CSIR November 2020

Application No.	20
Candidate Name	
Roll No.	
Test Date	19/11/2020
Test Time	9:00 AM - 12:00 PM
Subject	Earth Atmospheric Ocean and Planetary Sciences

Section : **Part A Earth Atmospheric Ocean and Planetary Sciences**

Q.1 The hour and minute hands of a clock are along the same line at a certain time. They will be collinear next after a lapse of time which is closest to

Options

1. 30 minutes.
2. 60 minutes.
3. 63 minutes.
4. 33 minutes.

Question Type : **MCQ**
Question ID : **8024373**
Option 1 ID : **8024379**
Option 2 ID : **80243710**
Option 3 ID : **80243711**
Option 4 ID : **80243712**
Status : **Not Answered**
Chosen Option : **--**

Q.2

Diamonds of a particular quality are available in 4 different sizes, whose prices are given below.

Size (carats)	Price (rupees/carat)
0.25	50,000
0.5	100,000
1	200,000
2	400,000

What are the minimum and maximum numbers of diamonds that can be purchased for Rs. 400,000?

Options

1. 1 and 8
2. 1 and 32
3. 2 and 8
4. 2 and 32

Question Type : **MCQ**
Question ID : **80243712**
Option 1 ID : **80243745**
Option 2 ID : **80243746**
Option 3 ID : **80243747**
Option 4 ID : **80243748**
Status : **Answered**
Chosen Option : **1**

Q.3 I bought some bananas for Rs. 120. The vendor gave me two extra bananas and in the process incurred a loss of Rs. 10 per dozen on the earlier price. How many bananas did I ultimately get for Rs. 120?

Options

1. 18
2. 16
3. 14
4. 12

Question Type : **MCQ**
Question ID : **80243717**
Option 1 ID : **80243765**
Option 2 ID : **80243766**
Option 3 ID : **80243767**
Option 4 ID : **80243768**
Status : **Not Answered**
Chosen Option : **--**

Q.4 Which one of the following pairs of statements represents negative feedback in a stimulus-response pair?

Options

1. Praise increases performance. Higher performance leads to praise.
2. Criticism reduces performance.
3. Increase in body temperature results in sweating. Sweating reduces the body temperature.
4. Reduction in air temperature increases polar ice. Increase in the polar ice reduces air temperature.

Question Type : **MCQ**
Question ID : **8024377**
Option 1 ID : **80243725**
Option 2 ID : **80243726**
Option 3 ID : **80243727**
Option 4 ID : **80243728**
Status : **Not Answered**
Chosen Option : **--**

Q.5

Marks of five students Brijesh, Paresh, Ramesh, Naresh and Suresh in an examination are distinct. Marks of Brijesh is the average of the marks of all these students. Marks of Naresh is the average of the marks of Paresh and Ramesh. Marks of Paresh is the least and marks of Naresh is more than the marks of Suresh. Who got the highest marks?

Options

1. Brijesh
2. Naresh
3. Ramesh
4. Suresh

Question Type : **MCQ**
Question ID : **8024375**
Option 1 ID : **80243717**
Option 2 ID : **80243718**
Option 3 ID : **80243719**
Option 4 ID : **80243720**
Status : **Answered**
Chosen Option : **1**

Q.6

The difference between the ages of a boy and his father is same as that between the father and grandfather Five years earlier, the grandfather was twice as old as the father. The present age of the boy is

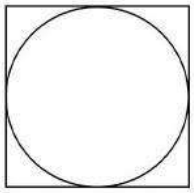
Options

1. 5 years.
2. 7 years.
3. 8 years.
4. 9 years.

Question Type : **MCQ**
Question ID : **80243718**
Option 1 ID : **80243769**
Option 2 ID : **80243770**
Option 3 ID : **80243771**
Option 4 ID : **80243772**
Status : **Not Answered**
Chosen Option : **--**

Q.7

The figure shows a circle inscribed in a square.



If a large number of points are randomly marked within the square, the expected percentage of points inside the circle is closest to

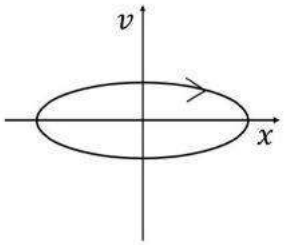
Options

1. 52
2. 79
3. 75
4. 70

Question Type : **MCQ**
Question ID : **8024379**
Option 1 ID : **80243733**
Option 2 ID : **80243734**
Option 3 ID : **80243735**
Option 4 ID : **80243736**
Status : **Answered**
Chosen Option : **2**

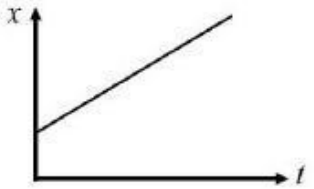
Q.8

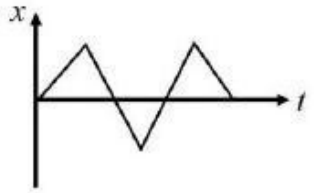
Consider a moving object whose velocity v varies with its position x as shown in the given plot.

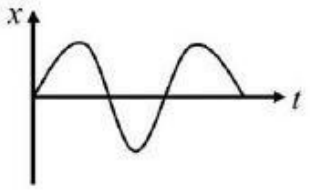


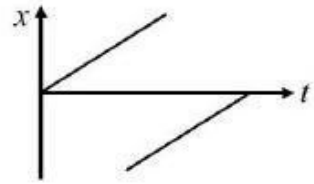
Which of the following plots showing the change in position with time is admissible for the above object?

Options

1.


2.


3.


4.


Question Type : **MCQ**
Question ID : **80243714**
Option 1 ID : **80243753**
Option 2 ID : **80243754**
Option 3 ID : **80243755**
Option 4 ID : **80243756**
Status : **Not Answered**
Chosen Option : **--**

Q.9

Maximum retail price (MRP) of each of 3 different brands of biscuits A, B and C is Rs. 20 per 100g packet. During a festive offer, A is available at 25% off on MRP, B is available with 25% extra biscuits for the same MRP, and one packet of C is free on purchase of three packets of C. If a person wants to buy biscuits for Rs. 60, which brand should the person choose to get the maximum amount of biscuits by weight?

Options

1. B only
2. Either A or B, not C
3. Either B or C, not A
4. Either A or C, not B

Question Type : **MCQ**
Question ID : **8024378**
Option 1 ID : **80243729**
Option 2 ID : **80243730**
Option 3 ID : **80243731**
Option 4 ID : **80243732**
Status : **Not Answered**
Chosen Option : **--**

Q.10 A certain multiple choice question has four options of which at least one is correct. If a student answers at random choosing at least one option, what is the probability that the student selects the exact combination of correct option(s)?

Options

1. 1/3
2. 1/4
3. 1/12
4. 1/15

Question Type : **MCQ**
Question ID : **80243720**
Option 1 ID : **80243777**
Option 2 ID : **80243778**
Option 3 ID : **80243779**
Option 4 ID : **80243780**
Status : **Not Answered**
Chosen Option : **--**

Q.11 A cube of side 3 cm is made by assembling cubes of side1 cm. How many small cubes can be counted on the surface?

Options

1. 24
2. 25
3. 26
4. 27

Question Type : **MCQ**
Question ID : **80243711**
Option 1 ID : **80243741**
Option 2 ID : **80243742**
Option 3 ID : **80243743**
Option 4 ID : **80243744**
Status : **Answered**
Chosen Option : **4**

Q.12

The surface area of water in a circular well with vertical wall is 30 m^2. When an idol made of a material of density 2 g/cm^3 is fully immersed, the water level rises by 10 cm. What is the mass of the idol?

Options

1. 300 kg
2. 600 kg
3. 3000 kg
4. 6000 kg

Question Type : **MCQ**
Question ID : **8024372**
Option 1 ID : **8024375**
Option 2 ID : **8024376**
Option 3 ID : **8024377**
Option 4 ID : **8024378**
Status : **Not Answered**
Chosen Option : **--**

Q.13

In a test attempting all given questions is compulsory. A candidate is given 3 questions to start with. On every correct answer the candidate is given 2 additional questions. If the candidate attempted a total of 11 questions, how many were correctly answered?

Options

1. 3
2. 5
3. 6
4. 4

Question Type : **MCQ**
Question ID : **8024376**
Option 1 ID : **80243721**
Option 2 ID : **80243722**
Option 3 ID : **80243723**
Option 4 ID : **80243724**
Status : **Not Answered**
Chosen Option : **--**

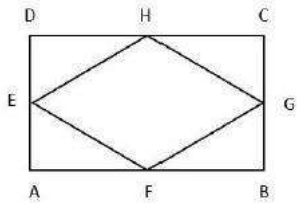
Q.14 In a triangle ABC, AB=8, BC=14, and CA=12 units. Circles are drawn with centres at A, B and C, such that they touch each other externally. The radius of the circle around A is

Options

1. 4
2. 6
3. 2
4. 3

Question Type : **MCQ**
Question ID : **80243719**
Option 1 ID : **80243773**
Option 2 ID : **80243774**
Option 3 ID : **80243775**
Option 4 ID : **80243776**
Status : **Not Answered**
Chosen Option : **--**

Q.15



If points E,F,G, and H bisect the sides of rectangle ABCD as shown in the figure, what is the ratio of the areas of quadrilateral EFGH and rectangle ABCD?

Options

1. 1:4
2. 1:3
3. 1:2
4. 2:1

Question Type : **MCQ**
Question ID : **80243710**
Option 1 ID : **80243737**
Option 2 ID : **80243738**
Option 3 ID : **80243739**
Option 4 ID : **80243740**
Status : **Not Answered**
Chosen Option : **--**

Q.16 In a ten-digit mobile number 999ABCDEEE, A, B, C and D are distinct prime numbers. The mobile number is never divisible by

Options

1. 3
2. 4
3. 5
4. 8

Question Type : **MCQ**
Question ID : **80243715**
Option 1 ID : **80243757**
Option 2 ID : **80243758**
Option 3 ID : **80243759**
Option 4 ID : **80243760**
Status : **Not Answered**
Chosen Option : **--**

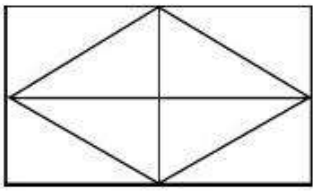
Q.17 The pointer of a spring balance is offset from zero. This balance showed a weight of 8 kg for an object A and 6 kg for another object B. When A and B are weighed together, the balance showed 16 kg. The true weights, in kg, of A and B, respectively are

Options

1. 4 and 6
2. 10 and 6
3. 10 and 8
4. 8 and 8

Question Type : **MCQ**
Question ID : **80243713**
Option 1 ID : **80243749**
Option 2 ID : **80243750**
Option 3 ID : **80243751**
Option 4 ID : **80243752**
Status : **Not Answered**
Chosen Option : **--**

Q.18



Which of the following is true for the given figure?

Options

1. Number of rectangles > Number of triangles.
2. Number of rectangles = Number of triangles.
3. Number of rectangles + 1 = Number of triangles.
4. Number of rectangles + 1 < Number of triangles.

Question Type : **MCQ**
Question ID : **8024374**
Option 1 ID : **80243713**
Option 2 ID : **80243714**
Option 3 ID : **80243715**
Option 4 ID : **80243716**
Status : **Not Answered**
Chosen Option : **--**

Q.19

Which of the following numbers is a perfect square?

Options

1. 48841
2. 58287
3. 68763
4. 38262

Question Type : **MCQ**
Question ID : **8024371**
Option 1 ID : **8024371**
Option 2 ID : **8024372**
Option 3 ID : **8024373**
Option 4 ID : **8024374**
Status : **Not Answered**
Chosen Option : **--**

Q.20

A person invests a certain amount of money. Whenever the amount gets exactly doubled, he donates Rs. 200. After four such donations he is left with Rs. 200. The initial amount of money he invested was rupees

Options

1. 1000
2. 800
3. 400
4. 200

Question Type : **MCQ**
Question ID : **80243716**
Option 1 ID : **80243761**
Option 2 ID : **80243762**
Option 3 ID : **80243763**
Option 4 ID : **80243764**
Status : **Answered**
Chosen Option : **4**

Section : **Part B Earth Atmospheric Ocean and Planetary Sciences**

Q.1

Which of the following symmetry operations would give a result similar to an operation of a bar 6 symmetry axis?

Options

1. A 6-fold symmetry axis with a mirror plane perpendicular to it.
2. A 6-fold symmetry axis with a mirror plane parallel to it.
3. A 3-fold symmetry axis with a mirror plane perpendicular to it.
4. A 3-fold symmetry axis with a mirror plane parallel to it.

Question Type : **MCQ**
Question ID : **80243734**
Option 1 ID : **802437133**
Option 2 ID : **802437134**
Option 3 ID : **802437135**
Option 4 ID : **802437136**
Status : **Marked For Review**
Chosen Option : **3**

Q.2

The concentration of the trace gases by volume in the lower troposphere in decreasing order is

Options 1.

Nitrous oxide; Carbon dioxide; Methane; Nitric oxide

2.

Methane; Nitrous oxide; Nitric oxide; Carbon dioxide

3.

Nitric oxide; Methane; Carbon dioxide; Nitrous oxide

4.

Carbon dioxide; Methane; Nitrous oxide; Nitrogen dioxide

N_2 (Nitrogen)	78.08%
O_2 (Oxygen)	20.95%
H_2O (water vapor)	<3.00%
A (Argon)	0.93%
CO_2 (carbon dioxide)	345 ppmv
O_3 (ozone)	10 ppmv
CH_4 (methane)	***1.6 ppmv***
N_2O (nitric oxide)	350 ppbv
CO (carbon monoxide)	***70 ppbv***
CFC=s 11-12	0.2-0.3 ppbv

Question Type : **MCQ**
Question ID : **80243762**
Option 1 ID : **802437245**
Option 2 ID : **802437246**
Option 3 ID : **802437247**
Option 4 ID : **802437248**
Status : **Answered**
Chosen Option : **4**

Q.3

For seismic wave propagation, the Earth acts as

Options

1. high cut filter.

2. low cut filter.

3. all pass filter.

4. high pass filter.

Question Type : **MCQ**
Question ID : **80243744**
Option 1 ID : **802437173**
Option 2 ID : **802437174**
Option 3 ID : **802437175**
Option 4 ID : **802437176**
Status : **Not Answered**
Chosen Option : **--**

Q.4 Which one of the following DOES NOT influence the Latent heat flux at the air-sea interface?

Options

1. atmospheric pressure
2. wind speed
3. relative humidity
4. evaporation

Question Type :	**MCQ**
Question ID :	**80243753**
Option 1 ID :	**802437209**
Option 2 ID :	**802437210**
Option 3 ID :	**802437211**
Option 4 ID :	**802437212**
Status :	**Not Answered**
Chosen Option :	**--**

Q.5 The ray path of a body wave propagating through an isotropic, radially symmetric layered Earth model is

Options

1. a curved path due to the spherical shape of the Earth.
2. a straight line.
3. a curved path due to linear increase in velocity with depth.
4. a curved path due to dispersion.

Question Type :	**MCQ**
Question ID :	**80243745**
Option 1 ID :	**802437177**
Option 2 ID :	**802437178**
Option 3 ID :	**802437179**
Option 4 ID :	**802437180**
Status :	**Not Answered**
Chosen Option :	**--**

Q.6

Which one of the following boundaries approximately represents the Great Oxidation Event (GOE) in the Earth's history?

Options

1. Proterozoic-Paleozoic
2. Archean-Proterozoic
3. Mesozoic-Cenozoic
4. Paleozoic-Mesozoic

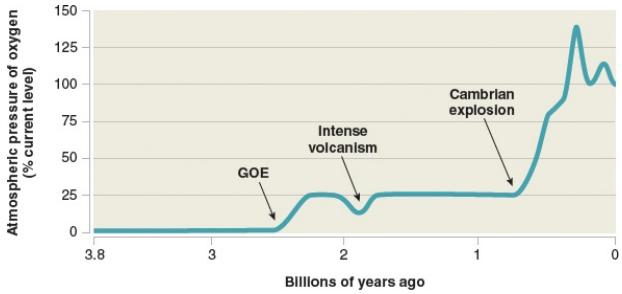
Question Type : **MCQ**
Question ID : **80243729**
Option 1 ID : **802437113**
Option 2 ID : **802437114**
Option 3 ID : **802437115**
Option 4 ID : **802437116**
Status : **Answered**
Chosen Option : **1**

Q.7

The duration of the Cretaceous Normal Superchron (CNS) is about

Options

1. 25 Ma
2. 30 Ma
3. 40 Ma
4. 50 Ma



Question Type : **MCQ**
Question ID : **80243742**
Option 1 ID : **802437165**
Option 2 ID : **802437166**
Option 3 ID : **802437167**
Option 4 ID : **802437168**
Status : **Not Answered**
Chosen Option : **--**

Q.8

The seasons on the Earth occur primarily because of

Options 1. the variability of the earth's distance from the sun.

2. shifting of ocean currents.

3. the tilt of the Earth's axis of rotation.

4. the jet stream.

The Short Answer:

Earth has **seasons** because its axis is tilted. **Earth's** axis is always pointed in the same direction, so different parts of **Earth** get the Sun's direct rays throughout the year.

Question Type : **MCQ**
Question ID : **80243765**
Option 1 ID : **802437257**
Option 2 ID : **802437258**
Option 3 ID : **802437259**
Option 4 ID : **802437260**
Status : **Answered**
Chosen Option : **3**

Q.9

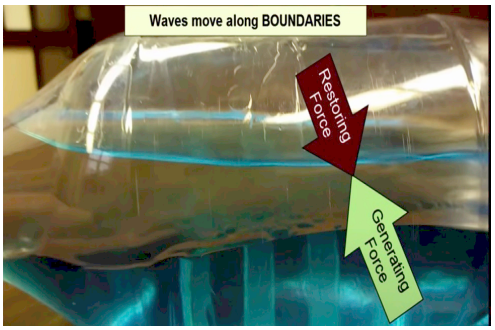
For which one of the following ocean waves, surface tension is the principal restoring force?

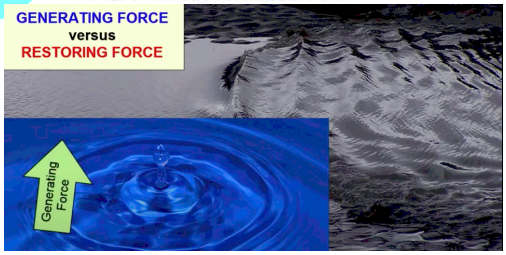
Options 1. Internal waves

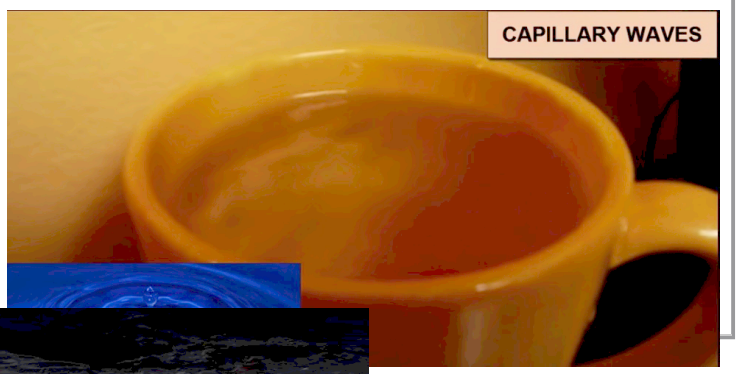
2. Tsunami

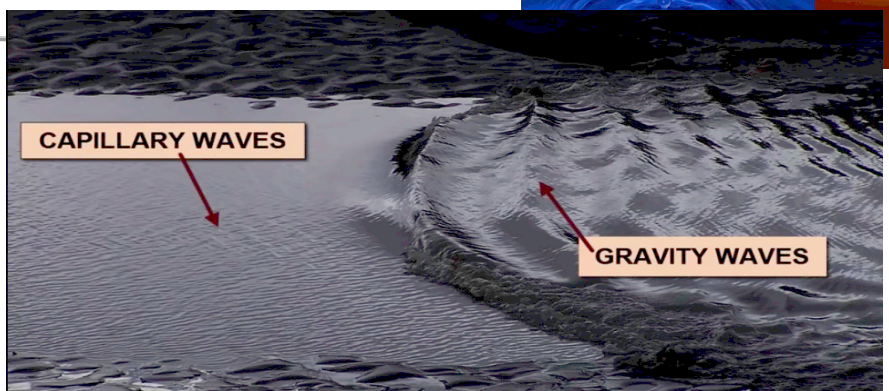
3. Standing waves (Seiche)

4. Capillary waves









Q.10

Which of the following is a diabatic process?

Options

1. Convection
2. Orographic lifting
3. Radiational heating or cooling
4. Rising air due to convergence in the Planetary Boundary Layer (PBL).

Question Type : **MCQ**
Question ID : **80243766**
Option 1 ID : **802437261**
Option 2 ID : **802437262**
Option 3 ID : **802437263**
Option 4 ID : **802437264**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.11

Which one of the following is true for ocean?

Options

1. $[HCO_3^-] > [CO_3^{2-}] > [H_2CO_3]$
2. $[HCO_3^-] < [CO_3^{2-}] < [H_2CO_3]$
3. $[H_2CO_3] > [HCO_3^-] > [CO_3^{2-}]$
4. $[CO_3^{2-}] > [H_2CO_3] > [HCO_3^-]$

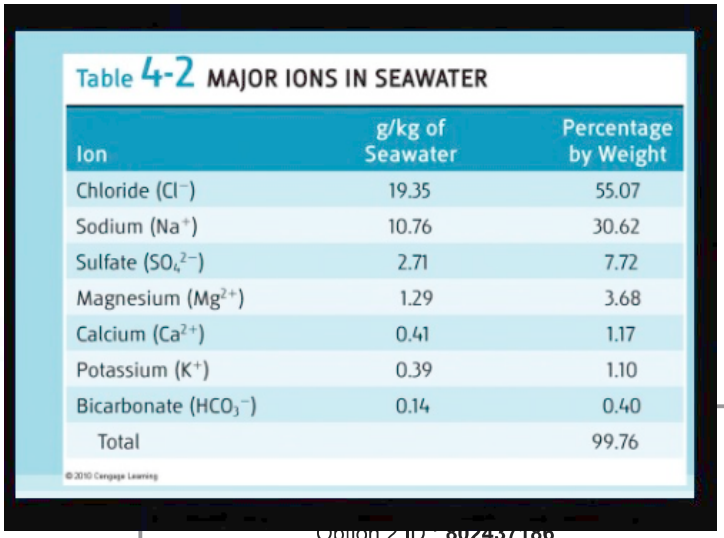


Table 4-2 MAJOR IONS IN SEAWATER

Ion	g/kg of Seawater	Percentage by Weight
Chloride (Cl^-)	19.35	55.07
Sodium (Na^+)	10.76	30.62
Sulfate (SO_4^{2-})	2.71	7.72
Magnesium (Mg^{2+})	1.29	3.68
Calcium (Ca^{2+})	0.41	1.17
Potassium (K^+)	0.39	1.10
Bicarbonate (HCO_3^-)	0.14	0.40
Total		99.76

Option 2 ID : **802437186**
Option 3 ID : **802437187**
Option 4 ID : **802437188**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.12

The 27-day periodicity of magnetic storms observed on the Earth is attributed to

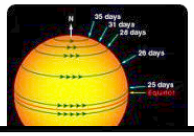
moon magnetic feild

Options

1. rotation of the Sun around its axis.
2. rotation of the Earth around its axis.
3. revolution of the Moon around the Earth.
4. rotation of the Moon around its axis.

The **moon** orbits the Earth once every 27.322 days. It also takes approximately 27 days for the **moon** to **rotate** once on its axis. As a result, the **moon** does not seem to be spinning but appears to observers from Earth to be keeping almost perfectly still. Scientists call this synchronous **rotation**. Nov 14, 2017

The Sun rotates on **its axis** once in about 27 days. This **rotation** was first detected by observing **the** motion of sunspots. ... In fact, **the Sun's** equatorial regions **rotate** faster (taking only about 24 days) than **the** polar regions (which **rotate** once in more than 30 days). Jan 22, 2013



Question Type : **MCQ**
Question ID : **80243739**
Option 1 ID : **802437153**
Option 2 ID : **802437154**

The Sun rotates on its axis once in about 27 days. This rotation was first detected by observing the motion of sunspots. The Sun's rotation axis is tilted by about 7.25 degrees from the axis of the Earth's orbit so we see more of the Sun's north pole in September of each year and more of its south pole in March.

Since the Sun is a ball of gas/plasma, it does not have to rotate rigidly like the solid planets and moons do. In fact, the Sun's equatorial regions rotate faster (taking only about 24 days) than the polar regions (which rotate once in more than 30 days). The source of this "differential rotation" is an area of current research in solar astronomy.

Q.13

According to the NUVEL-I model of global plate motion, the correct sequence of the plates in increasing order of their angular velocity with respect to the Pacific Plate is

NNR (NUVEL) NO Net Rotation

Australian

Options

1. South America – Antarctica – India – Nazca
2. Antarctica – South America – India – Nazca
3. South America – Antarctica – Nazca – India
4. Antarctica – South America – Nazca – India

Table 5. Plate Angular Velocities

Source	Angular Velocity: Latitude, deg,	Longitude, deg,	ω, deg/m.y.	Pole Error Ellipse: σ_{max}, deg	σ_{min}, deg	ψ, deg	σ_ω, deg/m.y.
Africa (Hartebeestoek, Maspalomas)							
This paper	50.0	−86.8	0.26	5.3	2.8	90	0.01
NNR-A	50.8	−74.0	0.29				
Antarctica (McMurdo and O'Higgins)							
This paper	60.5	−125.7	0.24	6.6	3.6	1	0.03
NNR-A	63.1	−115.9	0.24				
Australia (Perth, Yaragadee, Canberra, Hobart, Townsville)							
This paper	31.4	40.7	0.61	3.1	1.0	-61	0.01
NNR-A	34.0	33.2	0.65				
Europe (Hersmonceaux, Onsala, Tromso, Ny Alesund, Madrid, Kootwijk, Wetzell)							
This paper	56.3	−102.8	0.26	5.7	1.7	43	0.02
NNR-A	50.8	−112.4	0.23				
Nazca (Baltra Island and Easter Island)							
This paper	40.6	−100.7	0.70	7.6	1.7	-5	0.05
NNR-A	48.0	−100.2	0.74				
North America (Bermuda, North Liberty, Westford, Richmond, Algonquin, Fairbanks, St John's)							
This paper	−0.4	−84.5	0.22	4.3	2.0	0	0.01
NNR-A	−2.5	−86.0	0.21				
Pacific (Pamatai, Kokee Park, Chatham)							
This paper	−63.1	95.9	0.70	2.3	0.9	−82	0.01
NNR-A	−63.2	107.4	0.64				
South America (Kourou and Fortaleza)							
This paper	−21.0	−183.5	0.16	29.6	7.4	−71	0.06
NNR-A	−25.6	−124.0	0.12				

Q.14

Rossby number is a ratio of

Options

1. inertial force to Coriolis force.
2. mechanical production to buoyance.
3. inertial force to viscous force. — Reynolds number
4. inertial and gravitational force. — Foude number

The Rossby number (Ro, not R_0) is defined as

$$\mathrm{Ro} = \frac{U}{Lf},$$

where U and L are respectively characteristic velocity and length scales of the phenomenon, and $f = 2\Omega \sin\phi$ is the Coriolis frequency, with Ω being the angular frequency of planetary rotation, and ϕ the latitude.

A small Rossby number signifies a system strongly affected by Coriolis forces, and a large Rossby number signifies a system, in which inertial and centrifugal forces dominate. For example, in

Chosen Option : --

Q.15

In the ICAO Standard Atmosphere (ISA) the lapse rate (°C/km) in the 11- 20 km layer is

Options

1. 6.5
2. 9.8
3. - 0.001
4. 0

Question Type : **MCQ**

Question ID : **80243764**

Environmental lapse rate [edit]

The environmental lapse rate (ELR), is the rate of decrease of temperature with altitude in the stationary atmosphere at a given time and location. As an average, the International Civil Aviation Organization (ICAO) defines an international standard atmosphere (ISA) with a temperature lapse rate of 6.49 K/km[16] (3.56 °F or 1.98 °C/1,000 ft) from sea level to 11 km (36,090 ft or 6.8 mi). From 11 km up to 20 km (65,620 ft or 12.4 mi), the constant temperature is −56.5 °C (−69.7 °F), which is the lowest assumed temperature in the ISA. The standard atmosphere contains no moisture. Unlike the idealized ISA, the temperature of the actual atmosphere does not always fall at a uniform rate with height. For example, there can be an inversion layer in which the temperature increases with altitude.

Chosen Option : --

Q.16 Which of the following is TRUE for a disconformity?

Options 1. A gap in the geological record bounded below by igneous rocks and bounded above by sedimentary rocks. — Non conformity

2. A sequence of rocks that does not contain any gap in the geological record. — Not unconformity

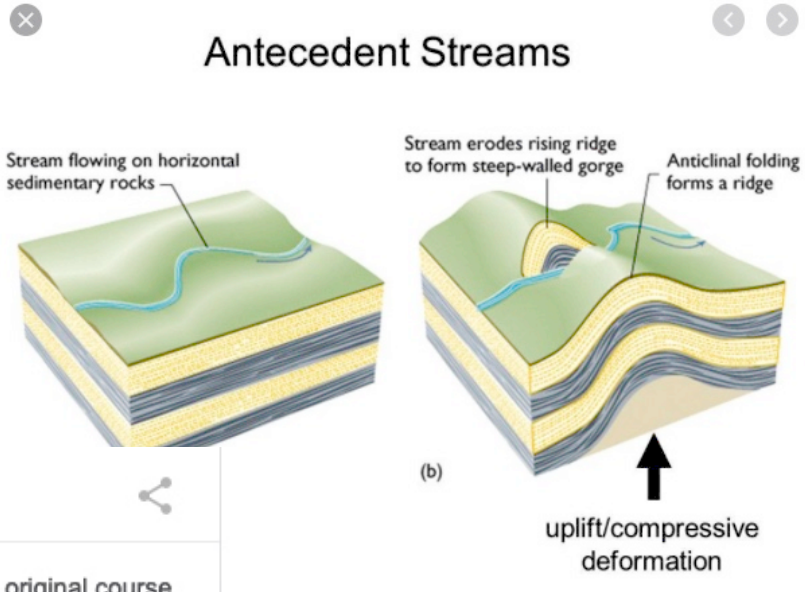
3. A gap in the geological record where the strata below and above an erosional surface are horizontal. — Disconformity

4. A gap in the geological record bounded below by tilted sedimentary strata and bounded above by horizontal sedimentary strata. — Angular unconformity

Question Type : **MCQ**
Question ID : **80243726**
Option 1 ID : **802437101**
Option 2 ID : **802437102**
Option 3 ID : **802437103**
Option 4 ID : **802437104**
Status : **Answered**
Chosen Option : **3**

Q.17 A drainage system, which has maintained its general direction across an area of localized or regional uplift is known as

Options
1. annular drainage.
2. antecedent drainage.
3. truncated drainage.
4. offset drainage.



Antecedent drainage stream

An antecedent stream is a stream that maintains its original course and pattern despite the changes in underlying rock topography. A stream with a dendritic drainage pattern, for example, can be subject to slow tectonic uplift. Wikipedia

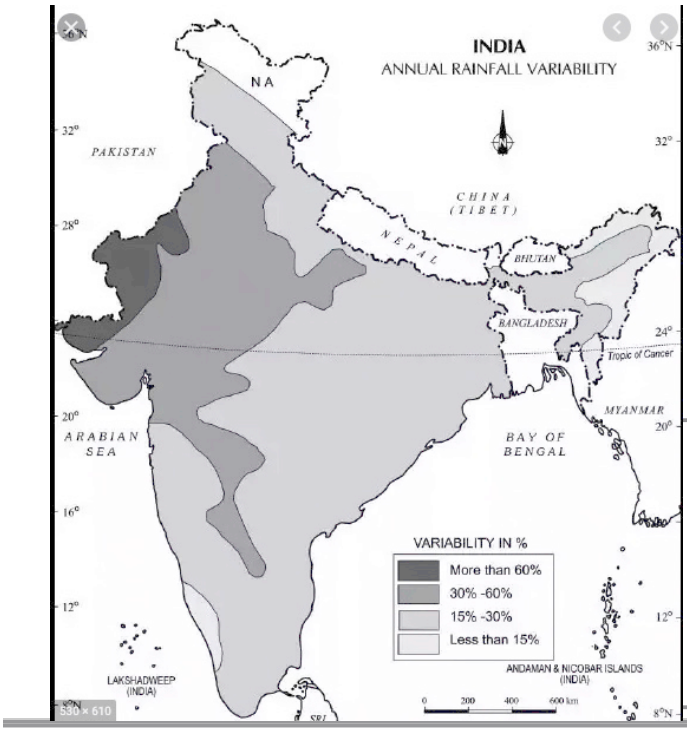
Option 4 ID : **802437240**
Status : **Marked For Review**
Chosen Option : **2**

Q.18

The highest variability of annual rainfall in India is observed over the

Options

1. Thar desert region
2. Assam valley region
3. Central India
4. East coast of India



Spatial Distribution

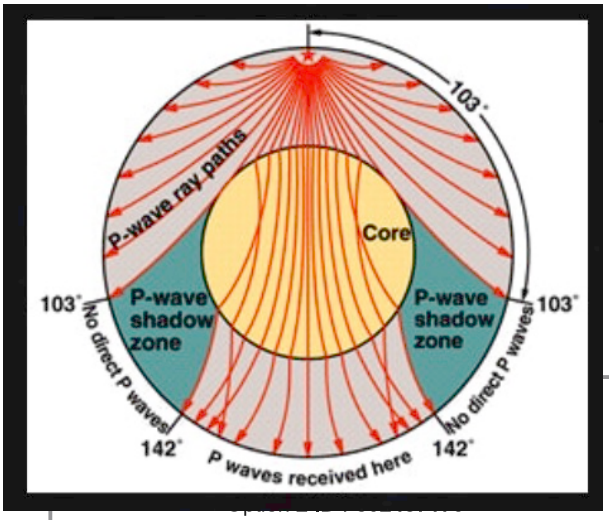
Areas of High Rainfall (Over 200cm): Highest rainfall occurs along the mountain ranges obstructing the approaching moist winds, like the west coast, as well as in the sub-Himalayan areas in the northeast
Areas of medium Rainfall (100-200 cm): In the southern parts of Gujarat, east Tamil Nadu, north-eastern Peninsula covering Orissa, Jharkhand, Bihar, eastern Madhya Pradesh, northern Ganga plain along the sub-Himalayas and the Cachar Valley.
Areas of low Rainfall (50-100 cm): Most of the regions having the effect of continentality like Western Uttar Pradesh, Delhi, Haryana, Punjab, Jammu and Kashmir, eastern Rajasthan, Gujarat and Deccan Plateau.
Areas of inadequate Rainfall (Less than 50 cm): These are arid regions lying in the interior parts of the Peninsula, especially in Andhra Pradesh, Karnataka and Maharashtra, Ladakh and most of western Rajasthan.
In the north India, rainfall decreases westwards and in Peninsular India, except Tamil Nadu, it decreases eastward.

Q.19

The S shadow zone on the Earth is nearly

Options

1. same as the P shadow zone.
2. two times the P shadow zone.
3. three times the P shadow zone.
4. four times the P shadow zone.

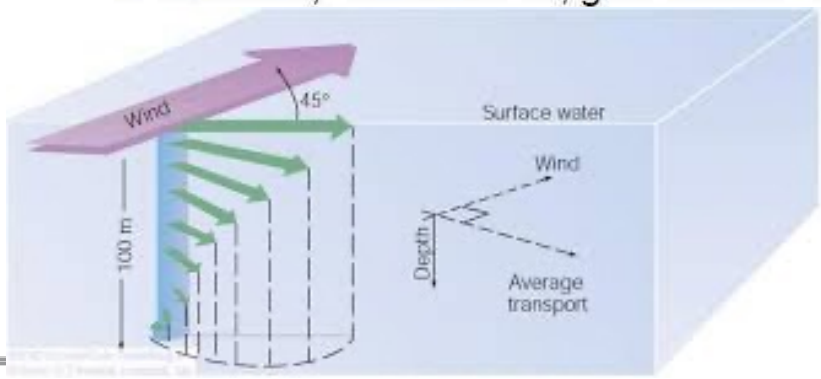


Option 3 ID : **802437171**
Option 4 ID : **802437172**
Status : **Answered**
Chosen Option : **2**

Q.20 Select the CORRECT group of forces which are primarily considered in the derivation of Ekman spiral in the upper-ocean.

Options

1. wind stress, pressure gradient, friction
2. wind stress, Coriolis force, friction
3. pressure gradient, Coriolis force, gravitational force
4. wind stress, Coriolis force, gravitational force.



Question Type : **MCQ**
Question ID : **80243755**
Option 1 ID : **802437217**
Option 2 ID : **802437218**
Option 3 ID : **802437219**
Option 4 ID : **802437220**
Status : **Answered**
Chosen Option : **2**

Q.21 Which of the following satellite does NOT provide information on oceanic bathymetry?

Options

1. GEOSAT
2. ERS-I & II
3. Coastal Zone Colour Scanner (CZCS)
4. TOPEX/Poseidon

Question Type : **MCQ**
Question ID : **80243751**
Option 1 ID : **802437201**
Option 2 ID : **802437202**
Option 3 ID : **802437203**
Option 4 ID : **802437204**
Status : **Not Answered**
Chosen Option : **--**

Q.22

If the attitude of the two limbs of a fold was measured as 263°/29°N and 351°/40°E, the fold axis will plunge in which one of the following quadrants?

Options

1. North East
2. South West
3. North West
4. South East

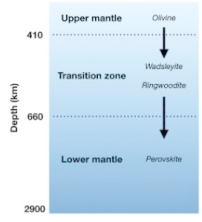
Question Type : **MCQ**
Question ID : **80243724**
Option 1 ID : **80243793**
Option 2 ID : **80243794**
Option 3 ID : **80243795**
Option 4 ID : **80243796**
Status : **Answered**
Chosen Option : **1**

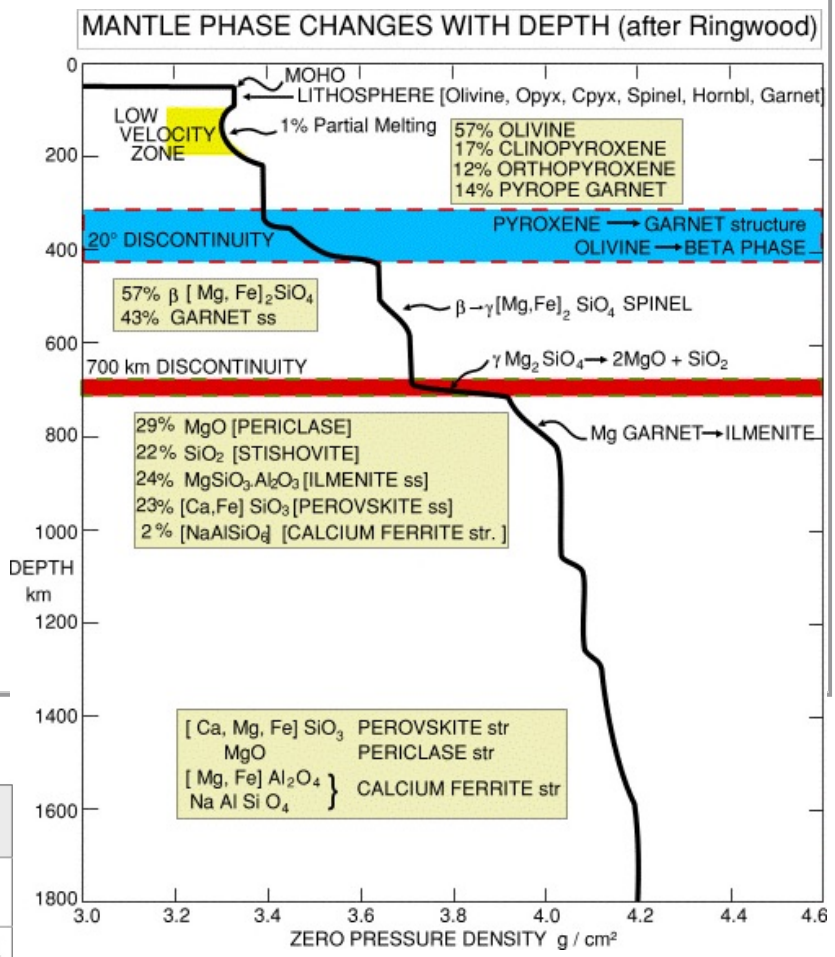
Q.23

In the Earth's interior, the increase of P-wave velocity at 670 km discontinuity is caused by phase transition from

Options

1. olivine to spinel.
2. garnet to perovskite.
3. olivine to perovskite.
4. β-spinel to γ-spinel.

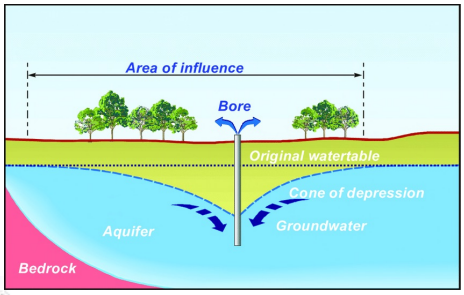




Depth	Pressure	Phase transformations of Olivine
410 km	13-14 GPa	Olivine = Wadsleyite (β-spinel structure)
520 km	18 GPa	Wadsleyite = Ringwoodite (γ-spinel structure)
660 km	23 GPa	Ringwoodite = Perovskite + Magnesiowustite

Q.24

The cone of depression in groundwater forms



Options

1. around a dry well
2. in the freshwater of a fast-pumped flow well.
3. in the salt water intruding from the sea to the well.
4. in a sink hole.

Which of following is the most important factor that causes a cone of depression to form in a water well?

Cone of depression is **formed** under the **well** in an aquifer when the **water** is pumped out through **well** is **more** than the recharge. Size and **shape** of the **cone of depression** are influenced by the many **factors** such as pumping rate, amount of **water** in the aquifer, type of aquifer material such as sand and silt.

Type : **MCQ**
ion ID : **80243770**
n 1 ID : **802437277**
n 2 ID : **802437278**
n 3 ID : **802437279**
n 4 ID : **802437280**
Status : **Answered**
Option : **2**

Q.25

In an isobaric/adiabatic process the temperature that is attained in an isobaric process when water vapour, present in a sample of air is condensed, is called

Options

1. wet bulb temperature.
2. virtual temperature.
3. equivalent temperature.
4. dew point temperature.

Question Type : **MCQ**

In atmospheric science, **equivalent temperature** is the temperature of an air parcel from which all the water vapor has been extracted by an adiabatic process.

Air contains water vapor that has been evaporated into it from liquid sources (lakes, sea, etc...). The energy needed to do that has been taken from the air. Taking a volume of air at temperature T and mixing ratio of r , drying it by condensation will restore energy to the airmass. This will depend on the latent heat release as:

r

Option 4 ID : **802437244**
Status : **Answered**

Virtual temperature

From Wikipedia, the free encyclopedia

In atmospheric thermodynamics, the **virtual temperature** (T_v) of a moist air parcel is the temperature at which a theoretical dry air parcel would have a total pressure and density equal to the moist parcel of air.[1] The virtual temperature of unsaturated moist air is always greater than the absolute air temperature, however, the existence of suspended cloud droplets reduces the virtual temperature.

Q.26 Which one of the following is NOT an autotrophic organism?

Options

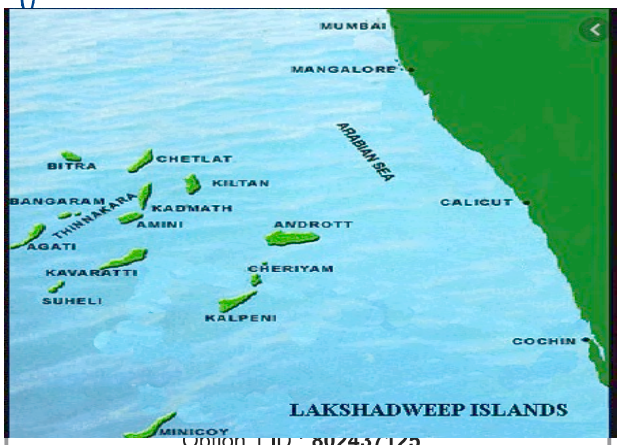
1. *Noctiluca* – hetro tooph
2. *Diatom* – algae
3. *Copepod* –
4. *Nodularia* – algae

Question Type : **MCQ**
Question ID : **80243746**
Option 1 ID : **802437181**
Option 2 ID : **802437182**
Option 3 ID : **802437183**
Option 4 ID : **802437184**
Status : **Not Answered**
Chosen Option : **--**

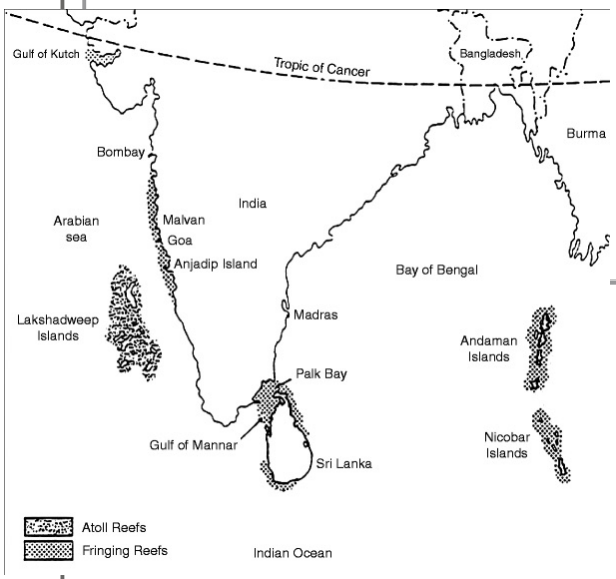
Q.27 Extensive living coral reefs occur in which of the following places?

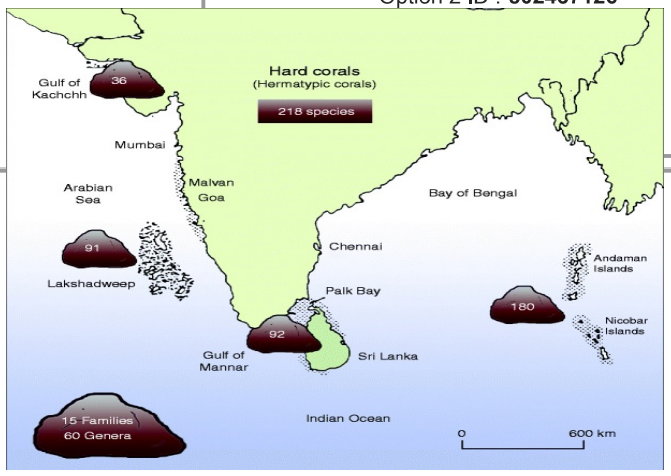
Options

1. Silvassa – Dadra & nagar Haveli
2. Kovalam – kerala
3. Kavaratti – Lak. D
4. Diu – Gujrat



Option 1 ID : **802437125**
Option 2 ID : **802437126**





Q.28 Which one of the statements about satellites in the geo-stationary orbit is INCORRECT?

→ 35786km

5.6 X 6400 = 35840

Options 1.

They orbit at a height which is about 5.6 times the radius of the Earth.

2.

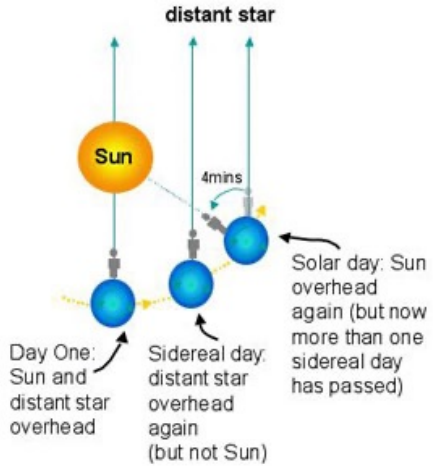
They move in the opposite direction of the Earth's rotation.

3.

They complete a single orbit in one sidereal day.

4.

GSAT and INSAT satellites are placed in geostationary orbits.



Why is a sidereal day different from a solar day?

A **sidereal day** is the time it takes for the Earth to rotate about its axis so that the distant stars appear in the same position in the sky. A **solar day** is the time it takes for the Earth to rotate about its axis so that the Sun appears in the same position in the sky.

Benefits

A satellite in geosynchronous orbit can see one spot of the planet almost all of the time. For Earth observation, this allows the satellite to look at how much a region changes over months or years. The drawback is the satellite is limited to a small parcel of ground; if a natural disaster happens elsewhere, for example, the satellite won't be able to move there due to fuel requirements.

Option 3 ID : **802437251**

Option 4 ID : **802437252**

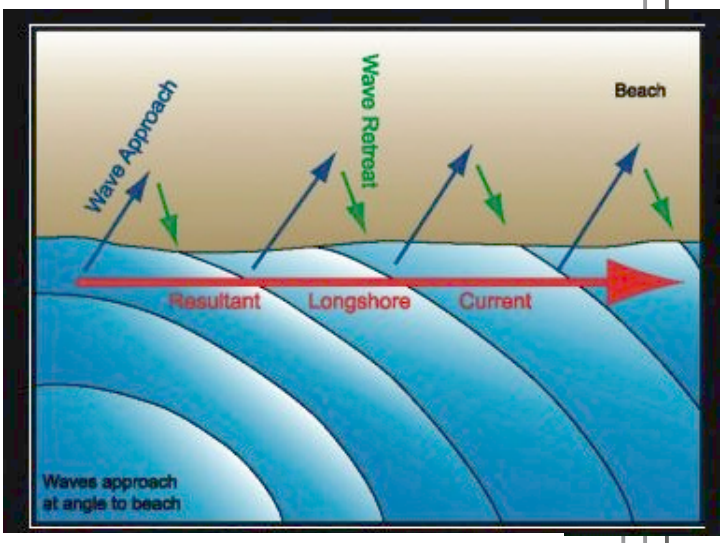
Status : **Answered**

Chosen Option : **2**

Q.29 Littoral drift is the volume or mass of sediment transported by

Options

1. longshore current and wind-drift
2. beach drift and rip currents
3. swash and wind-drift
4. longshore current and swash



Longshore Drift (littoral drift)

Longshore drift is a process responsible for moving significant amounts of sediment along the coast. This usually occurs in one direction as dictated by the prevailing wind. For example, the prevailing wind along the Holderness Coast is north-easterly. As the result waves break on to the beach obliquely at an angle of around 45 degrees. The swash moves beach material along the beach and the backwash, under gravity, pulls the material back down the beach at right angles to the coastline. Over time this creates a net shift of material along the coast.

Q.30

If σ_1, σ_2 and σ_3 are the principal stresses, then which one of the following stress states is uniaxial?

Options

1. $\sigma_1 \geq \sigma_2 \geq \sigma_3 > 0$
2. $\sigma_1 \neq 0, \sigma_2 \neq 0, \sigma_3 = 0$
3. $\sigma_1 \neq 0, \sigma_2 = 0, \sigma_3 = 0$
4. $\sigma_1 = \sigma_2 = \sigma_3 \neq 0$

Table I

The values of stress triaxiality in different stress states

Stress state	Principal stress			R_σ
	σ_1	σ_2	σ_3	
Triaxial inequivalent tension	σ	σ	$0.5\,\sigma$	1.67
Biaxial equivalent tension	σ	σ	0	0.67
Uniaxial tension	σ	0	0	0.33
Pure shear	σ	0	$-\sigma$	0
Uniaxial compression	0	0	$-\sigma$	−0.33
Conventional triaxial compression	$-0.2\,\sigma$	$-0.2\,\sigma$	$-\sigma$	−0.58
Conventional triaxial compression	$-0.4\,\sigma$	$-0.4\,\sigma$	$-\sigma$	−1.00
Conventional triaxial compression	$-0.6\,\sigma$	$-0.6\,\sigma$	$-\sigma$	−1.83
Triaxial equivalent compression	$-\sigma$	$-\sigma$	$-\sigma$	$-\infty$

Notes: The values of stress triaxiality in different stress states. In Table I R_σ denotes the value of stress triaxiality corresponding in different stress states, σ_1, σ_2, and σ_3 are the principal stresses, and it is assumed that $\sigma_1 \geq \sigma_2 \geq \sigma_3$ according to the positive-negative prescription of stress in elastic mechanics

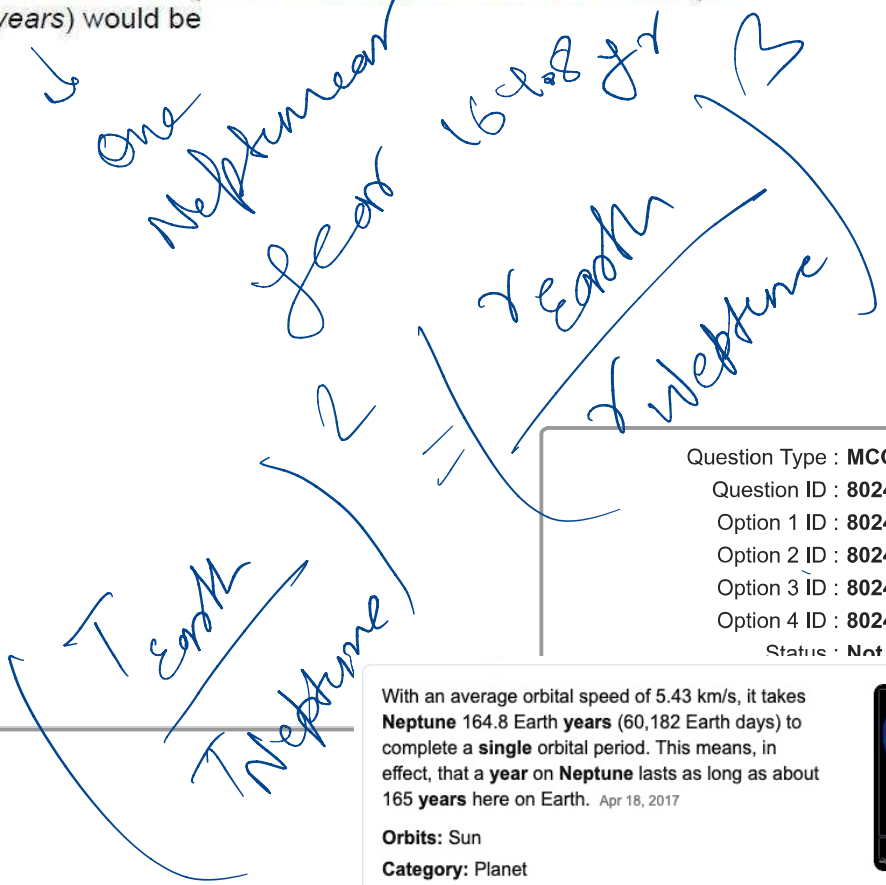
428 x 302

Q.31

Compared to the Earth, Neptune is approximately 30 times farther away from the Sun. Its period of revolution around the Sun (in *Neptune years*) would be

Options

1. 1
2. 30
3. 165
4. 423

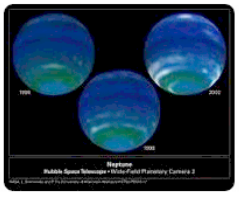


Question Type : **MCQ**
Question ID : **80243721**
Option 1 ID : **80243781**
Option 2 ID : **80243782**
Option 3 ID : **80243783**
Option 4 ID : **80243784**
Status : **Not Answered**

With an average orbital speed of 5.43 km/s, it takes **Neptune** 164.8 Earth **years** (60,182 Earth days) to complete a **single** orbital period. This means, in effect, that a **year** on **Neptune** lasts as long as about 165 **years** here on Earth. Apr 18, 2017

Orbits: Sun

Category: Planet



www.universetoday.com › how-long-is-a-year-on-neptune

The Orbit of Neptune. How Long is a Year on Neptune ...

About featured snippets Feedback

Q.32 Which one of the following processes can be related to the 'continuity equation'?

Options

1. Divergence or convergence at a given horizontal level leads to vertical velocity.

2. Ocean currents tend to flow parallel to isobars due to the Coriolis force.

3. The upward pressure gradient force is almost in balance with downward gravitational force.

4. Wind-driven turbulent mixing generates a mix layer in the upper ocean.

The first four terms form the material derivative so above Eq. becomes

$$\frac{D\rho}{Dt}+\rho\left(\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}+\frac{\partial w}{\partial z}\right)=0 \qquad (4)$$

providing the most general form of the *differential continuity equation* expressed using rectangular coordinates.

Question Type : **MCQ**
Question ID : **80243754**
Option 1 ID : **802437213**
Option 2 ID : **802437214**
Option 3 ID : **802437215**
Option 4 ID : **802437216**
Status : **Not Answered**
Chosen Option : **--**

Q.33 Precambrian rocks are exposed in which of the following cities?

Options

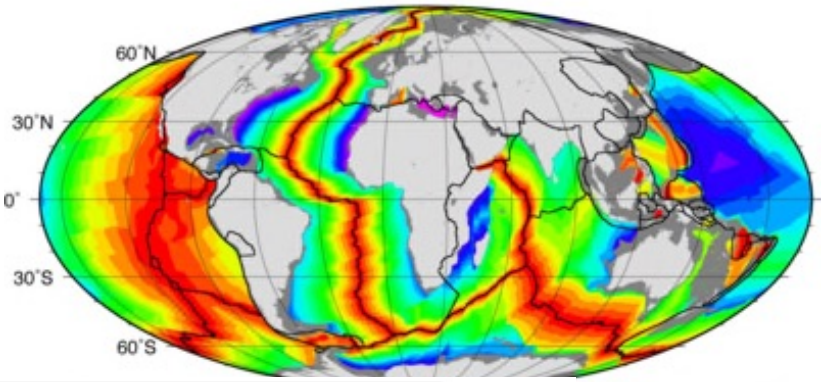
1. Mumbai
2. Delhi
3. Lucknow
4. Bhuj

Question Type : **MCQ**
Question ID : **80243731**
Option 1 ID : **802437121**
Option 2 ID : **802437122**
Option 3 ID : **802437123**
Option 4 ID : **802437124**
Status : **Marked For Review**
Chosen Option : **2**

Q.34 Which one of the following is the fastest spreading ridge on Earth?

Options

1. Mid-Atlantic ridge
2. Southwest Indian ridge
3. East Pacific ridge
4. Carlsbad ridge



Some of our recent research involves hydrothermal and structural investigations along Earth's fastest seafloor spreading center, the 28°S–32°S **East Pacific Rise**. The fastest present-day seafloor spreading, ~150 km/Myr, occurs along the **Pacific**-Nazca boundary between the Easter and Juan Fernandez microplates. Aug 28, 2017

www.soest.hawaii.edu › HIGP › Faculty › hey › fastest

Earth's Fastest Seafloor Spreading Center: 28°S–32°S East ...

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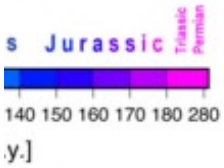

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For Review

Q.35 Which one of the following minerals determines the strength of the Earth's continental crust?

Options

1. Feldspar
2. Mica
3. Quartz
4. Amphibole

Geotech Stability Series

Question Type :	**MCQ**
Question ID :	**80243723**
Option 1 ID :	**80243789**
Option 2 ID :	**80243790**
Option 3 ID :	**80243791**
Option 4 ID :	**80243792**
Status :	**Not Attempted and Marked For Review**
Chosen Option :	**--**

Q.36 The time interval between consecutive 'Spring Tide' and 'Neap Tide' is

Options

1. 14 days
2. 1 day
3. 28 days
4. 7 days

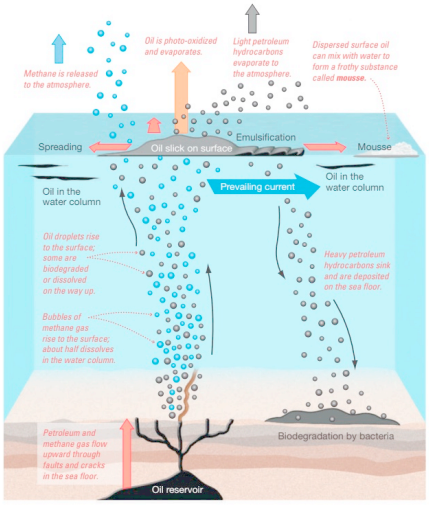
Explore the Beltoforion **interactive animation** of the sun-earth-moon system to see the neap tides, spring tides and the various forces involved. The time difference between spring tide and neap tide is normally 7 days and is in accordance with the **phases of the moon**, roughly 28 days divided by 4.
Watch NASA videos: **Moon phases - northern hemisphere** and **southern hemisphere**; click the gear icon ✿ and set Speed to 2 and Quality as high as possible.

Question Type : **MCQ**
Question ID : **80243769**
Option 1 ID : **802437273**
Option 2 ID : **802437274**
Option 3 ID : **802437275**
Option 4 ID : **802437276**
Status : **Answered**
Chosen Option : **1**

Q.37 What type of a marine environment would have slowest rate of recovery from a large oil spill?

Options

1. cyclonic gyres
2. anticyclonic gyres
3. highly productive waters
4. cold environment with little wave action



: 802437197
: 802437198
: 802437199
: 802437200
: Not Answered
: --

CLEANING OIL SPILLS When oil enters the ocean, it initially floats because oil is less dense than water and forms a slick at the surface, where it starts to break down through natural processes (Figure 11.9). The volatile, lighter components of crude oil evaporate over the first few days, leaving behind a more viscous substance that aggregates into tar balls and eventually sinks. The tarry oil also coats suspended particles, which settle to the sea floor, too.

If the floating oil hasn't dispersed, it can be collected with specially designed skimmers or absorbent materials. The collected oil (or oiled materials), however, must still be disposed of elsewhere. Waves, winds, and currents serve to further disperse an oil slick and mix the remaining oil with water to make a frothy emulsion called *mousse*. In addition, bacteria combined with the process of photo-oxidation by sunlight act to break down the oil into compounds that dissolve in water.

Q.38 Redfield ratio refers to the

Options 1. ratio among the different conservative tracers in the ocean.

2. ratio of calcium to magnesium in foraminifera.

3. mean molar ratio of carbon, nitrogen and phosphorus in the organic matter.

4. ratio of carbon, nitrogen and phosphorus in the surface waters.

Redfield ratio

From Wikipedia, the free encyclopedia

Redfield ratio or **Redfield stoichiometry** is the consistent atomic ratio of carbon, nitrogen and phosphorus found in marine phytoplankton and throughout the deep oceans.

The term is named for American oceanographer Alfred C. Redfield who in 1934 first described the relatively consistent ratio of nutrients in marine biomass samples collected across several voyages on board the research vessel Atlantis, and empirically found the ratio to be C:N:P = 106:16:1.[1] While deviations from the canonical 106:16:1 ratio have been found depending on phytoplankton species and the study area, the

ted and Review

Chosen Option : --

Q.39 The masses of the Earth's crust, its mantle and core are in the ratio 7: 690: 303. Then their contributions to the Earth's gravity field will be in the ratio

Options

1. 7: 690: 303

2. 303: 690: 7

3. $\sqrt{303}$: $\sqrt{690}$: $\sqrt{7}$

4. $\sqrt{7}$: $\sqrt{690}$: $\sqrt{303}$

Question Type : **MCQ**
Question ID : **80243736**
Option 1 ID : **802437141**
Option 2 ID : **802437142**
Option 3 ID : **802437143**
Option 4 ID : **802437144**
Status : **Not Answered**
Chosen Option : **--**

Q.40 Which one of the following clay minerals is devoid of iron?

odinite, chamosite, clinochlore (Fe) ferric-iron silicate mineral chlorite group $Al_2Si_2O_5(OH)_4$

Options

1. Chlorite
2. Glauconite
3. Chamosite
4. Kaolinite ✓

Question Type : **MCQ**
Question ID : **80243730**
Option 1 ID : **802437117**
Option 2 ID : **802437118**
Option 3 ID : **802437119**
Option 4 ID : **802437120**
Status : **Not Answered**
Chosen Option : **--**

Q.41 The texture in a graphic granite can represent which of the following stages of crystallization in the Albite-Silica binary system?

Options

1. At liquidus in the albite rich composition
2. At liquidus in the silica rich composition
3. At the eutectic point ✓
4. At the temperature below the eutectic point

freezing **point** of liquids

In phase: Binary systems. This **point** is called the **eutectic**. It is the lowest **temperature** at which a liquid can exist in this system. At the **eutectic**, both anorthite and titanite crystallize together at a fixed **temperature** and in a fixed ratio until the remaining liquid is consumed.

Graphic granite is a leucocratic granitic rock consisting of alkali feldspar with exsolved quartz typically forming a distinctive repetitive pattern sometimes resembling cuneiform writing. Experiments have shown that graphic granite texture is derived from large single crystals of quartz and feldspar interleaving to create the cuneiform illusion.[1]

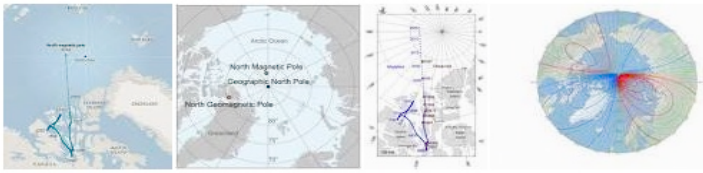
Exsolved magnetite has graphic texture, as do some exsolution textures of pyroxene, pyrite feldspar and rarely other minerals.

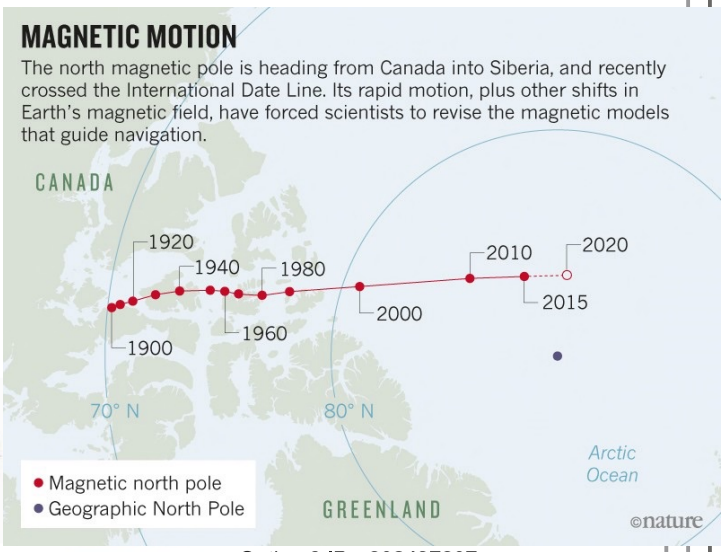
Question Type : **MCQ**
Question ID : **80243735**
Option 1 ID : **802437137**
Option 2 ID : **802437138**
Option 3 ID : **802437139**
Option 4 ID : **802437140**
Status : **Answered**
Option : **3**

Q.42 The magnetic North Pole is currently migrating from Canada towards which of the regions given below?

Options

1. Greenland
2. Siberia
3. Iceland
4. America





During the 20th century it moved 1,100 km (680 mi), and since 1970 its rate of motion has accelerated from 9 to 52 km (5.6 to 32.3 mi) per year (2001–2007 average; see also **polar** drift). ... As of early 2019, the **magnetic north pole is moving** from Canada towards Siberia at a rate of approximately 55 km (34 mi) per year.

Option 3 ID : **802437207**
Option 4 ID : **802437208**
Status : **Not Answered**
Chosen Option : **--**

Q.43 The Earth's magnetic field in the mantle

Options

1. is zero everywhere, due to high temperatures
2. increases sharply with depth
3. decreases sharply with depth
4. attains a finite constant value

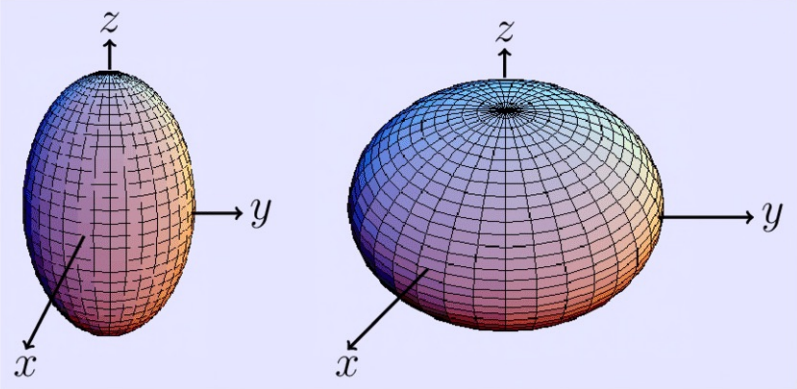
Question Type : **MCQ**
Question ID : **80243737**
Option 1 ID : **802437145**
Option 2 ID : **802437146**
Option 3 ID : **802437147**
Option 4 ID : **802437148**
Status : **Marked For Review**
Chosen Option : **2**

Q.44

The Earth is shaped like a/an

Options

1. Oblate spheroid
2. Oblate geoid
3. Prolate spheroid
4. Everest spheroid



Question Type : **MCQ**
Question ID : **80243722**
Option 1 ID : **80243785**
Option 2 ID : **80243786**
Option 3 ID : **80243787**
Option 4 ID : **80243788**
Status : **Answered**
Chosen Option : **1**

Q.45

The rate of change of relative circulation following the motion for a barotropic atmosphere can NOT change due to changes in

Options

1. meridional location.
2. area of domain.
3. zonal location.
4. inclination of domain.

Question Type : **MCQ**
Question ID : **80243768**
Option 1 ID : **802437269**
Option 2 ID : **802437270**
Option 3 ID : **802437271**
Option 4 ID : **802437272**
Status : **Not Answered**
Chosen Option : **--**

Q.46 Which of the following minerals exhibit maximum number of cleavage planes?

Options

1. Calcite
2. Galena
3. Fluorite
4. Sphalerite

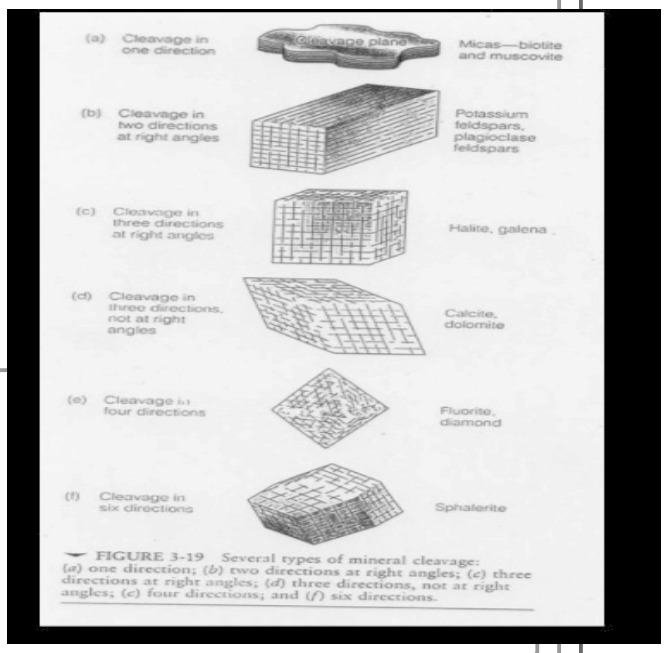


FIGURE 3-19 Several types of mineral cleavage: (a) one direction; (b) two directions at right angles; (c) three directions at right angles; (d) three directions, not at right angles; (e) four directions; and (f) six directions.

Q.47 Which one of the following fishes is a mesopelagic fish?

Options

1. *Argyropelecus affinis*
2. *Eurypharynx pelecanoides* — deep sea
3. *Ceratias holboelli* → deep sea
4. Deep-sea angler-fish

B

Question Type : **MCQ**
Question ID : **80243749**
Option 1 ID : **802437193**
Option 2 ID : **802437194**
Option 3 ID : **802437195**
Option 4 ID : **802437196**
Status : **Not Answered**
Chosen Option : **--**

Q.48 Which one of the following forces inhibits plate motion?

Options

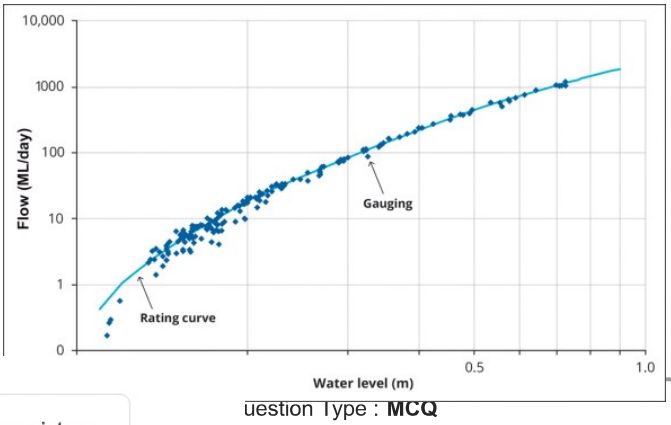
1. Slab pull
2. Ridge push
3. Trench suction
4. Basal drag

Question Type : **MCQ**
Question ID : **80243733**
Option 1 ID : **802437129**
Option 2 ID : **802437130**
Option 3 ID : **802437131**
Option 4 ID : **802437132**
Status : **Answered**
Chosen Option : **4**

Q.49 River discharge is estimated on the basis of

Options

1. Unit hydrograph
2. Hyetograph
3. Rating curve
4. Current meter



About 31,00,000 results (0.73 seconds)

In hydrology, a **rating curve** is a graph of **discharge** versus stage for a given point on a stream, usually at gauging stations, where the stream **discharge** is measured across the stream channel with a **flow** meter. Stage is measured by reading a gauge installed in the **river**. ...

en.wikipedia.org › wiki › Rating_curve
Rating curve - Wikipedia

uestion Type : **MCQ**
Question ID : **80243757**
Option 1 ID : **802437225**
Option 2 ID : **802437226**
Option 3 ID : **802437227**
Option 4 ID : **802437228**
Status : **Not Answered**
losen Option : **--**

Q.50

The magnitudes of two earthquakes A and B are measured on Richter scale as 6 and 5 respectively. Which of the following inferences is valid?

Options

1. The energy released in A is 10 times that of B.
2. The amount of destruction in case of A is 30 times that of B.
3. The ground motion in case of A is 10 times that of B.
4. Earthquake A is 1.2 times deeper than B.

Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; in terms of energy, each whole number increase corresponds to an increase of about 31.6 times the amount of energy released, and each increase of 0.2 corresponds to approximately a doubling of the energy released.

Q.1

A homogeneous liquid with binary components FeO – SiO_2 cools, at a constant pressure, to a temperature at which it unmixes to form two liquids of different compositions. On further cooling to the complete equilibrium crystallization,

Options

1. there would be four minerals, two crystallizing from silica rich liquid and two from FeO rich liquid.

2. the silica rich liquid would crystallize a silica mineral, while the FeO rich liquid would form a glass.

3. there would be fayalite and a silica mineral in eutectic proportion.

4. there would be a fayalite within a glass separating it from silica mineral.

Question Type : **MCQ**
Question ID : **80243781**
Option 1 ID : **802437321**
Option 2 ID : **802437322**
Option 3 ID : **802437323**
Option 4 ID : **802437324**
Status : **Not Answered**
Chosen Option : **--**

Q.2

Which one of the following statements is correct?

Options

1. Load cast forms by erosional processes.

2. Groove mark represents deformational feature.

3. The bounce mark occurs at the top of a sandstone bed.

4. Current crescent forms against an obstacle.

Question Type : **MCQ**
Question ID : **80243775**
Option 1 ID : **802437297**
Option 2 ID : **802437298**
Option 3 ID : **802437299**
Option 4 ID : **802437300**
Status : **Not Answered**
Chosen Option : **--**

Q.3 Which one of the following mineral pairs are NOT polymorphs?

Options

1. Quartz - moganite
2. Chrysotile - Lizardite
3. Anatase - Brookite
4. Marcasite – Chalcopyrite

Question Type : **MCQ**
Question ID : **80243780**
Option 1 ID : **802437317**
Option 2 ID : **802437318**
Option 3 ID : **802437319**
Option 4 ID : **802437320**
Status : **Not Answered**
Chosen Option : **--**

Q.4 Sense of Shear (SoS) plane is defined by which one of the following combinations?

Options

1. The SoS plane is parallel to foliation and perpendicular to stretching lineation.
2. The SoS plane is perpendicular to foliation and parallel to stretching lineation.
3. Both foliation and stretching lineation are parallel to SoS plane.
4. Both foliation and stretching lineation are perpendicular to SoS plane.

Question Type : **MCQ**
Question ID : **80243771**
Option 1 ID : **802437281**
Option 2 ID : **802437282**
Option 3 ID : **802437283**
Option 4 ID : **802437284**
Status : **Answered**
Chosen Option : **3**

Q.5

Which one of the following textures explicitly form during decompression stage of a metamorphic P-T path?

Options

1. Corona texture
2. Granoblastic texture
3. Normal growth zoning in garnet
4. Spherulitic texture

Question Type :	**MCQ**
Question ID :	**80243778**
Option 1 ID :	**802437309**
Option 2 ID :	**802437310**
Option 3 ID :	**802437311**
Option 4 ID :	**802437312**
Status :	**Not Attempted and Marked For Review**
Chosen Option :	**--**

Q.6

Consider the following thermobarometric equations:

Reaction A: $KAlSi_3O_8 + NaAl_2(Si_3Al)O_{10}(OH)_2 = NaAlSi_3O_8 + KAl_2(Si_3Al)O_{10}(OH)_2$

Reaction B: $Mg_3Al_2Si_3O_{12} + KAl_2(Si_3Al)O_{10}(OH)_2 = KMg_3(Si_3Al)O_{10}(OH)_2 + 2Al_2SiO_5 + SiO_2$.

Which of the following is TRUE for reactions 'A' and B'?

Options 1.

'A' is an example of barometer; 'B' is an example of thermometer

2.

'A' is an example of thermometer; 'B' is an example of barometer

3. Both 'A' and 'B' are examples of thermometers

4. Both 'A' and 'B' are examples of barometers

Question Type :	**MCQ**
Question ID :	**80243777**
Option 1 ID :	**802437305**
Option 2 ID :	**802437306**
Option 3 ID :	**802437307**
Option 4 ID :	**802437308**
Status :	**Not Attempted and Marked For Review**
Chosen Option :	**--**

Q.7

Paired metamorphic belts, which juxtapose HP/LT and LP/HT metamorphic belts, are typically associated with

Options

1. greenstone terrains
2. convergent plate margins
3. mid-oceanic ridges
4. transform plate boundaries

Question Type : **MCQ**
Question ID : **80243784**
Option 1 ID : **802437333**
Option 2 ID : **802437334**
Option 3 ID : **802437335**
Option 4 ID : **802437336**
Status : **Answered**
Chosen Option : **2**

Q.8

A grain-supported limestone containing around 10% lime mud is known as

Options

1. packstone.
2. grainstone.
3. wackestone.
4. floatstone.

Question Type : **MCQ**
Question ID : **80243776**
Option 1 ID : **802437301**
Option 2 ID : **802437302**
Option 3 ID : **802437303**
Option 4 ID : **802437304**
Status : **Not Answered**
Chosen Option : **--**

Q.9 The following assemblage of foraminifera are recorded from bottom to top of a stratigraphic section :

Uvigerina, Bulimina, Globorotalia
Eponides, Lenticulina, Textularia
Quinqueloculina, Ammonia, Cibicides
Trochammina, Ammobaculites, Miliammina

The stratigraphic section represents

Options

1. Lowstand System Tract.
2. Highstand System Tract.
3. Transgressive System Tract.
4. Falling Stage System Tract.

Question Type : **MCQ**
Question ID : **80243774**
Option 1 ID : **802437293**
Option 2 ID : **802437294**
Option 3 ID : **802437295**
Option 4 ID : **802437296**
Status : **Not Answered**
Chosen Option : **--**

Q.10 Coulomb's law of failure differs from Byerlee's law of failure in which one of the listed characteristics?

Options

1. Defines a failure envelope.
2. Applicable for intact homogenous rocks.
3. Law for shear failure.
4. Includes a coefficient of friction.

Question Type : **MCQ**
Question ID : **80243773**
Option 1 ID : **802437289**
Option 2 ID : **802437290**
Option 3 ID : **802437291**
Option 4 ID : **802437292**
Status : **Not Answered**
Chosen Option : **--**

Q.11

Match the following :

Deformation setting		Structure	
A.	Convergent	P.	Tulip structure
B.	Divergent	Q.	Ramp Anticline
C.	Strike-Slip Transpression	R.	Metamorphic Core Complex
D.	Strike-Slip Transtension	S.	Palm tree structure

Choose the correct option.

Options

1. A – Q; B – S; C – P; D – R
2. A – Q; B – R; C – S; D – P
3. A – R; B – S; C – P; D – Q
4. A – S; B – R; C – Q; D – P

Question Type : **MCQ**
Question ID : **80243772**
Option 1 ID : **802437285**
Option 2 ID : **802437286**
Option 3 ID : **802437287**
Option 4 ID : **802437288**
Status : **Answered**
Chosen Option : **2**

Q.12 Which one of the matches is correct for the stratigraphic unit and their ages?

Stratigraphic Unit		Period	
A	Dhosa Oolite	E	Palaeogene
B	Karai Shale	F	Cretaceous
C	Maleri Formation	G	Jurassic
D	Lakadong Limestone	H	Triassic

Options

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

Question Type : **MCQ**
Question ID : **80243785**
Option 1 ID : **802437337**
Option 2 ID : **802437338**
Option 3 ID : **802437339**
Option 4 ID : **802437340**
Status : **Not Answered**
Chosen Option : **--**

Q.13

In an unconfined coastal aquifer, the depth to groundwater table in a well is 1 m. The well is situated at an elevation of 2 m above mean sea level. What should be the depth of freshwater-saline water interface below the ground surface?

Options

1. 40 m
2. 42 m
3. 80 m
4. 38 m

Question Type : **MCQ**
Question ID : **80243782**
Option 1 ID : **802437325**
Option 2 ID : **802437326**
Option 3 ID : **802437327**
Option 4 ID : **802437328**
Status : **Answered**
Chosen Option : **1**

Q.14

The 'depleted mantle' model age of a rock, as calculated using Sm-Nd systematics is 2.5 Ga. It means that

Options

1. the isotope ratios $^{143}Nd/^{144}Nd$ in source of this rock at 2.5 Ga were the same as in the depleted mantle at that time.
2. this rock crystalized at 2.5 Ga.
3. the $^{147}Sm/^{144}Nd$ and the $^{143}Nd/^{144}Nd$ ratios in the rock were same as that in the depleted mantle at 2.5 Ga.
4. The terrane that it is found in, formed at 2.5 Ga.

Question Type : **MCQ**
Question ID : **80243783**
Option 1 ID : **802437329**
Option 2 ID : **802437330**
Option 3 ID : **802437331**
Option 4 ID : **802437332**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.15 Porphyry type Cu-deposits are formed in which of the following tectonic setting?

Options

1. Spreading centre
2. Oceanic island arc
3. Continent-continent collision
4. Continental arc

Question Type : **MCQ**
Question ID : **80243786**
Option 1 ID : **802437341**
Option 2 ID : **802437342**
Option 3 ID : **802437343**
Option 4 ID : **802437344**
Status : **Answered**
Chosen Option : **4**

Q.16 Choose the correct sequence of minerals that are usually crystallized from the cooling of magma (High-T to Low-T).

Options

1. $Mg_2SiO_4 \rightarrow Ca_2Mg_5Si_8O_{22}(OH)_2 \rightarrow Mg_2Si_2O_6 \rightarrow KAlSi_3O_8 \rightarrow KMg_3(Si_3Al)O_{10}(OH)_2$
2. $NaAlSi_3O_8 \rightarrow Ca_2Mg_5Si_8O_{22}(OH)_2 \rightarrow KAl_2(Si_3Al)O_{10}(OH)_2 \rightarrow SiO_2 \rightarrow KAlSi_3O_8$
3. $Mg_2SiO_4 \rightarrow Mg_2Si_2O_6 \rightarrow Ca_2Mg_5Si_8O_{22}(OH)_2 \rightarrow KMg_3(Si_3Al)O_{10}(OH)_2 \rightarrow KAlSi_3O_8$
4. $KAlSi_3O_8 \rightarrow NaAlSi_3O_8 \rightarrow Mg_2Si_2O_6 \rightarrow SiO_2 \rightarrow KAl_2(Si_3Al)O_{10}(OH)_2$

Question Type : **MCQ**
Question ID : **80243779**
Option 1 ID : **802437313**
Option 2 ID : **802437314**
Option 3 ID : **802437315**
Option 4 ID : **802437316**
Status : **Answered**
Chosen Option : **3**

Q.17 If in an electromagnetic survey, dip angle is measured over widely spaced vertical conductors along a profile, the number of 'false crossover' in the dip angle anomaly will be

Options

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

Question Type : **MCQ**
Question ID : **80243799**
Option 1 ID : **802437393**
Option 2 ID : **802437394**
Option 3 ID : **802437395**
Option 4 ID : **802437396**
Status : **Not Answered**
Chosen Option : **--**

Q.18 An input signal x(n) = {2, 1, -1} is passed through two serially connected linear time-invariant systems h1(n) = {1, -1} and h2(n) = {-1, 1}. The output signal y(n) will be

Options

1. {0, 0, 0, 0}
2. {-2, -3, 0, 1}
3. {-2, 3, 1, -3, 1}
4. {1, -2, 3, -1, -3}

Question Type : **MCQ**
Question ID : **80243788**
Option 1 ID : **802437349**
Option 2 ID : **802437350**
Option 3 ID : **802437351**
Option 4 ID : **802437352**
Status : **Not Answered**
Chosen Option : **--**

Q.19 Assume that a Poisson solid is subjected to a longitudinal stress (σ_{xx}) while the transverse stresses are zero. Then, the Young's Modulus(E) in terms of Modulus of Rigidity (μ) will be

Options

1. $E=\mu$
2. $E=1.5\mu$
3. $E=2.5\mu$
4. $E=3\mu$

Question Type : **MCQ**
Question ID : **80243794**
Option 1 ID : **802437373**
Option 2 ID : **802437374**
Option 3 ID : **802437375**
Option 4 ID : **802437376**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.20 A country rock at temperature T_c is intruded by a thick dyke at temperature T_m ($T_m > T_c$). Assuming that the temperature of the dyke remains constant with time, the temperature in the country rock away from the dyke contact will decrease as

Options

1. an exponential function
2. a linear function
3. a hyperbolic function
4. an error function

Question Type : **MCQ**
Question ID : **80243796**
Option 1 ID : **802437381**
Option 2 ID : **802437382**
Option 3 ID : **802437383**
Option 4 ID : **802437384**
Status : **Not Answered**
Chosen Option : **--**

Q.21

In the time-distance plot for a seismic survey over a two-layered medium, the travel time at which the direct P wave intersects the refracted wave is 3s. Estimate the depth to the velocity interface, assuming the slope of the direct wave to be 0.5s/km and the velocity of the lower medium to be twice the velocity of the upper medium.

Options

1. 1.73km
2. 2.73km
3. 3.73km
4. 4.73km

Question Type : **MCQ**
Question ID : **80243793**
Option 1 ID : **802437369**
Option 2 ID : **802437370**
Option 3 ID : **802437371**
Option 4 ID : **802437372**
Status : **Not Answered**
Chosen Option : **--**

Q.22

Two current electrodes C1(+I) and C2(-I) are placed 1000 m apart on the Earth surface and 5 Ampere current flows through the subsurface. Two potential electrodes P1 and P2 with electrode separation 10 m are placed between C1 and C2 such that midpoint of P1 and P2 is located at 400 m from the midpoint of C1 and C2. If 500 mV potential difference is measured between P1 and P2, then the apparent resistivity (in Ωm) will be (do not use approximate formulation)

Options

1. 418
2. 518
3. 618
4. 718

Question Type : **MCQ**
Question ID : **80243798**
Option 1 ID : **802437389**
Option 2 ID : **802437390**
Option 3 ID : **802437391**
Option 4 ID : **802437392**
Status : **Not Answered**
Chosen Option : **--**

Q.23

X, Y and V are the components of the Earth's magnetic field F, X being along the geographical north. H is its horizontal component and i and δ are its dip and declination respectively. Then, at a place on the Earth's surface where F is minimum, the value of $\frac{X\cos\delta + Y\sin\delta}{V\sin i + H\cos i}$ is

Options

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

Question Type : **MCQ**
Question ID : **80243791**
Option 1 ID : **802437361**
Option 2 ID : **802437362**
Option 3 ID : **802437363**
Option 4 ID : **802437364**
Status : **Not Answered**
Chosen Option : **--**

Q.24

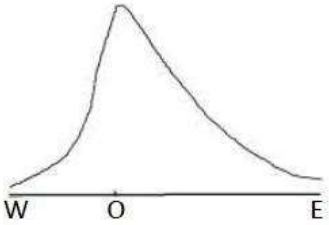
The distance between the points of the maximum and minimum anomaly values along a total field anomaly profile across an anomalous body resembling a single pole is 224 m. If the magnetic latitude of the place of survey is 30°, then the depth to the pole is

Options

1. 112 m
2. 100 m
3. 86 m
4. 72 m

Question Type : **MCQ**
Question ID : **80243792**
Option 1 ID : **802437365**
Option 2 ID : **802437366**
Option 3 ID : **802437367**
Option 4 ID : **802437368**
Status : **Not Answered**
Chosen Option : **--**

Q.25 The following figure shows a sketch of an E-W gravity profile across a sulphide vein. The maximum anomaly occurs at point O. Then, the vein dips due



Options

1. east and its top lies towards east of O.
2. west and its top lies towards west of O.
3. east and its top lies towards west of O.
4. west and its top lies towards east of O.

Question Type : **MCQ**
Question ID : **80243790**
Option 1 ID : **802437357**
Option 2 ID : **802437358**
Option 3 ID : **802437359**
Option 4 ID : **802437360**
Status : **Not Answered**
Chosen Option : **--**

Q.26 An oceanic plate is moving away from the spreading center at a speed of 6 cm/yr. Assuming that the plate motion is constant with geological time, the location of the Gauss – Gilbert paleomagnetic epoch boundary from the spreading center will be at approximate distance of

Options

1. 155 km
2. 185 km
3. 215 km
4. 255 km

Question Type : **MCQ**
Question ID : **80243797**
Option 1 ID : **802437385**
Option 2 ID : **802437386**
Option 3 ID : **802437387**
Option 4 ID : **802437388**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.27 An over pressured zone encountered in borehole logging is characterized by

Options

1. high porosity and high density
2. low resistivity and low density
3. low resistivity and low porosity
4. low porosity and low density

Question Type : **MCQ**
Question ID : **802437100**
Option 1 ID : **802437397**
Option 2 ID : **802437398**
Option 3 ID : **802437399**
Option 4 ID : **802437400**
Status : **Not Answered**
Chosen Option : **--**

Q.28

Which one of the following statements is correct?

Options 1.

Zero-offset rays are always perpendicular to the data acquisition surface.

2.

Receiver arrays are used to suppress ground roll.

3.

Time migration honours ray bending across an interface.

4.

Dix's method of estimating interval velocity is valid for any surface model as long as all layers are isotropic.

Question Type : **MCQ**
Question ID : **80243795**
Option 1 ID : **802437377**
Option 2 ID : **802437378**
Option 3 ID : **802437379**
Option 4 ID : **802437380**
Status : **Not Answered**
Chosen Option : **--**

Q.29

A spherical ore body with a density of 3.0 gm/cc is surrounded by country rock of density 2.7 gm/cc. A gravity profile across the body recorded an anomaly of 0.1 mgal at a distance of 100 m from the position of the maximum gravity anomaly, which is 0.3 mgal. The ore body weighs (in units of 10^6 tons)

Options

1. 0.45
2. 1.50
3. 2.25
4. 4.50

Question Type : **MCQ**
Question ID : **80243789**
Option 1 ID : **802437353**
Option 2 ID : **802437354**
Option 3 ID : **802437355**
Option 4 ID : **802437356**
Status : **Not Answered**
Chosen Option : **--**

Q.30 As per Gutenberg-Richter relationship for global seismicity, how many earthquakes of magnitude 2 will occur given the number of earthquakes of magnitude 6 to be 100 and b value to be 1.5 ?

Options

1. 10^4
2. 10^6
3. 10^8
4. 10^{10}

Question Type : **MCQ**
Question ID : **802437101**
Option 1 ID : **802437401**
Option 2 ID : **802437402**
Option 3 ID : **802437403**
Option 4 ID : **802437404**
Status : **Answered**
Chosen Option : **2**

Q.31 In case of resistivity sounding over multi-layered earth if $A_1(\lambda)$ is the kernel function then the correct relationship between resistivity transform function '$T(\lambda)$' and $A_1(\lambda)$ is (ρ_1 is the resistivity of the first layer)

Options

1. $T(\lambda)= \rho_1\{1+2A_1(\lambda)\}$
2. $T(\lambda)= \rho_1\{1+A_1(\lambda)\}$
3. $T(\lambda)= \rho_1+\{1+2A_1(\lambda)\}$
4. $T(\lambda)= \rho_1+\{1+A_1(\lambda)\}$

Question Type : **MCQ**
Question ID : **802437102**
Option 1 ID : **802437405**
Option 2 ID : **802437406**
Option 3 ID : **802437407**
Option 4 ID : **802437408**
Status : **Not Answered**
Chosen Option : **--**

Q.32 The Fourier transform of a function $f(t)$ is $sin\ \omega$. Then, the Fourier transform of $t^2 f(t)$ is

Options

1. $\sin \omega$
2. $\sin \omega^2$
3. $\omega^2 \sin \omega^2$
4. $\omega^2 sin\ \omega$

Question Type : **MCQ**
Question ID : **80243787**
Option 1 ID : **802437345**
Option 2 ID : **802437346**
Option 3 ID : **802437347**
Option 4 ID : **802437348**
Status : **Not Answered**
Chosen Option : **--**

Q.33 Identify the correct sequence considering cause and effect relationship in the Indian context.

Options 1.

Malnutrition → High morbidity → Low per capita income → High mortality

2.

High morbidity → Malnutrition → Low per capita income → High mortality

3.

Low per capita income → Malnutrition → High morbidity → High mortality

4.

Malnutrition → Low per capita income → High morbidity → High mortality

Question Type : **MCQ**
Question ID : **802437110**
Option 1 ID : **802437437**
Option 2 ID : **802437438**
Option 3 ID : **802437439**
Option 4 ID : **802437440**
Status : **Not Answered**
Chosen Option : **--**

Q.34

Match the earth scientists who were the first to propose the geomorphic concepts.

First proponent		Geomorphic concept	
A	A. Linton	L	Etchplanation
B	B. Willis and E.J. Wayland	M	Morphogenetic region
C	J. Büdel	N	Slope replacement
D	W. Penck	O	Slope retreat
		P	Theory of tor formation

Choose the correct option.

Options

1. A – O, B – N, C – L, D – P
2. A – P, B – L, C – M, D – N
3. A – O, B – M, C – L, D – N
4. A – O, B – P, C – N, D – P

Question Type : **MCQ**
Question ID : **802437108**
Option 1 ID : **802437429**
Option 2 ID : **802437430**
Option 3 ID : **802437431**
Option 4 ID : **802437432**
Status : **Not Answered**
Chosen Option : **--**

Q.35

Which one of the following values of hypsometric integral denotes maximum erosion of a drainage basin area down to its base level?

Options

1. 0.18
2. 0.44
3. 0.51
4. 0.91

Question Type : **MCQ**
Question ID : **802437106**
Option 1 ID : **802437421**
Option 2 ID : **802437422**
Option 3 ID : **802437423**
Option 4 ID : **802437424**
Status : **Not Answered**
Chosen Option : **--**

Q.36

Statement A: The tropics experience large annual temperature variations.

Statement B: Highest values of annual temperature range occur in the middle of large landmasses in the subpolar latitudes.

Choose the correct option.

Options

1. Both are true
2. Both are false
3. A is true but B is false
4. A is false but B is true

Question Type : **MCQ**
Question ID : **802437105**
Option 1 ID : **802437417**
Option 2 ID : **802437418**
Option 3 ID : **802437419**
Option 4 ID : **802437420**
Status : **Not Answered**
Chosen Option : **--**

Q.37

Sediment rating curve represents the relation between

Options

1. sediment yield and catchment area.

2. sediment transport rate and water discharge.

3. sediment concentration and total dissolved load.

4. sediment delivery rate and relief-length ratio.

Question Type : **MCQ**
Question ID : **802437103**
Option 1 ID : **802437409**
Option 2 ID : **802437410**
Option 3 ID : **802437411**
Option 4 ID : **802437412**
Status : **Not Answered**
Chosen Option : **--**

Q.38

Plateaus, mesas, buttes and pinnacles are

Options 1. evaporated landforms containing sediment and salt.

2. landforms of flat-lying rocks in arid regions.

3. formed when mountain streams carrying large amounts of rock waste drain into an adjacent lowland.

4. flood plain features.

Question Type : **MCQ**
Question ID : **802437114**
Option 1 ID : **802437453**
Option 2 ID : **802437454**
Option 3 ID : **802437455**
Option 4 ID : **802437456**
Status : **Answered**
Chosen Option : **2**

Q.39 Match the geomorphic features with the geomorphic processes.

Geomorphic feature		Geomorphic processes	
A	Cockpit	L	Coastal
B	Moulin	M	Fluvial
C	Runnel	N	Glacial
D	Talik	O	Karstic
		P	Periglacial

Choose the correct option.

Options

1. A – O, B – N, C – L, D – P
2. A – P, B – L, C – M, D – L
3. A – O, B – M, C – L, D – N
4. A – O, B – P, C – N, D – P

Question Type : **MCQ**
Question ID : **802437107**
Option 1 ID : **802437425**
Option 2 ID : **802437426**
Option 3 ID : **802437427**
Option 4 ID : **802437428**
Status : **Not Answered**
Chosen Option : **--**

Q.40 Acid rain is NOT associated with

Options

1. aluminium toxicity in lakes.
2. removal of nutrients from soil.
3. blackening of Taj Mahal.
4. increase in biological oxygen demand in lake.

Question Type : **MCQ**
Question ID : **802437115**
Option 1 ID : **802437457**
Option 2 ID : **802437458**
Option 3 ID : **802437459**
Option 4 ID : **802437460**
Status : **Not Answered**
Chosen Option : **--**

Q.41

Match the columns I and II.

Column-I (Regions)		Column-II (Process)	
A	Warmer forest	X	Alkaline compounds accumulate near the surface
B	Deciduous and mixed forest	Y	Bacterial actions and rapid chemical actions
C	Steppe grassland	Z	Soils are less acidic
D	Humid tropics	K	Leaching is less significant

Choose the correct option.

Options

1. A—X; B—Z; C—Y; D—K
2. A—K; B—Z; C—Y; D—X
3. A—K; B—Z; C—X; D—Y
4. A—X; B—Y; C—Z; D—K

Question Type : **MCQ**
Question ID : **802437111**
Option 1 ID : **802437441**
Option 2 ID : **802437442**
Option 3 ID : **802437443**
Option 4 ID : **802437444**
Status : **Not Answered**
Chosen Option : **--**

Q.42

Match Columns I and II.

Column-I		Column-II	
A	Bolson	X	Low-angle foot slope with veneer of wash material
B	Bajada	Y	Unconsolidated, highly dissected materials in semiarid regions
C	Pediment	Z	Coalesced alluvial fans
D	Badland	K	A slope-and-basin area between two adjacent ridges in a dry region with internal drainage

Choose the correct option.

Options

1. A—X; B—Z; C—Y; D—K
2. A—K; B—Z; C—Y; D—X
3. A—K; B—Z; C—X; D—Y
4. A—X; B—Y; C—Z; D—K

Question Type : **MCQ**
Question ID : **802437116**
Option 1 ID : **802437461**
Option 2 ID : **802437462**
Option 3 ID : **802437463**
Option 4 ID : **802437464**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.43

Assertion (A): Coasts tend to become sandy to muddy as tidal range changes from meso to macro.

Reason (R): In tropical coasts, mangrove vegetation is conducive to deposition of fine sediments.

Options 1.

Both A and R are true and R is the correct explanation

2. ✓

Both A and R are true but R is not a correct explanation

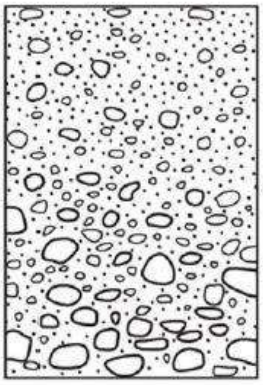
3. A is true but R is false

4. A is false but R is true

Question Type : **MCQ**
Question ID : **802437109**
Option 1 ID : **802437433**
Option 2 ID : **802437434**
Option 3 ID : **802437435**
Option 4 ID : **802437436**
Status : **Not Answered**
Chosen Option : **--**

Q.44

The diagram shows the vertical variation in the texture and grading of river bank deposits. It is



Options

1. Fining upwards and well sorted
2. Coarsening upwards and well sorted.
3. Fining upwards and poorly sorted.
4. Coarsening upwards and poorly sorted.

Question Type : **MCQ**
Question ID : **802437113**
Option 1 ID : **802437449**
Option 2 ID : **802437450**
Option 3 ID : **802437451**
Option 4 ID : **802437452**
Status : **Answered**
Chosen Option : **3**

Q.45 One of the following set of features correctly represents former higher sea levels or lake levels

Options 1.

Estuaries, Abandoned cliffs, Mangrove swamps

2.

Storm beaches, Foredunes, Submarine platforms

3. Strand lines, Raised beaches, Marine terraces

4. Plunging cliffs, Shingle beaches, Spits

Question Type : **MCQ**
Question ID : **802437112**
Option 1 ID : **802437445**
Option 2 ID : **802437446**
Option 3 ID : **802437447**
Option 4 ID : **802437448**
Status : **Not Answered**
Chosen Option : **--**

Q.46

Match Köppen's climate symbols with climate types.

Köppen's symbols		Climate types	
A	EF	L	Continental Dry Summer
B	Ds	M	Ice Cap
C	BS	N	Savanna
D	Aw/As	O	Steppe
		P	Tropical Rainforest

Choose the correct option.

Options

1. A – O, B – N, C – L, D – P
2. A – L, B – P, C – M, D – N
3. A – M, B – L, C – M, D – P
4. A – M, B – L, C – O, D – N

Question Type : **MCQ**
Question ID : **802437104**
Option 1 ID : **802437413**
Option 2 ID : **802437414**
Option 3 ID : **802437415**
Option 4 ID : **802437416**
Status : **Answered**
Chosen Option : **4**

Q.47

Choose the correct option from the following statements.

Relaxation methods are

Options 1.

used to solve parabolic partial differential equations.

2.

used to solve hyperbolic partial differential equations.

3.

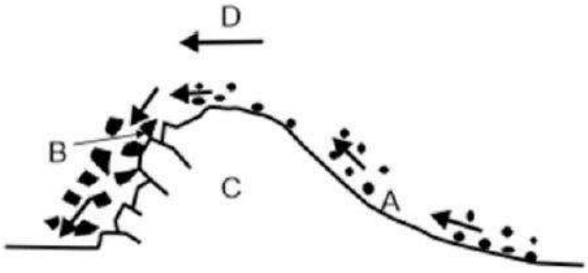
examples of iterative methods that are used to solve elliptic partial differential equations.

4.

examples of direct methods that are used to solve elliptic partial differential equations.

Question Type : **MCQ**
Question ID : **802437124**
Option 1 ID : **802437493**
Option 2 ID : **802437494**
Option 3 ID : **802437495**
Option 4 ID : **802437496**
Status : **Not Answered**
Chosen Option : **--**

Q.48 The following schematic diagram represents a glaciated terrain with four different points A, B, C and D. The state at different points shown are X-Glacial Ice movement, Y-Glacial plucking, Z- Jointed bedrock, K- Abrasion and polishing. Find the correct match.



Options

1. A—X; B—Z; C—Y; D—K
2. A—K; B—Y; C—Z; D—X
3. A—K; B—Z; C—X; D—Y
4. A—X; B—Y; C—Z; D—K

Question Type : **MCQ**
Question ID : **802437117**
Option 1 ID : **802437465**
Option 2 ID : **802437466**
Option 3 ID : **802437467**
Option 4 ID : **802437468**
Status : **Answered**
Chosen Option : **4**

Q.49

Occluded front occurs when

Options

1. cold front overtakes warm front.
2. warm front overtakes cold front.
3. cold air mass overtakes warm air mass.
4. warm air mass overtakes cold air mass.

Question Type : **MCQ**
Question ID : **802437123**
Option 1 ID : **802437489**
Option 2 ID : **802437490**
Option 3 ID : **802437491**
Option 4 ID : **802437492**
Status : **Answered**
Chosen Option : **4**

Q.50

In numerical weather prediction models with hydrostatic approximation, vertical velocity can be

Options

1. calculated from the Navier-Stokes' equation
2. calculated from continuity equation
3. assumed to be zero
4. assumed to be constant

Question Type : **MCQ**
Question ID : **802437129**
Option 1 ID : **802437513**
Option 2 ID : **802437514**
Option 3 ID : **802437515**
Option 4 ID : **802437516**
Status : **Not Answered**
Chosen Option : **--**

Q.51 The horizontal wind in the planetary boundary layer is the resultant of

Options

1. gravity, Coriolis and centrifugal forces.
2. pressure gradient, gravity and Coriolis forces.
3. Coriolis, pressure gradient and friction forces.
4. centrifugal, Coriolis and friction forces.

Question Type : **MCQ**
Question ID : **802437125**
Option 1 ID : **802437497**
Option 2 ID : **802437498**
Option 3 ID : **802437499**
Option 4 ID : **802437500**
Status : **Not Answered**
Chosen Option : **--**

Q.52 Highest cation exchange capacity is most likely to be in a soil that is

Options

1. very sandy
2. low in organic matter
3. high in clay and organic matter
4. silty and low in organic matter.

Question Type : **MCQ**
Question ID : **802437118**
Option 1 ID : **802437469**
Option 2 ID : **802437470**
Option 3 ID : **802437471**
Option 4 ID : **802437472**
Status : **Not Answered**
Chosen Option : **--**

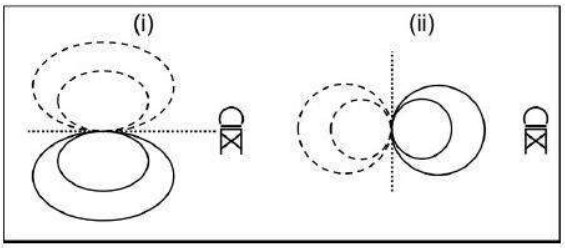
Q.53 Which one of these moisture variables will increase in a rising parcel of air?

Options

1. Mixing ratio
2. Relative humidity
3. Vapour pressure
4. Specific humidity

Question Type : **MCQ**
Question ID : **802437126**
Option 1 ID : **802437501**
Option 2 ID : **802437502**
Option 3 ID : **802437503**
Option 4 ID : **802437504**
Status : **Answered**
Chosen Option : **2**

Q.54 The following schematic diagram shows velocities observed by a ground Doppler radar for two atmospheric phenomena. The solid lines indicate wind component towards the radar, the dashed lines indicate wind components away from the radar, and the dotted line indicates the zero isodop. Which of the following options correctly identifies the two phenomena?



Options 1.

(i) Tornadic mesocyclone and (ii) Cold air downburst from a thunderstorm.

2. (i) Sea-breeze and (ii) Mountain-valley winds.

3. (i) Occluded front and (ii) Extra-tropical cyclone.

4. (i) Butterfly effect and (ii) Coriolis effect.

Question Type : **MCQ**
Question ID : **802437120**
Option 1 ID : **802437477**
Option 2 ID : **802437478**
Option 3 ID : **802437479**
Option 4 ID : **802437480**
Status : **Not Answered**
Chosen Option : **--**

Q.55 The difference between the barotropic and baroclinic atmosphere is that

Options

1. density is a function of pressure in the former while it is a function of temperature in the latter.

2. density is a function of pressure in the former while it is a function of pressure and temperature in the latter.

3. density is a function of temperature in both.

4. density is a function of temperature and pressure in both.

Question Type : **MCQ**
Question ID : **802437119**
Option 1 ID : **802437473**
Option 2 ID : **802437474**
Option 3 ID : **802437475**
Option 4 ID : **802437476**
Status : **Answered**
Chosen Option : **2**

Q.56 Statement A: The duration of Indian summer monsoon increases from south to north.
Statement B: The amount of Indian summer monsoon rainfall in the northern plains decreases from east to west.

Options

1. Both A and B are true

2. Both A and B are false

3. A is true, B is false

4. A is false, B is true

Question Type : **MCQ**
Question ID : **802437128**
Option 1 ID : **802437509**
Option 2 ID : **802437510**
Option 3 ID : **802437511**
Option 4 ID : **802437512**
Status : **Answered**
Chosen Option : **4**

Q.57

Choose the INCORRECT option.

In the geostrophic approximation,

Options 1.

pressure gradient force is in balance with Coriolis force.

2. it fails at equator.

3. it holds good in mid-latitudes.

4. Coriolis force varies linearly with latitude.

Question Type : **MCQ**
Question ID : **802437122**
Option 1 ID : **802437485**
Option 2 ID : **802437486**
Option 3 ID : **802437487**
Option 4 ID : **802437488**
Status : **Not Answered**
Chosen Option : **--**

Q.58

The chemical cycles that correspond to the catalytic destruction of the stratospheric ozone are

A. Cl/ ClO cycle.
B. NO/ NO_2 cycle.
C. SO_2/ SO_3 cycle.
D. OH/ H_2O cycle

Choose the correct option.

Options

1. A and B

2. A, B and D

3. C and D

4. A and C

Question Type : **MCQ**
Question ID : **802437132**
Option 1 ID : **802437525**
Option 2 ID : **802437526**
Option 3 ID : **802437527**
Option 4 ID : **802437528**
Status : **Not Answered**
Chosen Option : **--**

Q.59

_____ refers to the horizontal transport of air while _____ is the vertical transport of air.

Options

1. Advection, convection
2. Convection, advection
3. Propagation, transportation
4. Velocity, updraft

Question Type : **MCQ**
Question ID : **802437131**
Option 1 ID : **802437521**
Option 2 ID : **802437522**
Option 3 ID : **802437523**
Option 4 ID : **802437524**
Status : **Answered**
Chosen Option : **1**

Q.60

Diabatic thermodynamic processes can heat or cool the air at different rates. These processes include
A. Radiative heating/cooling.
B. Conduction from the surface.
C. Turbulent mixing.
D. Latent heat released/ absorbed due to phase change.
Choose the correct option

Options

1. A is true.
2. A and B are true.
3. A, B and C are true.
4. A, B, C and D are true.

Question Type : **MCQ**
Question ID : **802437127**
Option 1 ID : **802437505**
Option 2 ID : **802437506**
Option 3 ID : **802437507**
Option 4 ID : **802437508**
Status : **Not Answered**
Chosen Option : **--**

Q.61

Choose the INCORRECT option in the following statement.

Assumption of hydrostatic balance in the atmosphere leads to the following inference :

Options 1.

Coriolis force is not important in vertical motion.

2. Vertical acceleration is absent.

3. Vertical motion is absent.

4.

There is a perfect balance between upward directed vertical pressure gradient force and downward directed gravity force.

Question Type : **MCQ**
Question ID : **802437121**
Option 1 ID : **802437481**
Option 2 ID : **802437482**
Option 3 ID : **802437483**
Option 4 ID : **802437484**
Status : **Not Answered**
Chosen Option : **--**

Q.62

Cyclogenesis in Northern hemisphere is associated with

A. sea level pressure decrease
B. upward motion increase
C. relative vorticity increase

Choose the correct option

Options

1. A is true, B and C are false.

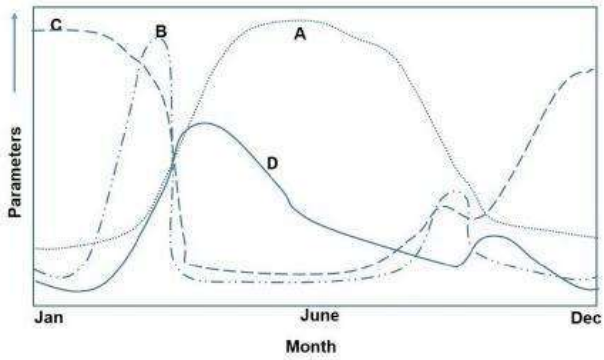
2. A, B and C are true.

3. A and B are true and C is false

4. A, B, and C are false.

Question Type : **MCQ**
Question ID : **802437130**
Option 1 ID : **802437517**
Option 2 ID : **802437518**
Option 3 ID : **802437519**
Option 4 ID : **802437520**
Status : **Not Answered**
Chosen Option : **--**

Q.63 Given profiles are schematic for the surface waters in northern temperate latitudes. Identify A, B, C and D parameters.



Options 1.

A – Nutrients, B – Phytoplankton, C – Zooplankton, D – Sunlight

2.

A – Sunlight, B – Phytoplankton, C – Nutrients, D – Zooplankton

3.

A – Zooplankton, B – Phytoplankton, C – Chlorophyll, D – Sunlight

4.

A – Sunlight, B – Phytoplankton, C – Nutrients, D – Chlorophyll

Question Type : **MCQ**
Question ID : **802437146**
Option 1 ID : **802437581**
Option 2 ID : **802437582**
Option 3 ID : **802437583**
Option 4 ID : **802437584**
Status : **Answered**
Chosen Option : **2**

Q.64

Statement A: Siliceous sediments are abundant on the deep ocean floor at high latitudes.

Statement B: Radiolarian are more abundant in high latitude waters.

Options 1.

Statement A is true and statement B is untrue.

2.

Statement B is true and statement A is untrue.

3.

Both the statements are true but B doesn't explain A.

4. Both the statements are true and B explains A.

Question Type : **MCQ**
Question ID : **802437140**
Option 1 ID : **802437557**
Option 2 ID : **802437558**
Option 3 ID : **802437559**
Option 4 ID : **802437560**
Status : **Answered**
Chosen Option : **1**

Q.65

Statement A: Ekman pumping velocity in the ocean is proportional to the curl of the wind stress.

Statement B: Low salinity water from river runoff and precipitation reduces mixed layer depth.

Choose the CORRECT option from below.

Options

1. Both the statements are true but B is not a correct explanation of A

2. Statement A is false, statement B is true

3. Statement A is true, statement B is false

4. Both the statements are true and B is a correct explanation of A

Question Type : **MCQ**
Question ID : **802437137**
Option 1 ID : **802437545**
Option 2 ID : **802437546**
Option 3 ID : **802437547**
Option 4 ID : **802437548**
Status : **Answered**
Chosen Option : **1**

Q.66

Which direction of meridional wind stress would cause coastal upwelling at the West Coast of India (WCI) and West Coast of Australia (WCA)?

Options

1. Northward at WCI and Southward at WCA

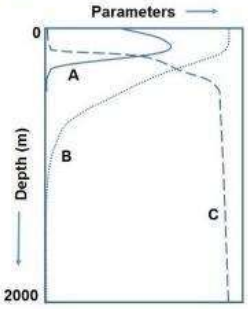
2. Southward at WCI and Southward at WCA

3. Northward at WCI and Northward at WCA

4. Southward at WCI and Northward at WCA

Question Type : **MCQ**
Question ID : **802437136**
Option 1 ID : **802437541**
Option 2 ID : **802437542**
Option 3 ID : **802437543**
Option 4 ID : **802437544**
Status : **Answered**
Chosen Option : **4**

Q.67 Identify parameters A, B and C in the schematic depth profile of a tropical oceanic basin.



Options

1. A – [Cl^-], B – [Oxygen], C – [nutrients].
2. A – [chlorophyll], B – [nutrients], C – [Na^+]
3. A – primary productivity, B – [Pb], C – [Fe]
4. A – primary productivity, B – [Fe], C- [Pb]

Question Type : **MCQ**
Question ID : **802437142**
Option 1 ID : **802437565**
Option 2 ID : **802437566**
Option 3 ID : **802437567**
Option 4 ID : **802437568**
Status : **Not Answered**
Chosen Option : **--**

Q.68 Choose the correct match between the columns I and II:

Column I		Column II	
A	Active Margin	I	It is formed when separated continental tracts move perpendicular to the coastline.
B	Rifted Margin	II	It develops when rifting is oblique to the coastline.
C	Sheared Margin	III	It is formed when continental breakup is associated with strike-slip faulting.
D	Transtensional Margin	IV	It is found on the edge of continents where subduction occurs.

Options

1. A-I; B-IV; C-II; D-III
2. A-IV; B-I; C-III; D-II
3. A-I; B-III; C-II; D-IV
4. A-IV; B-III; C-I; D-II

Question Type : **MCQ**
Question ID : **802437150**
Option 1 ID : **802437597**
Option 2 ID : **802437598**
Option 3 ID : **802437599**
Option 4 ID : **802437600**
Status : **Answered**
Chosen Option : **2**

Q.69

What will be the virtual temperature of an unsaturated air with temperature of 35°C and mixing ratio of $30g_{water}/kg_{dry\ air}$?

Options

1. 40.0°C
2. 40.2°C
3. 40.4°C
4. 40.6°C

Question Type : **MCQ**
Question ID : **802437133**
Option 1 ID : **802437529**
Option 2 ID : **802437530**
Option 3 ID : **802437531**
Option 4 ID : **802437532**
Status : **Not Answered**
Chosen Option : **--**

Q.70

Match the following marine organisms with their sizes

Marine organisms		Size range (m)	
A	Zooplankton	E	$10^{-6} – 10^{-4}$
B	Virus	F	$10^{-5} – 10^{-2}$
C	Bacteria	G	$10^{-8} – 10^{-6}$
D	Phytoplankton	H	$10^{-7} – 10^{-5}$

Options

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

Question Type : **MCQ**
Question ID : **802437143**
Option 1 ID : **802437569**
Option 2 ID : **802437570**
Option 3 ID : **802437571**
Option 4 ID : **802437572**
Status : **Not Answered**
Chosen Option : **--**

Q.71 What is the correct preference order (first one first) of oxidizing agent for marine heterotrophs?

Options

1. oxygen, sulphate, nitrate
2. oxygen, phosphate, nitrate
3. phosphate, sulphate, nitrate
4. oxygen, nitrate, sulphate

Question Type : **MCQ**
Question ID : **802437144**
Option 1 ID : **802437573**
Option 2 ID : **802437574**
Option 3 ID : **802437575**
Option 4 ID : **802437576**
Status : **Not Answered**
Chosen Option : **--**

Q.72 The chaetognath *Sagittci elegans* consumes 10 mg of copepods per day and produces 2 mg of faecal material per day. What is the assimilation efficiency of this carnivore?

Options

1. 20%
2. 40%
3. 60%
4. 80%

Question Type : **MCQ**
Question ID : **802437147**
Option 1 ID : **802437585**
Option 2 ID : **802437586**
Option 3 ID : **802437587**
Option 4 ID : **802437588**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.73

Which of the following statements is INCORECT?

Options 1.

Hydrothermal event plumes represent continuous venting of material, gases and magma.

2.

Hydrothermal event plumes are larger but transient plumes.

3.

Hydrothermal event plumes often travel thousands and more meters above its source.

4.

Hydrothermal event plumes are often associated with formation of new volcanic mounds.

Question Type : **MCQ**
Question ID : **802437148**
Option 1 ID : **802437589**
Option 2 ID : **802437590**
Option 3 ID : **802437591**
Option 4 ID : **802437592**
Status : **Answered**
Chosen Option : **1**

Q.74

Which of the following statements related to the tropical easterly jet over Indian subcontinent is INCORRECT?

Options 1.

It is formed due to the reversed meridional temperature gradient.

2. It is located over Peninsular India.

3.

The northeast monsoon rainfall increases with the intensification of the jet stream.

4. It is found at an altitude of 14 – 16 km.

Question Type : **MCQ**
Question ID : **802437134**
Option 1 ID : **802437533**
Option 2 ID : **802437534**
Option 3 ID : **802437535**
Option 4 ID : **802437536**
Status : **Answered**
Chosen Option : **3**

Q.75

Which one of the following is NOT true?

Options 1.

Primary production occurs up to 125 m in open ocean waters, while in turbid coastal waters a few meters to tens of meters.

2.

Light absorption depends upon water, suspended material, dissolved organisms, phytoplankton.

3.

Primary productivity in the Arabian Sea is primarily limited by phosphate.

4.

Upwelling makes the Arabian Sea one of the highly productive regions.

Question Type : **MCQ**
Question ID : **802437141**
Option 1 ID : **802437561**
Option 2 ID : **802437562**
Option 3 ID : **802437563**
Option 4 ID : **802437564**
Status : **Not Answered**
Chosen Option : **--**

Q.76

Match the 'Type of flow/circulation' in Column I to their most relevant Oceanic process/condition in Column II.

Column I		Column II	
P	Barotropic flow	T	Pressure gradient and Coriolis forces are in balance
Q	Baroclinic flow	U	Surfaces of constant density and constant pressure intersect at some angle
R	Geostrophic flow	V	Sinking motion of water at selected high latitude locations
S	Thermohaline circulation	W	Independent of depth in the ocean
		X	Pressure gradient and gravitational forces are in balance

Choose the CORRECT option

Options

1. P-U, Q-T, R-X, S-V

2. P-W, Q-U, R-T, S-V

3. P-U, Q-W, R-T, S-X

4. P-W, Q-U, R-X, S-V

Question Type : **MCQ**
Question ID : **802437138**
Option 1 ID : **802437549**
Option 2 ID : **802437550**
Option 3 ID : **802437551**
Option 4 ID : **802437552**
Status : **Answered**
Chosen Option : **2**

Q.77 Choose the correct match between the columns I and II:

Column I		Column II	
A	Littoral Zone	I	A flat topped ridge on the beach face formed by the deposition of beach material by wave action.
B	Foreshore	II	A group of linear depressions that run parallel to the shoreline.
C	Runnel	III	Zone between seaward boundary of land vegetation and to a point in the sea where sediments are not disturbed.
D	Berm	IV	Part of beach that is exposed during low tide and submerged during high tide.

Options

1. A-III; B-IV; C- II; D-I
2. A-IV; B-III; C-I; D-II
3. A-IV; B-III; C-II; D-I
4. A-I; B-II; C-III; D-IV

Question Type : **MCQ**
Question ID : **802437149**
Option 1 ID : **802437593**
Option 2 ID : **802437594**
Option 3 ID : **802437595**
Option 4 ID : **802437596**
Status : **Not Answered**
Chosen Option : **--**

Q.78

Which one of the following statements is INCORRECT for molybdenum (Mo) in the ocean?

Options

1. [Mo] ≈ 100 nM

2. Mo exists mainly in the dissolved form and has a conservative distribution (though it is a micronutrient) in the ocean.

3. Dissolved molybdenum exists as the molybdate (MoO_4^{2-}) anion in seawater.

4. Residence time of Mo is less than 1000 years in the ocean.

Question Type : **MCQ**
Question ID : **802437145**
Option 1 ID : **802437577**
Option 2 ID : **802437578**
Option 3 ID : **802437579**
Option 4 ID : **802437580**
Status : **Not Answered**
Chosen Option : **--**

Q.79

If a column of seawater moves from high latitude to low latitude (equatorward movement) then the relative vorticity of the water column will

Options

1. increase

2. decrease

3. remain unchanged

4. increase up to 30° latitude and then decrease

Question Type : **MCQ**
Question ID : **802437135**
Option 1 ID : **802437537**
Option 2 ID : **802437538**
Option 3 ID : **802437539**
Option 4 ID : **802437540**
Status : **Not Answered**
Chosen Option : **--**

Q.80 Which one of the following options correctly represents the relationship between oceanic surface Ekman layer depth (D_E), surface wind speed (U), and latitude (ϕ)?

Options

1. $D_E \propto U$, $D_E \propto 1/\phi$
2. $D_E \propto U$, D_E independent of ϕ
3. $D_E \propto 1/U$, $D_E \propto 1/\phi$
4. $D_E \propto U$, $D_E \propto \phi$

Question Type : **MCQ**
Question ID : **802437139**
Option 1 ID : **802437553**
Option 2 ID : **802437554**
Option 3 ID : **802437555**
Option 4 ID : **802437556**
Status : **Not Answered**
Chosen Option : **--**