles
3. near offsets and high dip angles
4. far offsets and low dip angles

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

Question Type : **MCQ**
Question ID : **3398931547**
Option 1 ID : **3398935957**
Option 2 ID : **3398935958**
Option 3 ID : **3398935959**
Option 4 ID : **3398935960**
Status : **Not Answered**
Chosen Option : **--**

**Q.65** Fold shape classification must be carried out on the profile plane which is_____ to the fold axis.

1. perpendicular
2. parallel
3. oblique
4. unrelated

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

Question Type : **MCQ**
Question ID : **3398931529**
Option 1 ID : **3398935885**
Option 2 ID : **3398935886**
Option 3 ID : **3398935887**
Option 4 ID : **3398935888**
Status : **Answered**
Chosen Option : **1**

**Q.66** A Biotite and a Plagioclase crystallized from the same magma acquiring the same $^{87}Sr/^{86}Sr$ ratio. After 1 billion years,

1. both the minerals will have the same $^{87}Sr/^{86}Sr$ as the initial ratio.
2. both the minerals will have the same $^{87}Sr/^{86}Sr$ but different from the initial ratio.
3. Biotite will have higher $^{87}Sr/^{86}Sr$ than that of the Plagioclase.
4. Plagioclase would have higher $^{87}Sr/^{86}Sr$ than that of the Biotite.

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

Question Type : **MCQ**
Question ID : **3398931524**
Option 1 ID : **3398935865**
Option 2 ID : **3398935866**
Option 3 ID : **3398935867**

Option 4 ID : **3398935868**
Status : **Not Answered**
Chosen Option : **--**

**Q.67** A fossil ecosystem consists of various species of Cephalopoda, Anthozoa and Crinoidea. These groups reached the peak of their diversity in Ordovician and suffered badly in Permo-Triassic extinction. Which evolutionary fauna are they representative of?

1. Cambrian evolutionary fauna
2. Ordovician evolutionary fauna
3. Paleozoic evolutionary fauna
4. Modern evolutionary fauna

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

Question Type : **MCQ**
Question ID : **3398931519**
Option 1 ID : **3398935845**
Option 2 ID : **3398935846**
Option 3 ID : **3398935847**
Option 4 ID : **3398935848**
Status : **Not Answered**
Chosen Option : **--**

**Q.68** Consider the following statements

A. Monsoon trough shifts to the foot hills of the Himalayas
B. North-East India gets more rainfall than normal
C. Tropical easterly jet-stream weakens
D. Somali jet shifts northward

Choose the correct combination of statements that are true for break condition in the Indian summer monsoon

1. A, C and D
2. B, C and D
3. A, B and C
4. A and D

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

Question Type : **MCQ**
Question ID : **3398931584**
Option 1 ID : **3398936105**
Option 2 ID : **3398936106**
Option 3 ID : **3398936107**
Option 4 ID : **3398936108**
Status : **Not Answered**
Chosen Option : **--**

**Q.69**

Find the correct match.

| Microbial constituents | | Cell diameter | |
|---|---|---|---|
| A | Microplankton | E | $(0.1 - 0.5)\mu m$ |
| B | Nanoplankton | F | $(50 - 500)\mu m$ |
| C | SAR 11 bacteria | G | $(10 - 50)\mu m$ |
| D | Ultraplankton | H | $(0.5 - 10)\mu m$ |

1. A→E; B→F; C→G, D→H
2. A→F; B→G; C→E, D→H
3. A→H; B→F; C→G, D→E
4. A→F; B→H; C→G, D→E

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

Question Type : **MCQ**
Question ID : **3398931573**
Option 1 ID : **3398936061**
Option 2 ID : **3398936062**
Option 3 ID : **3398936063**
Option 4 ID : **3398936064**
Status : **Not Answered**
Chosen Option : **--**

**Q.70** The apparent resistivity measured in an I.P. survey at 10Hz and 0.1 Hz are $80\Omega m$ and $100\Omega m$, respectively. The percentage (%) frequency effect will be

1. 10
2. 20
3. 25
4. 50

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

Question Type : **MCQ**
Question ID : **3398931543**
Option 1 ID : **3398935941**
Option 2 ID : **3398935942**
Option 3 ID : **3398935943**
Option 4 ID : **3398935944**
Status : **Not Answered**
Chosen Option : **--**

**Q.71** A dry air parcel having temperature 303 K at the 1000 hPa level is lifted adiabatically by 2 km. Its potential temperature will be

1. 303 K
2. 322.6 K
3. 312.8 K
4. 283.4 K

Options 1. 1

2. 2
3. 3
4. 4

Question Type : MCQ
Question ID : 3398931582
Option 1 ID : 3398936097
Option 2 ID : 3398936098
Option 3 ID : 3398936099
Option 4 ID : 3398936100
Status : Not Answered
Chosen Option : --

Q.72 $F, V$ and $H$ represent the earth's magnetic field and its vertical and horizontal components respectively. $\Delta F, \Delta V$ and $\Delta H$ are anomalies in the respective components. $\tan i = V/H$ and $\tan\theta = \Delta V/\Delta H$. Then, which one of the following options contains the equalities, that are both true ?

1. $F^2 = V^2 + H^2;\ \Delta F^2 = \Delta V^2 + \Delta H^2$
2. $F^2 = V^2 + H^2;\ \Delta F = \Delta V \sin i + \Delta H cos\, i$
3. $F = V\sin i + H cos\, i;\ \Delta F = \Delta V sin\,\theta + \Delta H \cos\theta$
4. $F = V sin\, i + H\cos i;\ \Delta F^2 = \Delta V^2 + \Delta H^2$

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

Question Type : MCQ
Question ID : 3398931539
Option 1 ID : 3398935925
Option 2 ID : 3398935926
Option 3 ID : 3398935927
Option 4 ID : 3398935928
Status : Not Answered
Chosen Option : --

Q.73 Find the CORRECT statement from the following:

1. North Atlantic Deep Water is lighter than Antarctic Intermediate water
2. Antarctic Intermediate water is less saline than Antarctic Bottom water
3. North Atlantic Deep water is the densest water on the Earth
4. Antarctic Bottom water is saltier than North Atlantic Deep water

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

Question Type : MCQ
Question ID : 3398931574
Option 1 ID : 3398936065
Option 2 ID : 3398936066
Option 3 ID : 3398936067
Option 4 ID : 3398936068
Status : Not Answered
Chosen Option : --

Q.74

If a river is slowly downcutting as its channel meanders laterally from one side of the valley to the other, portions of the older floodplain may be preserved as

1. Paired terraces
2. Unpaired terraces
3. Strath terraces
4. Point bars

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

Question Type : **MCQ**
Question ID : **3398931552**
Option 1 ID : **3398935977**
Option 2 ID : **3398935978**
Option 3 ID : **3398935979**
Option 4 ID : **3398935980**
Status : **Not Answered**
Chosen Option : **--**

**Q.75** Which of the following pairs of stratigraphic units is chronostratigraphically corresponding?

1. Syringothyris Limestone – Kioto Limestone
2. Barail Group – Subathu Group
3. Bandah Formation – Prang Formation
4. Kamlial Formation – Lathi Formation

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

Question Type : **MCQ**
Question ID : **3398931526**
Option 1 ID : **3398935873**
Option 2 ID : **3398935874**
Option 3 ID : **3398935875**
Option 4 ID : **3398935876**
Status : **Not Answered**
Chosen Option : **--**

**Q.76** Omphacite is a Clinopyroxene solid solution of:

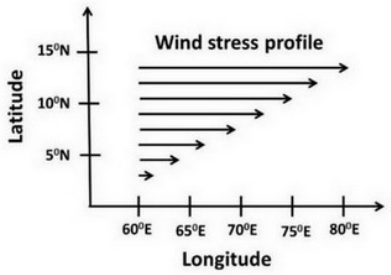
1. Jadeite (25% - 75%) , Augite (25% - 75%) and Aegirine (0% - 25%)
2. Diopside (25% - 75%), Hedenbergite (0% - 25%) and Aegirine (25% - 75%)
3. Augite (25% - 75%) and Aegirine (25% - 75%)
4. Jadeite (25% - 75%), Aegirine (25% - 75%) and Augite (0% - 25%)

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

Question Type : **MCQ**
Question ID : **3398931521**
Option 1 ID : **3398935853**
Option 2 ID : **3398935854**
Option 3 ID : **3398935855**
Option 4 ID : **3398935856**

Status : **Not Answered**
Chosen Option : **--**

Q.77




Wind stress over the sea surface is shown in the above diagram. Which one of the following statements is true based on the diagram?

1. Sverdrup meridional transport is equatorward
2. Sverdrup meridional transport is poleward
3. Vertical velocity ($\omega$) is positive
4. Curl of the wind stress is positive

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

Question Type : **MCQ**
Question ID : **3398931570**
Option 1 ID : **3398936049**
Option 2 ID : **3398936050**
Option 3 ID : **3398936051**
Option 4 ID : **3398936052**
Status : **Not Answered**
Chosen Option : **--**

Q.78 Find the correct match between items in Column I and items in Column II

| | Column I | | Column II |
|---|---|---|---|
| A. | Rip cells | E. | Lagoons |
| B. | Beach-drift | F. | Chenier ridges |
| C. | Macrotidal processes | G. | Spits |
| D. | Aeolian processes | H | Rhythmic beach topography |
| | | I. | Mudflats |

1. A-F, B-E, C-H, D-I
2. A-I, B-G, C-E, D-H
3. A-H, B-G, C-I, D-F
4. A-H, B-F, C-E, D-G

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

Question Type : **MCQ**
Question ID : **3398931560**
Option 1 ID : **3398936009**
Option 2 ID : **3398936010**
Option 3 ID : **3398936011**

Option 4 ID : **3398936012**
Status : **Not Answered**
Chosen Option : **--**

**Q.79** The temperature attained by moist air when all the water vapour is condensed isobarically is called

1. Virtual temperature
2. Dew point temperature
3. Equivalent temperature
4. Wet bulb temperature

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

Question Type : **MCQ**
Question ID : **3398931597**
Option 1 ID : **3398936157**
Option 2 ID : **3398936158**
Option 3 ID : **3398936159**
Option 4 ID : **3398936160**
Status : **Not Answered**
Chosen Option : **--**

**Q.80** A sphere and a horizontal circular cylinder are both associated with a maximum gravity anomaly of 0.8 milligal. If the sphere and the cylinder are both located at twice their present depth, then the values of their maximum gravity anomalies (in milligal) would be respectively

1. 0.2 ; 0.4
2. 0.1 ; 0.1
3. 0.1 ; 0.2
4. 0.2 ; 0.2

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

Question Type : **MCQ**
Question ID : **3398931538**
Option 1 ID : **3398935921**
Option 2 ID : **3398935922**
Option 3 ID : **3398935923**
Option 4 ID : **3398935924**
Status : **Not Answered**
Chosen Option : **--**