INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO 2026)

NATIONAL ENTRANCE TEST (SET-B)

DATE : 24-JAN-2026

1. According to W.M. Davis, the evolution of landscape is a function of?

(a) Structure and Time (b) Structure, Stage and Time

(c) Structure, Lithology and Time (d) All of the above

Ans. (d)

Sol. All of the above

2. The cubic system has:

(a) 9 forms (b) 15 forms (c) 23 forms (d) 33 forms

Ans. (b)

Sol. 15 forms

3. Which of the following denotes a class that has no symmetry at all?

(a) Pinacoidal (b) Pedial (c) Domatic (d) Sphenoidal

Ans. (b)

Sol. Pedial class is a crystal class within the triclinic crystal system that possesses no symmetry elements at all.

4. Galena crystallizes in the form of?

(a) Cubes and Octahedra (b) Trapezohedra

(c) Cubes and Rhombohedra (d) Rhombododecahedra

Ans. (a)

Sol. Cubes and Octahedra

5. Which of the following show a 6 membered ring structure?

(a) Bentonite (b) Tourmaline (c) Beryl (d) Axinite

Ans. (c)

Sol. Beryl – Show a 6 membered ring structure

6. Unconformity where tilted rocks are overlain by younger, more horizontal formations can be classified as :

(a) Disconformity (b) Nonconformity (c) Paraconformity (d) Angular Unconformity

Ans. (d)

Sol. Angular Unconformity

7. A line joining points of maximum curvature on a folded surface is:

(a) Fold limb (b) Fold hinge (c) Axial plane (d) None of the above

Ans. (b)

Sol. The line joining the points of maximum curvature on a folded surface is fold hinge.

8. Which one of the following is not a Gondwana fossil of India?

(a) Gangomopteris (b) Sivatherium giganteum

(c) Glossopteris (d) Ptillophylum

Ans. (b)

Sol. Sivatherium giganteum

9. Sediment sorting points is statistically explained as?

(a) The spread or variability of grain sizes in a sediment sample

(b) The asymmetry of the grain sizes data distribution

(c) The value below which a given percentage of data falls

(d) The difference between the maximum and minimum values

Ans. (a)

Sol. The spread or variability of grain sizes in a sediment sample

10. In sedimentology, the sediment grain size ranges from 2000 μm to 62.5 μm, 62.5 μm to 3.9 μm and less than 3.9 μm are classified as?

(a) Sand, Silt, Clay (b) Clay, Silt, Sand (c) Sand, Clay, Silt (d) Clay, Sand, Silt

Ans. (a)

Sol. Sand – (2000 μm to 62.5 μm)

Silt – (62.5 μm to 3.9 μm)

Clay – (Less than 3.9 μm)

11. The primary component of chocolate is cocoa butter, which crystallizes into six distinct crystal forms. Select the correct statement(s).

(a) The delectable crystal form exhibits a soft texture and melts gradually in the mouth, resulting in a coarse and gritty sensation on the tongue.

(b) The delectable crystal form exhibits a low level of stability, resulting in a pleasant melting experience in the mouth.

(c) Stable form provides a low level of stability, resulting in a pleasant melting experience in the mouth.

(d) Stable form provides a soft texture and melts gradually in the mouth, resulting in a coarse and gritty sensation on the tongue.

(a) Statement (a) and (c) are correct

(b) Statement (b) and (c) are correct

(c) Statement (b) and (d) are correct

(d) Statement (a) and (d) are correct

Ans. ( )

Sol. *

12. A crystal exhibiting twofold symmetry along the b-axis, mirror plane along the ac-plane, or both is classified as a?

(a) Triclinic system (b) Hexagonal system

(c) Tetragonal system (d) Monoclinic system

Ans. (d)

Sol. Monoclinic system

13. A dimensionless quantity that quantifies the degree of magnetization induced in a material in response to an applied magnetic field is known as?

(a) Magnetic intensity (b) Magnetic susceptibility

(c) Magnetic Flux (d) Coercivity

Ans. (b)

Sol. because among them only magnetic susceptibility is dimension less quantity.

14. The calcite mineral shells of planktonic and benthic foraminifera exhibit distinct $\delta^{18}O$ values. Select the correct statement(s).

a. Planktonic foraminifera are the Surface waters habitat

b. Planktonic foraminifera are the deep or bottom water habitat

c. Benthic foraminifera are the deep or bottom water habitat

d. Benthic foraminifera are the Surface waters habitat

(a) Statement (a) and (c) are correct (b) Statement (b) and (d) are correct

(c) Statement (d) and (a) are correct (d) Statement (b) and (c) are correct

Ans. (a)

Sol. Statement (b) and (d) are incorrect because these statements swap the habitats of two groups.

Benthic org. do not live at the surface.

Planktonic org. do not live on deep sea floor.

15. In a fluvial system, Bar and Over-bank deposits together construct a river terraces. Select the correct statement(s).

a. Bar deposits record vertical accretion episodes in a river's history

b. Over-bank deposits record vertical accretion episodes in a river's history

c. Bar deposits records channel migration episodes in a river's history

d. Over-bank deposits records channel migration episodes in a river's history

(a) Statement (a) and (c) are correct (b) Statement (b) and (d) are correct

(c) Statement (d) and (a) are correct (d) Statement (b) and (c) are correct

Ans. (d)

Sol. Statement (b) and (c) are correct

16. Non glacial processes conditioned under glacial environment are referred to as?

(a) Paraglacial processes (b) Supraglacial processes

(c) Englacial processes (d) Subglacial processes

Ans. (a)

Sol. Paraglacial processes

INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO 2026)

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17. Multiple alluvial fans may coalesce along a mountain front to form a continuous piedmont slope known as?

(a) Bajada (b) Pediment (c) Terrace (d) Bolson

Ans. (a)

Sol. Bajada

18. A sedimentary structure characterized by alternating sets of cross-beds with foresets dipping in opposite directions leads to the formation of

(a) Current Bedding (b) Herringbone Cross Stratification

(c) Rhythmic bedding (d) Tidal Bundles

Ans. (b)

Sol. Herringbone Cross Stratification

19. Munsell Soil Charts are standardized colour charts employed to classify and describe soil colours in both field and laboratory settings, arranged in a sequential order

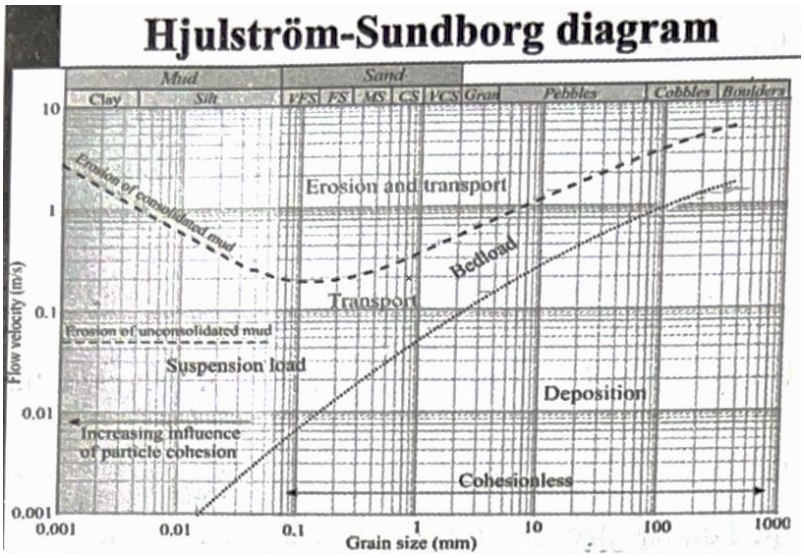
(a) Chroma, hue and value (b) Hue, value and chroma

(c) Value, hue and chroma (d) Chroma, value and hue

Ans. (b)

Sol. Hue, value and chroma

20. Read the figure given below and choose correct statements.



a. Sand grains are easiest to erode, need the lowest velocity for entrainment

b. Sand grains require high velocities to be eroded

c. For a given grain size, there's a range of velocities where material is eroded or deposited rather than transported

INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO 2026)

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d. For a given grain size, there's a range of velocities where material is transported rather than eroded or deposited

(a) Statement (a) and (c) are correct (b) Statement (b) and (d) are correct

(c) Statement (d) and (a) are correct (d) Statement (b) and (c) are correct

Ans. (b)

Sol. Statement (b) and (d) are correct

21. Heavy liquid separation method is used to separate zircon, rutile and garnet from quartz using

(a) Acetone (b) Benzene (c) Bromoform (d) Water

Ans. (c)

Sol. Bromoform (CH_3Br)

22. Read the statement regarding The Intertropical Convergence Zone (ITCZ). Select the correct statement(s).

(a) The ITCZ is a zone of high pressure where the northeasterly and southeasterly trade winds from both hemispheres converge.

(b) The ITCZ is a zone of low pressure where the northeasterly and southeasterly trade winds from both hemispheres converge.

(c) The southward migration of the ITCZ "switches on" the southwest monsoon whereas northward migration marks monsoon retreat.

(d) The northward migration of the ITCZ "switches on" the southwest monsoon whereas southward migration marks monsoon.

(a) Statement (a) and (c) are correct (b) Statement (b) and (d) are correct

(c) Statement (d) and (a) are correct (d) Statement (b) and (c) are correct

Ans. (b)

Sol. ICTZ is fundamentally low pressure zone where NE and SE trade winds are converge.

23. Ekman transport is

a. The movement of water is at an angle of 40 degrees to the direction of the prevailing winds

b. The horizontal mass transport associated with wind stress applied on the ocean surface

c. The movement of water is at right angles to the direction of the prevailing winds

d. The vertical mass transport associated with wind stress applied on the ocean surface

(a) Statement (a) and (c) are correct (b) Statement (b) and (d) are correct

(c) Statement (d) and (a) are correct (d) Statement (b) and (c) are correct

Ans. (d)

Sol. Ekman transport is the horizontal mass transport caused by wind stress on the ocean surface and at 90° to the prevailing wind.

INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO 2026)

NATIONAL ENTRANCE TEST (SET-B)

DATE : 24-JAN-2026

24. Carbon-14 is produced in the upper atmosphere when cosmic rays bombard?

(a) Carbon atom (b) Hydrogen atoms (c) Nitrogen atoms (d) Oxygen atoms

Ans. (c)

Sol. C-14 is produced in the upper atmosphere when cosmic rays bombard N-14 atoms.

25. Gravimeter is based on _____.

(a) Archimedes' Principle (b) Hooke's Law

(c) Law of Gravity (d) Kepler's Law

Ans. (b)

Sol. A gravimeter measures tiny variations in gravitational acceleration (g). In most gravimeters (especially spring gravimeters), A small mass is attached to a spring. When gravity changes, the mass stretches or compresses the spring,

It follows Hooke's Law:

$F = mg = kx$

26. Match the calendar dates with the events that occur during the annual rotation of Earth around the Sun.

(a) Aphelion	(i) 4th July
b) Autumn Equinox	(ii) 22nd September
c) Perihelion	(iii) 3rd January
d) Summer solstices	(iv) 21st June

(a) (a)-(i), (b)-(ii), (c)-(iii) and (d)-(iv) (b) (a)-(ii), (b)-(ii), (c)-(iv) and (d)-(iii)

(c) (a)-(iii), (b)-(iv), (c)-(i) and (d)-(ii) (d) (a)-(iv), (b)-(iii), (c)-(ii) and (d)-(i)

Ans. (a)

Sol. Aphelion is the point in Earth's orbit when it is farthest from the Sun, which occurs around July 4th each year. Perihelion is when it is closest to the Sun, occurring around January 3rd. The Autumn Equinox in the Northern Hemisphere marks the start of autumn, when the Sun crosses the celestial equator going south, around September 22nd. The Summer Solstice in the Northern Hemisphere is the day with the longest period of daylight, occurring around June 21st.

27. Read the statement regarding El Nino and La Nina. Select the correct statement(s).

(a) El Nino extensive warming of the central and eastern tropical Pacific Ocean

(b) El Nino extensive warming of Pacific in north of Australia and southeast Asia

(c) La Nina extensive warming of Pacific in north of Australia and southeast Asia

(d) La Nina extensive warming of the central and eastern tropical Pacific Ocean

(a) Statement (a) and (c) are correct (b) Statement (b) and (d) are correct

(c) Statement (d) and (a) are correct (d) Statement (b) and (c) are correct

Ans. (a)

Sol. El Nino warming occurs in central and eastern tropical pacific ocean.

La-Nina warming occurs in western pacific ocean (Australia and south asia.)

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28. Determine if Stokes' Law is applicable for quartz grain (density = 2.65 g/cm^3), diameter = 0.2 mm, settling in water at 20°C (kinematic viscosity v = 1 × 10^{-6}m^2/s, density = 1.00 g/cm^3, settling velocity ($_s$ = 0.00003597 m/s).

(a) Re < 1 (b) 0.1 < Re < 1 (c) Re > 1 (d) Re = 1

Ans. (a)

Sol. Stroke's Law (Setting velocity) is applicable only for creeping flow ($R_e < 1$)

$R_e = \rho v(2r)\eta = (10^3 \times 10^{-6} \times 2 \times 0.1 \times 10^{-3})/10^{-6} = 0.2$ ($R_e < 1$)

29. A sediment sample has a total volume of 200 cm^3. When saturated and weighed, it contains 50 cm^3 of water. What is its porosity?

(a) 75% (b) 50% (c) 25% (d) 5%

Ans. (c)

Sol. $\text{Porosity} = \frac{\text{Volume of voids}}{\text{Total volume}} \times 100 = \frac{50}{200} \times 100 = 25\%$

30. Lake sediment core shows that 45 cm of sediment accumulated in 150 years. What is the average sediment accumulation rate?

(a) 0.3 cm/year (b) 3.3 cm/year (c) 0.675 cm/year (d) 6.750 cm/year

Ans. (a)

Sol. $\text{Average sediment accumulation rate} = \frac{\text{Total depth}}{\text{Total time}}$

$= \frac{45}{150} = 0.3$ cm/year

31. When muscovite-corderite-andalusite is involved in melting, the granite tends to be_____

(a) Peraluminous (b) Metaluminous (c) Peralkaline (d) Mesoaluminous

Ans. (a)

Sol. Peraluminous (s-type granite)

32. What is the name for the number of protons in an atom's nucleus?

(a) Mass number (b) Atomic Number

(c) Atomic Weight (d) Isotope Number

Ans. (b)

Sol. Atomic Number

33. Lherzolite is a type of ultramafic _____

(a) Granite (b) Gabbro (c) Pyroxenite (d) Peridotite

Ans. (d)

Sol. Peridotite

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34. The primitive mantle composition is inferred from

(a) Chondritic meteorites (b) MORB

(c) Basaltic crust (d) Granite

Ans. (a)

Sol. Chondritic meteorites

35. Smooth surface, ropy lava and spherical vesicles are associated with _____

(a) A'a (b) Transitional lavas

(c) Pahoehoe (d) Blocky

Ans. (c)

Sol. Pahoehoe

36. Bowen's Reaction Series explains:

(a) The relationship between magma viscosity and eruption type

(b) The sequential crystallization of silicate minerals from cooling magma

(c) The tectonic setting of magmatic arcs

(d) The distribution of elements in the Earth's crust

Ans. (b)

Sol. The sequential crystallization of silicate minerals from cooling magma.

37. The presence of euhedral crystals in an igneous rock indicates:

(a) Rapid under cooling in presence of water

(b) Rapid degassing in an unrestricted environment

(c) Magmatic pulses

(d) Crystallization in an open system.

Ans. (d)

Sol. The presence of euhedral crystals in an igneous rock indicates - Crystallization in an open system.

38. The theory that describes Earth's lithosphere as being broken into plates that move is called:

(a) Continental Drift Theory (b) Plate Tectonics Theory

(c) Nebular Theory (d) Uniformitarianism

Ans. (b)

Sol. Plate Tectonics Theory

39. The $\delta^{18}O$ values in marine carbonates primarily reflect changes in:

(a) Ocean salinity

(b) Atmospheric CO_2 concentration

(c) Solar radiation intensity

(d) Global ice volume and temperature

Ans. (d)

Sol. Global ice volume and temperature

40. Radiocarbon dating (^{14}C) is most effective for dating materials up to approximately:

(a) 1,000 years (b) 10,000 years (c) 50,000 years (d) 1 million years

Ans. (c)

Sol. 50,000 year

C^{14} half life = 5730 years

Due to this half-life and the sensitivity of current detection methods, the practical limit for effective dating is around 50,000 years as after this amount of remaining C^{14} is too small to measure accurately.

41. Which gas is most commonly measured in ice cores to infer past greenhouse gas levels?

(a) CO_2 (b) O_2 (c) N_2 (d) SO_2

Ans. (a)

Sol. CO_2, CH_4 and NO_2 but most commonly measured gas in ice cores it is the dominant long lived green house gas CH_4 important but lower concentration. N_2O measured less frequently.

42. Which principle states that "the present is the key to the past"?

(a) Catastrophism (b) Uniformitarianism (c) Neptunism (d) Plutonism

Ans. (b)

Sol. Uniformitarianism

43. The theory that describes the formation of our solar system is called:

(a) Plate Tectonics Theory (b) Big Bang Theory

(c) Nebular Theory (d) Continental Drift Theory

Ans. (c)

Sol. Nebular Theory.

44. Which texture describes igneous rocks with large, visible crystals?

(a) Aphanitic (b) Phaneritic (c) Porphyritic (d) Glassy

Ans. (b)

Sol. Phaneritic (coarse-grained texture)

45. What is the term for igneous rocks rich in dark silicate minerals?

(a) Felsic (b) Mafic (c) Intermediate (d) Ultramafic

Ans. (b)

Sol. Mafic

46. A glowing cloud of a fast-moving, extremely hot pyroclastic flow of volcanic gas, ash, and rock that rushes down the slopes of a volcano during an explosive eruption is better described as?

(a) Avalanches (b) Lahars (c) Nuee ardente (d) Aurora Borealis

Ans. (c)

Sol. Nuee Ardene is the French team meaning glowing clouds consist of hot gases, ash and pyroclastic material.

47. What type of bond involves the sharing of electrons between atoms?

(a) Ionic bond (b) Hydrogen bond (c) Metallic bond (d) Covalent bond

Ans. (d)

Sol. Covalent bond

48. The colour of a mineral in powdered form is called its:

(a) Luster (b) Cleavage (c) Streak (d) Fracture

Ans. (c)

Sol. Streak

49. Which of the following is a ferromagnesian silicate mineral?

(a) Quartz (b) Muscovite (c) Orthoclase (d) Biotite

Ans. (d)

Sol. Biotite

50. What does a higher $\delta^{13}C$ value in organic matter generally indicate?

(a) C_4 plant dominance (b) C_3 plant dominance

(c) Marine origin (d) Low productivity environment

Ans. (a)

Sol. C_4 plant dominance

Term $\delta^{13}C$ measures the ratio of stable isotopes ^{13}C to ^{12}C relative to a standard.

Because plant prefer lighter isotope (^{12}C) during photosynthesis, they are depleted in ^{13}C values in terrestrial records.

51. Loess deposits are primarily used to reconstruct past:

(a) Wind patterns and aridity (b) Ocean temperatures

(c) Volcanic eruptions (d) Glacial meltwater chemistry

Ans. (a)

Sol. Wind patterns and aridity

52. The Younger Dryas was a period characterized by:

(a) Rapid warming (b) Global cooling

(c) High CO_2 levels (d) Increased precipitation

Ans. (b)

Sol. The younger dryas is the example of abrupt climate change. While most intense cooling was centered around the north atlantic, its effect felt through shifts in wind pattern and moisture distribution.

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53. The ratio of magnesium to calcium (Mg/Ca) in foraminiferal shells is a proxy for:

(a) Salinity (b) Temperature (c) pH (d) Sedimentation rate

Ans. (b)

Sol. Temperature

54. If the actual vapor pressure is 10 mb and the saturation vapor pressure is 20 mb, what is the relative humidity (RH)?

(a) 20% (b) 30% (c) 40% (d) 50%

Ans. (d)

Sol. Relative humidity $= \frac{\text{Actual vapor pressure}}{\text{Saturation vapor pressure}} \times 100$

$= \frac{10}{20} \times 100 = 50\%$

55. Tropical Easterly jet is observed at ..... pressure level in the atmosphere

(a) 200 hpa (b) 600 hpa (c) 400 hpa (d) 1000 hpa

Ans. (a)

Sol. The 200 hpa level is the standard pressure level where jet is strongest and most frequently observed.

56. Suppose a rock layer contains fossils to Trilobites, brachiopods and graptolites given the fossil ranges for Trilobites: Cambrian to Permian, Brachiopods: Cambrian to Recent, and Graptolites: Ordovician to Devonian, what is the possible age range for the rock layer?

(a) Cambrian to Permian (b) Cambrian to Recent

(c) Ordovician to Devonian (d) Ordovician to Recent

Ans. (c)

Sol. Ordovician to devonian

Trilobites : cambrian to permian

Brachiopods : cambrian to recent

Graptolites : ordovician to devonian

The start : Because rock cannot be older than ordovician, because graptolites didn't exist in cambrian.

The End : Rock cannot be younger than devonian, because graptolites went extinct after that period.

The overlap: B/w ordoviacian and devonian, all three groups were alive at same time

57. A 2kg rock sample contains 0.004 g of gold (Au). Calculate the concentration of gold in the sample in ppm.

(a) 0.2 ppm (b) 0.4 ppm (c) 2.0 ppm (d) 4.0 ppm

Ans. (c)

Sol. Concentration of gold (in ppm) $= \frac{\text{mass of solute}}{\text{mass of sample}} \times 10^6$

$= \frac{0.004\,\text{g}}{2000\,\text{g}} \times 10^6$

$= 2.0$ ppm

58. Calculate discharge of river having channel width 20 m, average depth of channel 3 m and average velocity of water in channel 2 m/s

(a) 6 m^3/s (b) 40 m^3/s (c) 60 m^3/s (d) 120 m^3/s

Ans. (d)

Sol. Volume of water = l × b × h = 2 × 20 × 3 = 120 m^3/sec

59. If the Southern Ocean upwelling were to weaken significantly, which of the following global biogeochemical consequences would logically follow first?

(a) Increase in global N_2 fixation

(b) Strong decline in deep ocean O_2

(c) Reduced return of deep nutrients to the surface

(d) Immediate warming of deep waters

Ans. (c)

Sol. In options A and B, (Nitrogen fixation and oxygen levels) might eventually happen as secondary biological responses to nutrient shifts, they are not immediate physical consequence of upwelling slowing down.

60. An ocean basin shows a long-term decline in $\delta^{15}N$ of sinking particles. Which scenario best explains the trend?

(a) Increase in denitrification rate (b) Enhanced N_2 fixation

(c) Stronger remineralization at depth (d) Increase in nitrate assimilation efficiency

Ans. (b)

Sol. When N_2 fixation increases, it introduces a large amount of light nitrogen into the surface ecosystem.

61. Which of the following would cause shoaling of the oxygen minimum zone (OMZ)?

(a) Stronger surface productivity coupled with weak ventilation

(b) Reduced remineralization depth of sinking particles

(c) Strengthened thermocline ventilation

(d) High denitrification

Ans. (a)

Sol. In oceanography, shoaling refers to the boundary of a zone (like oxygen minimum zone) moving closer to the surface.

62. You observe an increase in δ^{13}C-DIC in surface waters but no change in pCO_2. What is the most consistent explanation?

(a) Enhanced air-sea CO_2 uptake
(b) Local primary production drawing down ^{12}C
(c) Lateral transport of δ^{13}C-rich waters
(d) Decrease in riverine organic matter input

Ans. ( )

Sol. *

63. A sudden drop in mixed-layer depth in winter would most strongly affect:

(a) Spring bloom timing
(b) Deep-water formation
(c) Silica cycling in the deep ocean
(d) Long-term oxygen consumption in mid depths

Ans. (b)

Sol. The mixed layer depth plays a critical role in the global conveyor belt of ocean circulation.

64. If a region shifts from diatom-dominated to picoplankton-dominated production, what is the most direct effect?

(a) Higher export efficiency
(b) Lower export efficiency and shallower remineralization
(c) Increased silica deposition
(d) Stronger deep carbon sequestration

Ans. (b)

Sol. Lower export efficiency and shallower remineralization

65. Which condition most strongly promotes formation of a deep chlorophyll maximum (DCM)?

(a) High remineralization
(b) Strong subsurface light-nutrient co-limitation
(c) High nutrients in the surface
(d) High turbidity in surface waters

Ans. (b)

Sol. Strong subsurface light-nutrient co-limitation

66. An ocean eddy traps warm, nutrient-poor water but shows high productivity inside. What mechanism explains this best?

(a) Eddy pumping uplifting deeper nutrients
(b) Horizontal stirring concentrating phytoplankton
(c) Enhanced dust deposition
(d) Nitrogen fixation only

Ans. (a)

Sol. As an eddy rotates it cause vertical heaving of the layer where temperature changes rapidly. In certain phases of eddy nutrient rich water from the deep is pumped up. And eddies trap plankton and larvae inside as result they cannot dispose and small amount of nutrients are repeatedly used.

67. Which shift would most directly increase the Revelle factor of surface water?

(a) Higher temperature (b) Lower alkalinity

(c) High $CaCO_3$ export (d) Increase salinity

Ans. (b)

Sol. Lower alkalinity

68. If ΔpCO_2 between ocean and atmosphere decreases but SST is constant, which factor likely changed

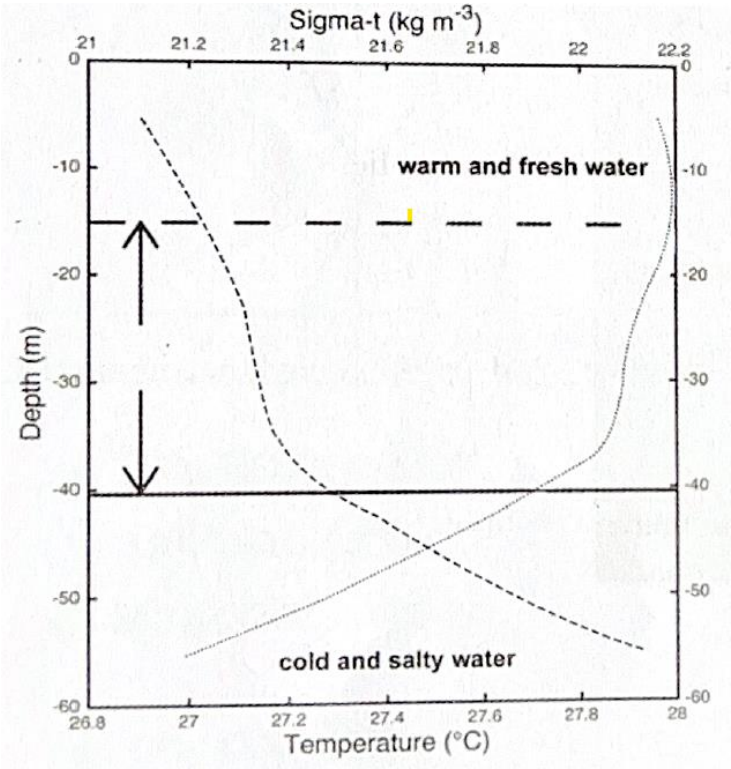
(a) Total alkalinity decreased (b) Salinity increased

(c) DIC decreased (d) Stronger winds enhanced gas exchange

Ans. (c)

Sol. DIC (Dissolve Inorganic Carbon) decreased

69. The given figure shows the temperature (in dotted lines) and salinity density (in dash) diagram. What is the depth between 15-40 m can be called?

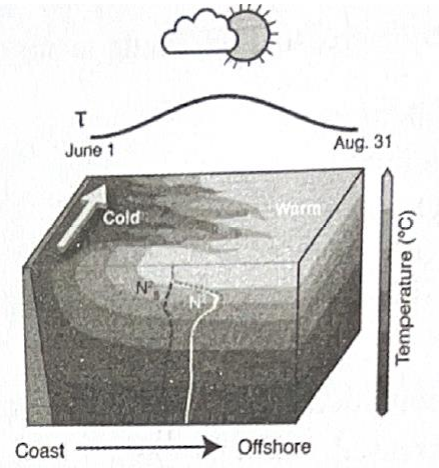


(a) Mixed layer (b) Barrier layer (c) Thermocline (d) Euphotic zone

Ans. (b)

Sol. Barrier layer

70. Which of the following basins is most likely represented in given figure?

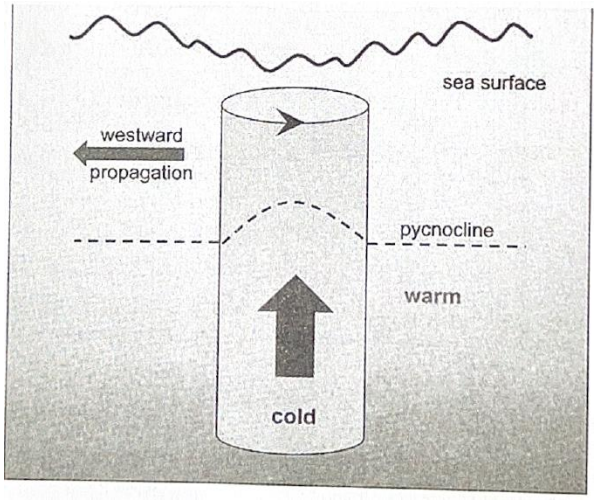


(a) Bay of Bengal
(b) Sargasso Sea
(c) Black Sea
(d) Arabian Sea

Ans. (d)

Sol. The Bay of Bengal does not experience such strong coastal upwelling due to high fresh water. The sargasso sea is an digotrophic gyre without this specific coastal upwelling. The black sea is a semi-enclosed basin with different circulation patterns.

71. What is best shown in the given schematic for a Northern Hemisphere?



(a) Cyclonic eddy
(b) Anticylonic eddy
(c) Downwelling
(d) Coriolis force

Ans. (a)

Sol. Cyclonic eddy has indicators –
Upward domed pycnocline, central cold core, surface propogation, rotation.

INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO 2026)

NATIONAL ENTRANCE TEST (SET-B)

DATE : 24-JAN-2026

72. Which of the following best describes Ocean Alkalinity Enhancement (OAE)?

(a) Adding iron to seawater to stimulate phytoplankton growth

(b) Increasing seawater buffering capacity by adding alkaline materials

(c) Increasing the depth of the mixed layer to enhance CO_2 storage

(d) Pumping CO_2-rich deep waters to the surface to promote degassing

Ans. (b)

Sol. Ocean alkalinity enhancement is a carbon dioxide removal technique that involves adding alkaline substances to the ocean.

73. A fundamental challenge in ocean iron fertilization (OIF) is:

(a) Lack of available iron in the global ocean

(b) Low biological response to iron in high-nutrient low-chlorophyll regions

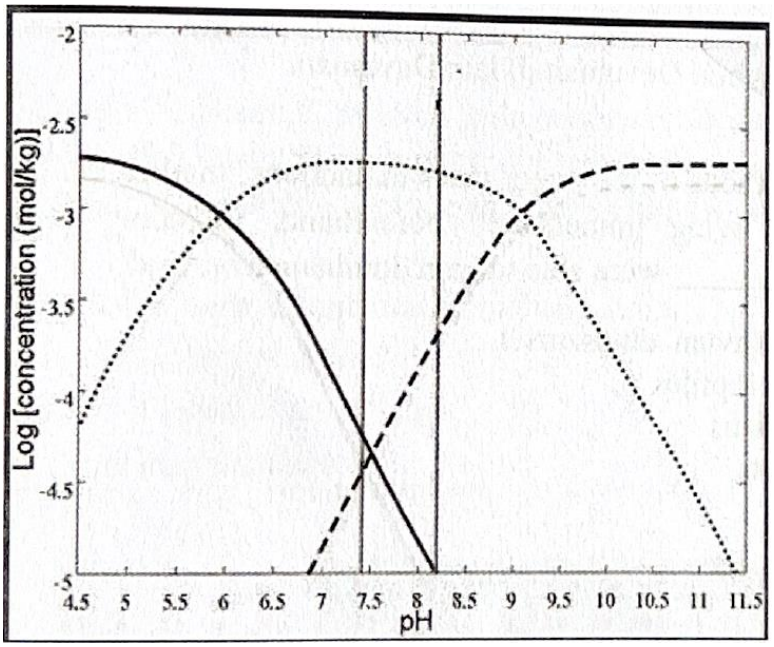
(c) Verifying long-term CO_2 sequestration and preventing rapid remineralization

(d) The inability of phytoplankton to use iron

Ans. (c)

Sol. Remineralized means turned back into CO_2, in the shallow layers of the ocean. If this happens, the carbon is released back into the atmosphere quickly rather than being stored long-term.

74. Following plot shows the variation in solubility of dissolved inorganic carbon (DIC) in water versus pH. In the plot, plain line, dash line and dotted lines, respectively, represent the concentration of:



(a) CO_2, HCO_3^-, CO_3^{2-}

(b) CO_3^{2-}, CO_2, HCO_3^-

(c) HCO_3^-, CO_3^{2-}, CO_2

(d) CO_2, CO_3^{2-}, HCO_3^-

Ans. (d)

Sol. CO_2, CO_3^{2-}, HCO_3^-

INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO 2026)

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75. The "Layered Intrusion" concept is best represented by which geological body?

(a) Deccan Traps (b) Bushveld Complex

(c) Columbia River Basalt (d) Hawaiian Shield Volcano

Ans. (b)

Sol. Bushveld Complex

76. The mass dinosaurs extinction took place around how many Million years in India?

(a) 20-5 Million years ago (b) 40-23 Million years ago

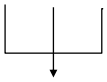
(c) 65-63 Million years ago (d) 74-70 Million year ago

Ans. (c)

Sol. 65-63 Million years ago

Extinction of non-avian dinosaurs occured in cretaceous-paleogene (k-Pg) extinction event.

why option (a), (b), (d) not correct



Timeframes (miocene/oligocene) are much recent by then, mammals had already become dominant land animals.

option (d) - represents late cretaceous, but it preceedes the actual extinction event by several million years.

77. The oldest known fossils of bony fish have been discovered from the?

(a) late Silurian (b) early Silurian

(c) mid Devonian (d) late Devonian

Ans. (a)

Sol. The oldest known fossils of bony fish (osteichthyes) date back to the late Silurian period, approx.. 420-425 mya. While Devonian period (419-358 mya) – Age of fish – This is when they became dominant.

78. K-Pg extinction perhaps the most famous of the major mass extinctions, marked the end of about 67 percent of all species living immediately beforehand, including the non- avian dinosaurs. As a result, _____ were able to gain dominance on land.

(a) mammals and birds (avian dinosaurs) (b) pteridophytes and reptiles

(c) grasses and amphibians (d) mammals and insects

Ans. (a)

Sol. Insects and amphibians also survived, but grasses hadn't even become dominant yet, and pteridophytes (ferns) actually suffered a massive temporary collapse. while reptiles like turtle, crocodiles and lizards survived, but most famous reptiles like non-avian dinosaurs, pterosaurs were completely wiped out.

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79. How much is the ocean water density?

(a) 1200 kg/m^3 (b) 800 kg/m^3 (c) 600 kg/m^3 (d) 1026 kg/m^3

Ans. (d)

Sol. 1026 kg/m^3

80. The trace fossils in the photo below represent:

(a) dwelling traces (b) resting traces

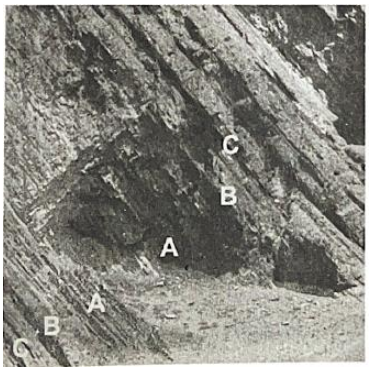
(c) walking traces (d) feeding traces

Ans. (b)

Sol. Resting traces (cubichnia)

The image show star-like symmetrical impression without a continuous path or burrow. This indicates the organism stayed at one place, resting on the sediment.

81. Letter A, B and C indicate beds dominated by certain fossil taxa; where A = ammonoid + belemnite rich fauna; B = brachiopod + trilobite rich fauna and C = stromatolite rich bed. Choose the correct order of the sequence and the structure of which they are constiuents.



(a) A, B and C; normal sequence of inclined strata

(b) C, B and A; part of a syncline

(c) A, B and C; part of an anticline

(d) C, B and A; recumbent fold

Ans. (b)

Sol. C, B and A; part of a syncline

82. Grazing behaviour of an organism preserved in the form of a fossil is termed as:

(a) Agrichnia (b) Domichnia (c) Repichnia (d) Pascichnia

Ans. (d)

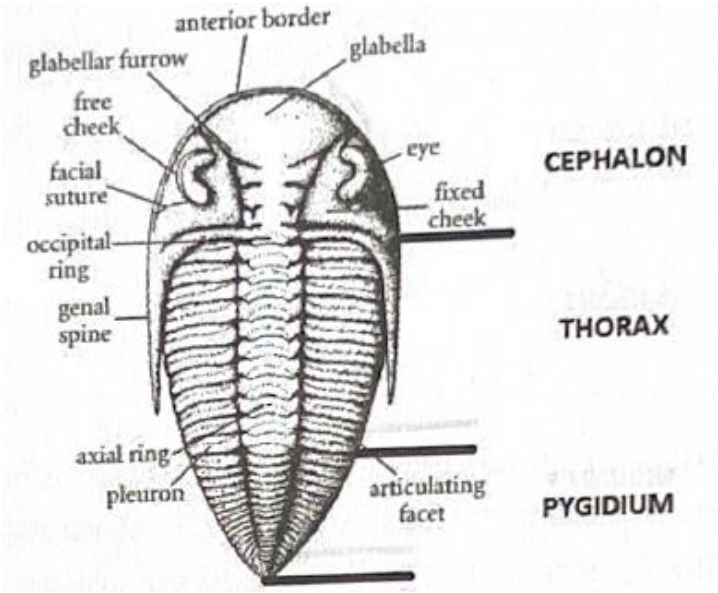
Sol. Pascichnia – They are the feeding traces left by grazers on the surface of a soft sediment or mineral substrate.

Agrichnia – Trace fossil c/o systematic and interlaced burrow networks.

Domichnia – Habitation structures

Repichnia – Walking/surface traces from creeping or crawling.

83. The term 'Trilobite' is derived from the division of the carapace into:



(a) cephalon, thorax, abdomen

(b) cephalon into glabella & cheeks

(c) two pleural lobes & one axial lobe

(d) None of the above.

Ans. (c)

Sol. Two pleural lobes and one axial lobe

Trilobites are named after its three longitudianal lobes :

- Right pleural lobes
- Axial lobe
- Left pleural lobe

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84. The Winter Solstice is located in which of the following constellations?

(a) Aries (b) Pisces (c) Virgo (d) Sagittarius.

Ans. (d)

Sol. The winter solstice, around December 21st, currently occurs when the Sun is in the constellation of Sagittarius. The Earth's axial precession causes the position of the solstices to shift over time, but in the modern era, Sagittarius is the correct constellation.

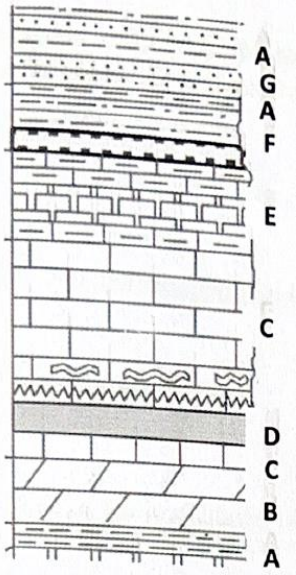
85. Which of the following types of stars can be used to measure distances?

(a) Cepheids (b) Wolf Rayet (c) Black holes (d) RS CVN

Ans. (a)

Sol. Cepheid variable stars have a direct relationship between their luminosity and pulsation period. By measuring their period, astronomers can determine their absolute brightness and, consequently, their distance from Earth.

86. Which type of fossil should NOT be expected in unit C?



(a) Stromatolite (b) Fossil wood (c) Ammonite (d) Echinoderms

Ans. (c)

Sol. Ammonites appeared much later than organisms in those lower units. Unit C is represented by brick pattern – standard geological symbol for limestone.

Limestone always forms in marine (ocean) environments

Stromatolites – microbial reets found in marine environment

Echinoderms – strictly marine animals

Fossilwood – comes from land plants

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87. About three million years ago vertebrates like the opossum, armadillo, and porcupine migrated to North America via the:

(a) Isthmus of Suez (b) Isthmus of Kra (c) Isthmus of Panama (d) Isthmus of Rivas

Ans. (c)

Sol. Isthmus of Panama

88. Amongst the seven theories on the 'Origin of Life', the 'Spontaneous Generation/Abiogenesis' theory was proposed by:

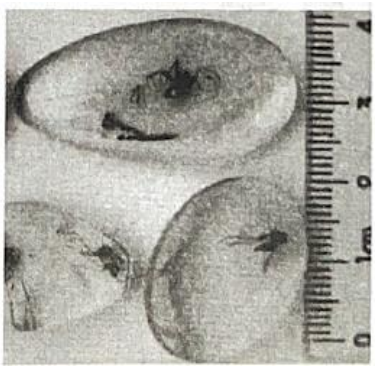
(a) Oparin and Haldane (b) Louis Pasteur

(c) Anaxagoras (d) Georges Cuvier

Ans. (c)

Sol. Anaxagoras - Along c̄ aristotle proposed spontaneous gen. theroy which suggested life could arise from non-living matter like mud, slime or decaying organic material.

89. Preservation of entire organisms takes place when organisms get embedded in amber. Amber is an exudation of:



(a) Xerophytes (b) Acacia trees (c) Conifers (d) Palms

Ans. (c)

Sol. Amber – fossilized tree resin

While many trees produce resin or sap, vast majority of world amber deposits come from ancient conifers (like pine or cedars)

90. Like all groups of organisms, the Equidae was also represented by many genera and species. Now, they are represented only by the zebra, horse and donkey, all belonging to the genus:

(a) Equus (b) Mesohippus

(c) Pliohippus (d) Loxodonta

Ans. (a)

Sol. Equus - option (b), (c) - all living equines (Horse, Zebra and donkeys) all belong to single genus equus.

option (d) - Loxodontia - genus of african elephants

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91. _____ discovered the first correctly identified ichthyosaur skeleton.

(a) William Buckland (b) Mary Anning

(c) Richard Owen (d) Charles Darwin

Ans. (b)

Sol. Many anning (often c her brother joseph) discovered first icthyosaour skeleton in the cliffs of lyme regis around 1811.

92. Gastropods have coiled shells; they exhibit both right-handed coiling as well left-handed coiling. Shells showing left-handed coiling are known as:

(a) sinistral (b) dextral (c) spiral (d) helical

Ans. (a)

Sol. Sinistral (left-handed coiling)

Dextral (right-hand coiling rare)

93. Which important marine invertebrate group went extinct along with the dinosaurs during the K-Pg extinction event?

(a) Gastropods (b) Oysters (c) Ammonoids (d) Bryozoa

Ans. (c)

Sol. Ammonoids (coiled – shell cephalopods)

Relative of modern squid and octopus they were incredibly diverse for millions of years but wen completely extinct at k-pg boundary.

94. There is no Helium in the Earth's atmosphere because:

(a) at normal temperature the average velocity of He atom is enough to allow it to escape

(b) there is no helium in the core of the earth

(c) Helium is a noble gas

(d) Sun is too bright on earth

Ans. (a)

Sol. Helium is extermely light and because of its density, helium rises to the top of the atmosphere and easily reaches escape velocity.

95. Walker cell is observed in?

(a) Meridional Plane (b) Zonal Plane

(c) At pole (d) At everywhere

Ans. (b)

Sol. Zonal Plane

96. Which of the following is the lowest grade metamorphic facies?

(a) Eclogite facies. (b) Granulite facies

(c) Blueschist facies (d) Greenschist facies

Ans. (d)

Sol. Greenschist facies

97. Which of the following is not an erosional feature of wind?

(a) Zeugen (b) Yardang (c) Hohlweg (d) Serir

Ans. (d)

Sol. Serir

98. The Event Horizon of a black hole is the radius at which the escape velocity from an object is equal to the speed of light, for a star with 3 solar masses, the Event Horizon is:

(a) 13.5 km (b) 13.5 m (c) 13.5×10^6 Km (d) 13.5×10^6 m

Ans. (a)

Sol. For a black hole with a mass of 3 solar masses, the Event Horizon (Schwarzschild radius)

$$R_S = \frac{2GM}{C^2} = \frac{2G(3M_\odot)}{C^2} \qquad (\text{Here } M = 3M_\odot)$$

is 8.86 km, while the photon sphere is 13.5 km; however, based on common approximations (3 km per solar mass), answer is 13.5 km (representing the photon sphere or a rounded approximation).

99. Spring deposit of $CaCO_3$ is known as:

(a) Calc tufa (b) Travertine (c) Sinter (d) Natron

Ans. (b)

Sol. Travertine

100. Which of the following weathers most rapidly?

(a) Orthoclase (b) Albite (c) Anorthite (d) Bytownite

Ans. (c)

Sol. Based on the goldich stability series (which is reverse of Bowen's reaction series)

Anorthite > Bytownite > Albite > Orthoclase