Bihar D.El.Ed Science Questions PDF

Q1. Which of the following potassium compounds is known as "Pearl ash"?
(a) K_2SO_4
(b) K_2CO_3
(c) $KMnO_4$
(d) KOH

Q2. The process by which vegetable ghee is manufactured is known as-
(a) Saponification
(b) Hydrogenation
(c) Esterification
(d) Hydrolysis

Q3. Salts of which of the following elements provide colors to fireworks?
(a) Zinc and sulphur
(b) Potassium and mercury
(c) Strontium and barium
(d) Chromium and nickel

Q4. Light scattering takes place in -
(a) Electrolytic solutions
(b) Colloidal solutions
(c) Electrodialysis
(d) Electroplating

Q5. Which one of the following is not an inert gas?
(a) Helium
(b) Neon
(c) Freon
(d) Xenon

Q6. Neha by chance mixed acetone with alcohol. The mixture of acetone and alcohol can be separated by-
(a) Filtration
(b) Separating funnel
(c) Fractional crystallization
(d) Fractional distillation

Q7. Milk can be preserved by adding a few drops of-
(a) HCHO solution
(b) HCOOH solution
(c) CH3CHO solution
(d) CH3COOH solution

Q8. PET bottles and jars are commonly used for storing edible items. PET is very familiar form of-
(a) Polyamide
(b) Polyester
(c) Acrylic
(d) Rayon

Q9. Higher concentration of Nitrogen-dioxide in atmosphere causes-
(a) Cancer
(b) Bronchitis
(c) Asphyxiation
(d) Corrosion

Q10. Cement factory workers are prone to -
(a) Asbestosis
(b) Leukemia
(c) Bone Marrow disease
(d) Cytosilicosis

Q11. Which of the following animal's front teeth keep growing throughout its life?
(a) Cat
(b) Squirrel
(c) Snake
(d) Tiger

Q12. Which of the following part of cinchona tree is used to treat malaria ?
(a) Root
(b) Bark
(c) Leaves
(d) Seed

Q13. Poisonous teeth of snakes are called
(a) Pangs
(b) Fangs
(c) Incisors
(d) scales

Q14. Vermi-composting is a method of composting that uses:
(a) Tapeworm
(b) Leeches
(c) Earthworm
(d) Hookworm

Q15. Pashmina variety of wool is obtained from which animal?
(a) Sheep
(b) Camel
(c) Goat
(d) Alpaca

Q16. Which of the following cell organelle is in continuation with the outer membrane of nucleus?
(a) Lysosomes
(b) Endoplasmic Reticulum
(c) Mitochondria
(d) Peroxisomes

Q17. The female reproductive part of a flower is
(a) Gynoecium
(b) Androecium
(c) Pollen sac
(d) Stamen

Q18. Who was the first person providing the description of covalent bond?
(a) Langmuir
(b) Lewis
(c) Kossel
(d) Lavoisier

Q19. Whose oxidation number is always -1?
(a) F
(b) Cl
(c) Br
(d) I

Q20. Which of the following is natural acid-base indicator?
I. Litmus
II. Turmeric
(a) Only II
(b) Only I
(c) Neither I nor II
(d) Both I and II

Q21. The properties of an element in the periodic table depend on _____.
(a) atomic size
(b) number of protons
(c) atomic mass
(d) electronic configuration

Q22. Which of the following is NOT found in the section of a leaf?
(A) Guard cells
(B) Stoma
(C) Chlorophyll
(D) Pseudopodia
(E) Xylem
(a) (A) and (B)
(b) (A) and (D)
(c) (C) and (E)
(d) (D) and (E)

Q23. Which one of these is not a eukaryote?
(a) Euglena
(b) Anabaena
(c) Spirogyra
(d) Agaricus

Q24. Phosphinic acid is
(a) H_3PO_2
(b) H_3PO_3
(c) $H_4P_2O_5$
(d) $H_4P_2O_6$

Q25. Who among the following received Noble Prize for peace and started the Green Belt Movement?
(a) Rajendra K. Pachauri
(b) Wagai M. Matthai
(c) Jim Bohlen
(d) Gro Harlem Brundtland

Q26. The deficiency of which vitamin causes anaemia?
(a) Vitamin E
(b) Vitamin D
(c) Vitamin B3
(d) Vitamin B12

Q27. _____ is a change of position.
(a) Speed
(b) Velocity
(c) Motion
(d) Distance

Q28. Which of the following is the source of non-renewable energy?
(a) Forest
(b) Wind
(c) Coal
(d) Trees

Q29. LEED, one of the Sustainable Habitat green rating systems, refers to:
(a) Leadership in Energy and Efficiency Design
(b) Leadership in Energy and Efficiency Document
(c) Leadership in Energy and Environment Design
(d) Leadership in Energy and Environment Document

Q30. α– particles consist of:
(a) 2 protons and 2 neutrons only
(b) 2 electrons, 2 protons and 2 neutrons
(c) 2 electrons and 4 protons only
(d) 2 protons only

Q31. Which among the following elements has the highest Electronegativity?
(a) Gallium
(b) Sodium
(c) Arsenic
(d) Caesium

Q32. Which drug is used for Pain Relief?
(a) Risedronate
(b) Tramadol
(c) Folic Acid
(d) Bupropion

Q33. Which of the following is a Synthetic rubber?
(a) Leoprene
(b) Monoprene
(c) Neoprene
(d) Isoprene

Q34. Soil having a high content of aluminum and iron oxide is also known as _____.
(a) Meadow soil
(b) Pedalfer soil
(c) Chernozen soil
(d) Podzol soil

Q35. Which of the following is an Inert Gas?
(a) Hydrogen
(b) Nitrogen
(c) Oxygen
(d) Argon

Q36. Turmeric is obtained from which part of the plant:
(a) Root
(b) Stem
(c) Fruit
(d) Flower bud

Q37. Which one of the following animals stores water in the intestine?
(a) Moloch
(b) Camel
(c) Zebra
(d) Uromastix

Q38. Opium is obtained from
(a) Dried leaves
(b) Roots
(c) Latex from an unripe fruit
(d) Flower

Q39. Thiamine is:
(a) Vitamin C
(b) Vitamin B_2
(c) Vitamin B_6
(d) Vitamin B_1

Q40. The normal, RBC count in adult males is -
(a) 4.7- 6.1 million
(b) 7.5- 8.5 million
(c) 2- 3 million
(d) 1.5- 2.5 million

Q41. With the propagation of a longitudinal wave through a material medium, the quantities transmitted in the propagation direction are
(a) energy, momentum and mass
(b) energy and force
(c) energy and mass
(d) energy and linear momentum

Q42. The loudness and pitch of a sound depend on
(a) intensity and velocity
(b) intensity and frequency
(c) frequency and velocity
(d) frequency and number of harmonics

Q43. A source of sound moves towards an observer with a velocity 108 km/h and the observer also moves towards the source with the velocity 5 km/h, then the velocity of sound is
(a) 320 m/s
(b) 330 m/s
(c) 340 m/s
(d) data insufficient

Q44. A charged particle moves along a circle under the action of magnetic and electric fields, then this region of space may have
(a) E = 0, B = 0
(b) E = 0, B ≠ 0
(c) E ≠ 0, B = 0
(d) E ≠ 0, B ≠ 0

Q45. The amplification produced by a triode is due to the action of
(a) filament
(b) cathode
(c) grid
(d) plate

Q46. A concave mirror having a radius of curvature 40 cm is placed in front of an illuminated point source at a distance of 30 cm from it. Find the location of the image.
(a) 50 cm from the mirror on the side of the object
(b) 60 cm from the mirror on the side of the object
(c) 30 cm from the mirror on the side of the object
(d) 40 cm from the mirror on the side of the object

Q47. A sphere of mass 2 kg strikes another sphere of mass 3 kg at rest with a velocity of 5 m/s. If they move together after collision, what is their common velocity?
(a) 5 m/s
(b) 6 m/s
(c) 1 m/s
(d) 2 m/s

Q48. Water is mostly treated with chlorine:
(a) To kill harmful micro-organisms
(b) To decrease BOD
(c) To decrease COD
(d) To increase DO

Q49. Blood is red in colour due to the presence of _____ .
(a) Cytochrome
(b) Chlorophyll
(c) Hemocyanin
(d) Haemoglobin

Q50. Which is used as an Air pollution indicator?
(a) Algae
(b) Fungi
(c) Bacteria
(d) Lichens

Solutions

S1. Ans.(b)
Sol. Potassium carbonate is the inorganic compound with the formula K_2CO_3. It is a white salt, which is soluble in water. It is deliquescent, often appearing as a damp or wet solid. Potassium carbonate is mainly used in the production of soap and glass.

S2. Ans.(b)
Sol. Vegetable ghee is manufactured by hardening vegetable oils through a process of hydrogenation.
H2C = CH2 + H2→C2H6H2C = CH2 + H2→C2H6
The above reaction is a simple hydrogenation reaction. Hydrogenation reaction of unsaturated fatty acids is basically the reaction where the hydrogen gets added in the double bond of the alkene or alkyne in presence of nickel. Nickel acts like a catalyst in solid state.

S3. Ans.(c)
Sol. The colors in fireworks are created by the use of metal salts. Metal salts commonly used in firework displays include: strontium carbonate (red fireworks), calcium chloride (orange fireworks), sodium nitrate (yellow fireworks), barium chloride (green fireworks) and copper chloride (blue fireworks).

S4. Ans.(b)
Sol. The term Tyndall effect is generally applied with the effect of light scattering on particles in colloid systems.

S5. Ans.(c)
Sol. Helium, Xenon, Neon are inert gases. Inert gases are the chemical elements which are having a very stable configuration. That is inert gases will be having octet valence electrons in its outermost shell. . Inert gases can also be referred to as noble gases.

S6. Ans.(d)
Sol. A mixture of acetone and alcohol can be separated by fractional distillation. Fractional distillation is the separation of a mixture into its component parts, or fractions. Chemical compounds are separated by heating them to a temperature at which one or more fractions of the mixture will vaporize. It uses distillation to fractionate.

S7. Ans.(a)
Sol. Formaldehyde solution is an emulsifier which is added in the milk as it acts as a preserving agent for the milk. It kills most of the bacteria and fungi present in the solution. As it kills the microbes present in the solution, we can use it as preservative so that it will not allow the microorganisms to grow in the milk and as a result we can preserve for longer times.

S8. Ans.(b)
Sol. It is a form of polyester. The full form of PET is polyethylene terephthalate. It is used for making bottles, containers, wires, utensils, jars, etc.

S9. Ans.(b)
Sol. Bronchitis. Elevated levels of nitrogen dioxide can cause damage to the human respiratory tract and increase a person's vulnerability to, and the severity of, respiratory infections and asthma. Nitrogen dioxide can fade and discolor furnishings and fabrics, reduce visibility, and react with surfaces.

S10. Ans.(d)
Sol. Cytosilicosis is a form of occupational lung disease caused by inhalation of crystalline silica dust and is marked by inflammation and scarring in the form of nodular lesions in the upper lobes of the lungs.

S11. Ans.(b)
Sol. Squirrels, Rabbits, and Rodents have teeth that never stop growing. They have to chew on tough foods like nuts, leaves, and bark to wear down their teeth and keep them from growing too long.

S12. Ans.(b)
Sol. Quinine is a medication used to treat malaria and babesiosis. Quinine was first isolated in 1820 from the bark of a cinchona tree. It is an antimalarial drug that is made from Cinchona bark.

S13. Ans.(b)
Sol. The poisonous teeth of snakes are called fangs.

S14. Ans.(c)
Sol. Vermicomposting is the process by which worms are used to convert organic materials into a humus-like material known as vermicompost.

S15. Ans.(c)
Sol. A pashmina variety of wool is obtained from a Changthangi goat or a Pashmina goat which are a special breed of goats found in the high altitude regions of Nepal and India.

S16. Ans.(b)
Sol. The correct answer is Endoplasmic Reticulum. The endoplasmic reticulum remains in continuation with the outer nuclear wall. It is because when a cell makes proteins, it transcribes mRNA from the DNA located inside the nucleus. The mRNA that is made is then Carried out of the nucleus into the RER (rough endoplasmic reticulum).

S17. Ans.(a)
Sol. The correct answer is Gynoecium.
The female reproductive part of the flower is the gynoecium (also called pistil). Ovules arise from meristematic tissue within the gynoecium. Upon fertilization, these ovules develop into seeds while the gynoecium turns into a fruit.

S18. Ans.(b)
Sol. The correct answer is Lewis.
The first description of covalent bonding was provided by Lewis in terms of the sharing of electron pairs between atoms and he related the process to the attainment of noble gas configurations by reacting atoms as a result of sharing of electrons. The Lewis dot symbols show the number of valence electrons of the atoms of a given element and Lewis dot structures shows pictorial representations of bonding in molecules.

S19. Ans.(a)
Sol. The correct answer is F.
Fluorine always shows a -1 oxidation state as it is the most electronegative element. It has seven valence electrons and gains one valence electron to complete its octet. This gives a -1 oxidation state to fluorine.

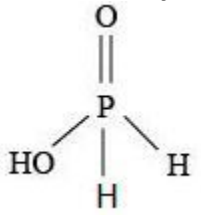
S20. Ans.(d)
Sol. The correct answer is Both I and II.
Indicators are the substances that are used to identify whether the given substance is an acid or a base.
There are two types of indicators:
Natural : These indicators are obtained from natural sources like plants. Turmeric, litmus, china rose petals, etc., are some of the naturally occurring indicators.

S21. Ans.(d)
Sol. The correct answer is electronic configuration.
The properties of an element in the periodic table depend on electronic configuration. The chemical properties of each element are determined by the element's electronic configuration, and particularly by its outermost valence electrons. An element's location in the periodic table is largely dependent on its electron; the number of valence shell electrons determines its group, and the type of orbital in which the valence electrons lie determines the element' block. In addition, the total number of electrons shells an atom determines which period it belongs to. Because of its structure, the periodic table has become an extremely useful tool for assessing and predicting elemental and chemical trends.

S22. Ans.(d)
Sol. The correct answer is (D) and (E).
Guard cells: Guard cells are specialized cells found in the epidermis of a leaf. They surrounded and regulate the opening and closing of stomata, which are tiny pores present on the leaf's surface. The stomata are responsible for gas exchange, allowing carbon dioxide to enter the leaf for photosynthesis and releasing oxygen and water vapor. Therefore, guard cells are indeed found in the section of a leaf.
Stoma: As mentioned above, stomata are small pores present in the epidermis of a leaf. They allow the exchange of gases between the leaf and the atmosphere. Stomata are surrounded by the guard cells that regulate their opening and closing. Thus, stomata are indeed found in the section of a leaf.
Chlorophyll: Chlorophyll is the green pigment found in chloroplasts, which are organelles within plant cells responsible for photosynthesis. Chloroplasts are mainly found in the mesophyll cells of a leaf, which are located between the upper and lower epidermis. Chlorophyll plays a crucial role in capturing light energy to facilitate photosynthesis. Therefore, chlorophyll is indeed found in the section of a leaf.
Pseudopodia: Pseudopodia are temporary projections of the cytoplasm in certain eukaryotic cells, such as amoeba, used or locomotion and capturing prey. However, pseudopodia are not found in the section of a leaf. They are specific to certain single-celled organisms and not a feature of plant cells.
Xylem: Xylem is a type of tissue in vascular plants that transports water and some nutrients. While the xylem is found in the plant's stem and root, it doesn't directly exist in the leaf structure, though leaf veins contain extensions of the stem's xylem. So it's a bit more ambiguous.

S23. Ans.(b)
Sol. The correct answer is Anabaena.
Anabaena is not a eukaryotic but a prokaryotic cell. These are the Eubacteria (true bacteria) and belong to the Kingdom Monera. Anabaena is a unicellular, filamentous or colonial, nitrogen-fixing, and autotrophic genus of Cyanobacteria. It is used as a nitrogen fertilizer. They possess specialized cells called heterocysts, that can fix atmospheric nitrogen. Anabaena has a symbiotic association with the fern Azolla, which fern provides a habitat to Anabaena and nitrogen is provided by Anabaena to the Azolla.

S24. Ans.(a)
Sol. The correct chemical formula for Phosphinic acid or Hypophosphorous acid is H_3PO_2.
H_3PO_2 is named as hypophosphorous acid. As it contains only one P–OH group, its basicity is one.



S25. Ans.(b)
Sol. The correct answer is Wagai M. Matthai.
Wangari Maathai (1940-2011) was the founder of the Green Belt Movement and the 2004 Nobel Peace Prize Laureate. Wangari Maathai was awarded the Nobel Peace Prize in 2004.

S26. Ans.(d)
Sol. The correct answer is Vitamin B12.
Vitamin B12–deficiency anaemia, also known as cobalamin deficiency, is a condition that develops when your body can't make enough healthy red blood cells because it doesn't have enough vitamin B12. Your body needs vitamin B12 to make healthy red blood cells , white blood cells , and platelets .

S27. Ans.(c)
Sol. The correct answer is Motion.
Motion is the process of moving or being moved, as well as a change in the position of an item. The term "body in motion" refers to when a body's location in relation to its environment changes.

S28. Ans.(c)
Sol. The correct answer is Coal.
Coal, natural gas and crude oil are called as fossil fuels. They are regarded as non-renewable source because it takes millions of years to form and once these resources are used, they cannot be regained.

S29. Ans.(c)
Sol. The correct answer is Leadership in Energy and Environmental Design.
Leadership in Energy and Environmental Design, more commonly known as LEED, is an environmentally oriented building certification program run by the U.S. Green Building Council (USGBC). It aims to improve building and construction project performance across seven areas of environmental and human health:
1. Use of integrative processes.
2. Location and transportation.
3. Sustainable building site development.
4. Water efficiency.
5. Energy efficiency.
6. Materials and resources selection.
7. Indoor environmental quality.

S30. Ans.(a)
Sol. 2 protons and 2 neutrons only
α - particle is nucleus of Helium which has two protons and two neutrons.

S31. Ans.(c)
Sol. Arsenic has the highest electronegativity of the given elements.

S32. Ans.(b)
Sol. Tramadol is used to treat moderate to moderately severe pain.

S33. Ans.(c)
Sol. Neoprene is a family of synthetic rubbers that are produced by the polymerization of chloroprene. Neoprene exhibits good chemical stability and maintains flexibility over a wide temperature range.

S34. Ans.(b)
Sol. Pedalfer is composed of the high amount of aluminum and iron oxides. It is a subdivision of the zonal soil order comprising a large group of soils in which sesquioxides increase relative to silica during soil formation. Pedalfers usually occur in humid areas.

S35. Ans.(d)
Sol. Noble Gases are all odorless, colorless, monatomic gases with very low chemical reactivity.The six noble gases that occur naturally are helium (He), neon (Ne), argon (Ar), krypton (Kr), xenon (Xe), and radioactive radon (Rn).

S36. Ans.(b)
Sol. Turmeric is obtained from the stem of the plant.

S37. Ans.(b)
Sol. Camels have some special abilities which enable them to walk for a long distance over sandy desert hills when there is neither water nor vegetation. That is why it is called "Ship of Desert". A camel can drink more than 100 litre of water at once and store it in their intestine for future needs.

S38. Ans.(c)
Sol. Opium is dried latex. The dried latex is obtained from the unripe fruit, by making shallow cuts.

S39. Ans.(d)
Sol. Thiamine (Vitamin B_1) is a water-soluble vitamin that is necessary for carbohydrate and amino acid metabolism.

S40. Ans.(a)
Sol. The normal range in men is approximately 4.7 to 6.1 million cells/ul.

S41. Ans.(d)
Sol. Energy and linear momentum

S42. Ans.(b)
Sol. Loudness depends upon intensity while pitch depends upon frequency.

S43. Ans.(d)
Sol. The observed and emitted frequencies are required for calculating the velocity of sound.

S44. Ans.(b)
Sol. A charged particle moves in a straight line under the action of an electric field whereas it moves in a circular path under the action of a magnetic field. Thus, for the particle moving in a circular path, E = 0, B ≠ 0.

S45. Ans.(c)
Sol. The amplification produced by a triode is due to the action of grid.

S46. Ans.(b)
Sol.
Given, Radius of curvature of concave mirror (R) = -40cm
So, focus = R/2 = -40/2 = -20 cm
Object is placed in front of mirrou (u) = -30 cm
Image positive (v) = ?
We know that,

$$\frac{1}{f}=\frac{1}{u}+\frac{1}{v}$$

Or, $\frac{1}{v}=\frac{1}{f}-\frac{1}{u}$

Or, $\frac{1}{v}=\frac{1}{-20}-\frac{1}{-30}=\frac{-3+2}{60}=-\frac{1}{60}$

$\frac{1}{v}=-\frac{1}{60}$

Or, v = -60 cm
The image is formed at 60 cm in front of mirror or on the side of object.

S47. Ans.(d)
Sol. Given,
M1 = 2 kg, m2 = 3 kg, u1 = 5 m/s, u2 = 0 m/s
Let the common velocity of the combined body be V m/s
Mass of combined body M = 2 + 3 = 5 kg
Applying conservation of momentum:
M1v1 + m2v2 = MV
Or, (2x5) + (3x0) = 5V
Or, 10 – 0 = 5V
Or, V = 2 m/s
Hence, the combined velocity of both the spheres is 2 m/s

S48. Ans.(a)

Sol. As a halogen, chlorine is a highly efficient disinfectant, and is added to public water supplies to kill disease – causing pathogens, such as bacteria, viruses and protozoans, that commonly grow in water supply reservoirs, on the walls of water mains and in storage tanks.

Hence, water is treated with chlorine to kill harmful micro-organism.

S49. Ans.(d)

Sol. Blood is red in colour due to the presence of Haemoglobin.

S50. Ans.(d)

Sol. Lichens are widely used as environmental indicators or bio-indicators. Because of their sensitivity lichens are particularly significant biological indicators of air pollution.