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OLYMPIAD EXPLORER



Workbook for
**Nationwide Interactive SCIENCE Olympiad & Other
National/International Olympiads/Talent Search Exams.**

Also useful for Nationwide Biotechnology Olympiad (NBTO)

Based on CBSE, ICSE, GCSE, State Board Syllabus & NCF (NCERT)

100's of Q's with answers

- Chapterwise Practice Q's
- Revision Q's
- Sample Paper



Class

9

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SYLLABUS GUIDELINES*

**Based on CBSE, ICSE & GCSE Syllabus
& NCF guidelines devised by NCERT**

Matter in our surroundings –

Characteristics and states of matter, Change of state and Evaporation

The fundamental unit of Life – Structure of a cell, cell organelles

Motion – Uniform and Non-Uniform motion, distance-displacement, velocity and acceleration

Is matter around us pure –

Mixtures, types of mixtures, solution, colloids, suspension

Methods of separation of mixtures, compounds, element, physical and chemical change

Tissues –

Types of plant tissues and animal tissues

Force and Laws of Motion –

Force, definition and its effects, three laws of motion, mass, Inertia and conservation of momentum

Atoms and Molecules –

Laws of Chemical combination, Definition of atoms and molecules, Chemical formulae.

Diversity In Living Organisms – Classification of plants

Classification of animals and nomenclature.

Gravitation –

Universal law of gravitation, free - fall, mass and weight.

Thrust and pressure, Archimedes principle, relative density.

Structure of Atom –

Atomic number, Mass number, Valency, Isotopes and Isobars

Electronic Distribution – Rutherford's Model and Bohr Model.

Diseases and its causes

Infectious and Non-infectious diseases,

Principles of treatment and prevention

Work and Energy –

Work done by a force, power and energy

Kinetic energy and potential energy, laws of conservation of energy

Natural Resources –

Air, water and soil, pollution of air and water.

Nitrogen Cycle, Carbon cycle, Water cycle, Oxygen cycle, Green House Effect, Ozone layer.

Sound –

Propagation of sound – longitudinal and transverse waves.

Characteristics of sound waves, structure of human ear (qualitative), Multiple reflection of sound application of ultrasound

Improvement in food resources –

Improvement in crop yield, Manure and fertilizers, cropping patterns, animal husbandry, poultry and fish farming, bee-keeping.



- Q.1.** The temperature at which celsius and fahrenheit scales shows the same reading is:
(a) 40°K (b) 100°F
(c) -40°C (d) -100°C
- Q.2.** Match the following and choose the correct answer:
- | Column-I | Column-II |
|-----------|--|
| A. Solid | i Super energetic particles. |
| B. Liquid | ii Neither shape nor fixed volume at a given pressure. |
| C. Gas | iii Has definite shape. |
| D. Plasma | iv No definite shape with less molecular forces than that in solids. |
- (a) A - i, B - ii, C - iii, D - iv
(b) A - iii, B - iv, C - ii, D - i
(c) A - iii, B - iv, C - i, D - ii
(d) A - i, B - iv, C - ii, D - iii
- Q.3.** Which is more effective in cooling?
(a) Water at 0°C (b) Water at 100°C
(c) Ice at 0°C (d) All of these
- Q.4.** Which of the following is not a solid?
(a) Honey (b) Cotton wool
(c) Flour (d) Plasticine
- Q.5.** What type of clothes are comfortable for us in summer?
(a) Silk clothes (b) Cotton clothes
(c) Leather clothes (d) Rayon clothes
- Q.6.** Which of the following uses compressed air?
(a) Car tyres (b) Aerosol cans
(c) Air guns (d) All of these
- Q.7.** 250 ml milk + 770 cubic meter milk =
(a) 1020 ml (b) 1020 cubic meters
(c) 250.00077 ml (d) 770.00025 cubic meters
- Q.8.** Which of the following will diffuse faster?
(a) A drop of ink in water. (b) Oxygen in nitrogen.
(c) Milk in water. (d) Sugar in salt.
- Q.9.** Astha filled 1L of air in jar of capacity 750 ml. Volume of air in jar is

- (a) 1000 mL (b) 750 mL
(c) 250 mL (d) 875 mL
- Q.10.** On heating temperature of the system does not change
(a) After the melting point is reached, till the entire solid melts.
(b) Before the melting point is reached, till all of the solid melts.
(c) Till solid completely changes into vapour.
(d) When thermometer is faulty.
- Q.11.** Which of following statement is true?
(a) Energy of particles in steam at 373 K > Energy of particles in water at 373K
(b) Energy of particles in steam at 373 K < Energy of particles in water at 373 K
(c) Energy of particles in steam at 373 K = Energy of particles in water at 373 K
(d) None of these
- Q.12.** Which of the following sublimates on heating?
(a) Ice (b) Dry ice
(c) Both (a) and (b) (d) None of these
- Q.13.** Melting points of four solids A, B, C & D are 773°C, 826°C, 932K and 1238°C respectively. Which of these has strongest force of attraction between its particles?
(a) A (b) B
(c) C (d) D
- Q.14.** Rate of evaporation is highest in
(a) An open vessel of diameter 25 cm.
(b) An open vessel of diameter 30 cm.
(c) An open vessel of diameter 27.5 cm.
(d) An open vessel of radius 25 cm.
- Q.15.** Evaporation
(A) Makes the surrounding cold.
(B) Makes the surrounding hot.
(C) Does not affect the surroundings.
(D) Makes the surrounding sometimes cold and sometimes hot.
- Q.16.** A liquid is different from a solid in that it has
(a) A definite shape. (b) A definite volume.
(c) No definite shape. (d) No definite volume
- Q.17.** Which of the following state of matter consists of super

- energetic and super excited particles in the form of ionized gases?
(a) Solid (b) Liquid
(c) Plasma (d) Bose Einstein Condensate
- Q.18.** Which of the following statements is false?
(a) The states of matter are inter-convertible.
(b) Evaporation is a surface phenomenon.
(c) Kinetic energy of the particles is minimum in case of solids.
(d) The arrangement of particles is most ordered in the case of liquids.
- Q.19.** On heating, kinetic energy of the molecules:
(a) Decreases
(b) Increases
(c) Either decreases or increases
(d) Remains same
- Q.20.** Name the chemical present in nail polish remover that evaporates quickly to give cooling effect.
(a) Water (b) Acetic acid
(c) Acetone (d) Alcohol
- Q.21.** Choose the false statement:
(a) Liquids have definite volume but no definite shape
(b) Gases are more compressible than liquids
(c) Rate of diffusion is highest in liquids
(d) Increase in pressure changes liquids to solids
- Q.22.** Which one of the following is a property of both liquids & gases?
(a) Definite shape (b) Definite volume
(c) Viscosity (d) High inter molecular interaction
- Q.23.** Which of the following is considered as normal atmospheric pressure?
(a) 1 atmosphere (b) 1.01×10^5 pa
(c) Both (a) and (b) (d) None of these
- Q.24.** Which of the following is neither an element nor a compound?
(a) Water (b) Gold
(c) Glucose (d) Air
- Q.25.** The formation of a chemical compound is accompanied with
(a) Liberation of energy (b) Absorption of energy
(c) Either liberation or absorption of energy
(d) Changes in thermal energy

- Q.26.** The smallest possible unit of a chemical compound is
 (a) An electron (b) An ion
 (c) An atom (d) A molecule
- Q.27.** Compounds may be formed by
 (a) Decomposition of other compounds
 (b) Combination of elements
 (c) Combination of compounds
 (d) All of the above methods
- Q.28.** A mixture of water and sodium chloride can be separated by
 (a) Decantation (b) Sedimentation
 (c) Simple distillation (d) Fractional distillation
- Q.29.** Ethyl alcohol is completely miscible with water. It can be separated from a mixture of the two liquids by
 (a) Using a separating funnel
 (b) Evaporation
 (c) Fractional distillation
 (d) Allowing the water to evaporate
- Q.30.** Separation of two solids by fractional crystallization depends on the difference in their
 (a) Densities (b) Solubilities
 (c) Crystalline shapes (d) Crystal size
- Q.31.** When a mixture of sand, common salt, glass powder, and iodine is heated, the sublimate is
 (a) Iodine (b) Glass powder
 (c) Common salt (d) Sand
- Q.32.** Which of the following is amorphous?
 (a) Sodium chloride (b) Glass
 (c) Powdered marble (d) Copper



ANSWERS

1. (c) 2. (b) 3. (c) 4. (a) 5. (b) 6. (d) 7. (d) 8. (b)
 9. (b) 10. (a) 11. (a) 12. (b) 13. (d) 14. (d) 15. (a) 16. (c)
 17. (c) 18. (d) 19. (b) 20. (c) 21. (c) 22. (c) 23. (c) 24. (d)
 25. (c) 26. (d) 27. (d) 28. (c) 29. (c) 30. (b) 31. (a) 32. (b)



Chapter 2 ATOMS AND MOLECULES

- Q.1.** When a paper is burnt it is considered a chemical change because
 (a) The change is permanent.
 (b) There is no change in mass.
 (c) The chemical composition changes.
 (d) Both (a) and (c)
- Q.2.** An aqueous solution at room temperature was heated and some more solute was added to it. It was observed that after sometime solution could not dissolve any more of the solute. The solution is then cooled. The solution now formed is called
 (a) Saturated solution. (b) Super saturated solution.
 (c) Unsaturated solution. (d) Homogeneous solution.
- Q.3.** A mixture of iron filings and sulphur powder can be separated using
 (a) A magnet
 (b) Handpicking
 (c) Carbon disulphide solution
 (d) Both (a) and (c)
- Q.4.** A mixture of chalk powder and water can be separated using the technique of filtration because
 (a) Chalk powder remains suspended in water.
 (b) They form a miscible solution.
 (c) The mixture can easily pass through filter paper
 (d) Water acts as a good solvent.
- Q.5.** The necessary condition for separation of the components of a mixture regarding the boiling points of the components of a mixture of two or more miscible liquids is
 (a) Their boiling points should be same
 (b) Their boiling points should be less than 373 K.
 (c) Their boiling points should differ by 25 K.
 (d) The boiling point of one of the component should be 373 K.
- Q.6.** To check whether a given aqueous salt solution is saturated or unsaturated, we will
 (a) Heat the solution (b) Cool the solution

- (c) Add more water to the solution
(d) Add more salt to the solution.
- Q.7.** A mixture of salt and iodine is heated in a china dish. A few minutes later it is observed that
- (a) The mixture starts melting.
(b) Salt is left behind in the dish.
(c) Iodine is left behind.
(d) Nothing happens.
- Q.8.** Crystallization is considered better than evaporation for obtaining pure crystal of sugar because
- (a) On heating sugar can get charred
(b) Sugar particles will evaporate.
(c) Sugar particles will decompose.
(d) Sugar particles will melt
- Q.9.** Which is the only metal that exists in liquid state at room temperature?
- (a) Sodium (b) Mercury
(c) Germanium (d) Gallium
- Q.10.** Why is inter-conversion of states of matter considered physical change?
- (a) Because state changes from one form to another.
(b) Because a change in temperature is required.
(c) Because the chemical composition of the substance remains unchanged.
(d) Because they have same physical properties.
- Q.11.** Separating cream from milk is done using
- (a) Filtration (b) Centrifugation machine
(c) Evaporation (d) Boiling
- Q.12.** The dispersed phase of a colloid is similar to _____ of a solution.
- (a) Solute (b) Solvent
(c) Solubility (d) Concentration
- Q.13.** A mixture
- (a) Has a fixed composition.
(b) Does not have a fixed melting point.
(c) Has a fixed melting point.
(d) Is a pure substance.
- Q.14.** When a suspension is left undisturbed for some time
- (a) Some larger solute particles settle down at the bottom.

- (b) All the solute particles settle down.
(c) It absorbs the light rays passing through it.
(d) It turns into a true solution.
- Q.15.** The concentration of solute particles remains same throughout in
- (a) Homogeneous mixture (b) Heterogeneous mixture
(c) Suspension (d) Both (a) and (b)
- Q.16.** The size of particles in a true solution is less than
- (a) 10^{-10}m (b) 10^{-8}m
(c) 10^{-7}m (d) 10^{-9}m
- Q.17.** The necessary condition to be specified while expressing solubility is
- (a) Temperature (b) Pressure
(c) Boiling point (d) Atomic number of solute
- Q.18.** The principle behind fractional distillation technique in separation of two liquids is
- (a) Difference in Melting point
(b) Difference in Boiling point
(c) Difference in Concentration
(d) Difference in Solubility
- Q.19.** Solubility of a gas in a liquid increases on
- (a) Increasing temperature.
(b) Decreasing pressure.
(c) Increasing pressure.
(d) No effect of temperature and pressure.
- Q.20.** The non-metal which is liquid at room temperature is -
- (a) Chlorine (b) Bromine
(c) Iodine (d) Fluorine
- Q.21.** Soap solution is an example of
- (a) Sol (b) Foam
(c) Emulsion (d) Gel
- Q.22.** Solvent in air is
- (a) Nitrogen (b) Oxygen
(c) Carbon Dioxide (d) Argon
- Q.23.** Dispersed phase and dispersion medium in a jelly are ___ and ___, respectively.
- (a) Solid, liquid (b) Liquid, solid
(c) Solid, solid (d) Liquid, Liquid

- Q.24.** Which one of the following will show Tyndall effect?
 (a) Smoke (b) Salt solution
 (c) Alloys (d) Aerated drinks
- Q.25.** What type of solution are alloys?
 (a) Solids in liquids (b) Liquids in solids
 (c) Solids in solids (d) Liquids in liquids
- Q.26.** Separation technique used for two or more miscible liquids having difference in their boiling points
 (a) Centrifugation (b) Evaporation
 (c) Chromatography (d) Fractional distillation
- Q.27.** Name the metal that can be cut by knife
 (a) Hg (b) Al
 (c) Fe (d) Na
- Q.28.** Metals are ductile. This means:
 (a) Metals can be drawn into wires
 (b) Metals can be hammered into sheets
 (c) Metals produce ringing sound
 (d) Metals are good conductors
- Q.29.** Which of the following is a poor conductor of heat and electricity?
 (a) Copper (b) Silver
 (c) Gold (d) Carbon
- Q.30.** An atom is made up of negatively charged electrons and positively charged protons, still it is electrically neutral. The reason is
 (a) The electrons and protons are equal in number so no net charge is present
 (b) The neutrons neutralize the charge and made the atom neutral
 (c) The charge on the atom is too small to be detected
 (d) Both (a) and (b)
- Q.31.** When calcium metal (Ca) changes to calcium ion (Ca^{2+}) the number of electrons protons and neutrons
 (a) Number of neutrons remains the same while the number of both protons and electrons changes.
 (b) Number of neutrons and protons remains same while the number of electrons decreases by 2.
 (c) All the three particles remain unchanged.
 (d) Number of neutrons and electrons remains the same while number of protons increases by 2.

- Q.32.** The number of atoms present in 0.4 mole of Calcium (Ca) are
 (a) 2.408×10^{23} (b) 24.08×10^{23}
 (c) 2.408×10^{24} (d) 6.022×10^{23}
- Q.33.** An element A forms an oxide A_2O_3 , the valency of A is
 (a) 2 (b) 3
 (c) 5 (d) 1
- Q.34.** Formula mass of ammonium sulphate $(\text{NH}_4)_2\text{SO}_4$ is
 (a) 114u (b) 132u
 (c) 120u (d) 142u
- Q.35.** The chemical formula of Phosphorus and Sulphur are respectively:
 (a) P_4 and S (b) P_3 and S_8
 (c) P_4 and S_8 (d) P_4 and S_6
- Q.36.** Which of the following gases can exist in atomic form?
 (a) Oxygen (O) (b) Neon (Ne)
 (c) Hydrogen (H) (d) Nitrogen (N)
- Q.37.** Law of Constant Proportion was given by
 (a) Newton (b) Rutherford
 (c) Lavoisier (d) Proust
- Q.38.** 1 mole of NH_3 molecules contains
 (a) 6.022×10^{23} NH_3 molecules
 (b) 6.022×10^{22} NH_3 atoms
 (c) 6.022×10^{23} NH_3 atoms
 (d) 6.022×10^{22} NH_3 molecules
- Q.39.** Valencies exhibited by iron are
 (a) 2 and 3 (b) 1 and 3
 (c) 1, 2 and 3 (d) 1 and 2
- Q.40.** Cation is formed due to
 (a) Gain of electrons (b) Loss of protons
 (c) Loss of electrons (d) Gain of protons



ANSWERS

1. (d) 2. (b) 3. (d) 4. (a) 5. (c) 6. (d) 7. (b) 8. (a)
 9. (b) 10. (c) 11. (b) 12. (a) 13. (b) 14. (b) 15. (a) 16. (d)
 17. (a) 18. (b) 19. (c) 20. (b) 21. (c) 22. (a) 23. (b) 24. (a)
 25. (c) 26. (d) 27. (d) 28. (a) 29. (d) 30. (a) 31. (b) 32. (a)
 33. (b) 34. (b) 35. (c) 36. (b) 37. (c) 38. (a) 39. (a) 40. (c)



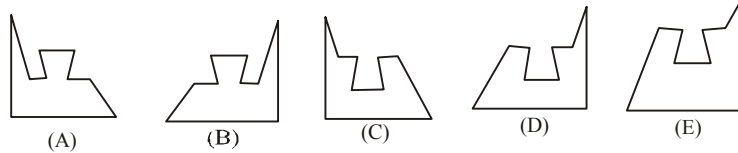
NATIONWIDE INTERACTIVE SCIENCE OLYMPIAD (NISO) SAMPLE PAPER

Total duration : 60 Minutes

Total Marks : 50

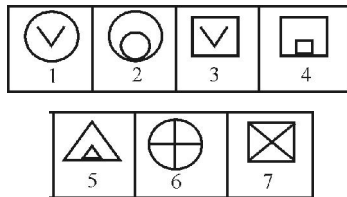
GENERAL I.Q.

- Starting from a point **P**, Sachin walked 20 metres towards South. He turned left and walked 30 metres. He then turned left and walked 20 metres. He again turned left and walked 40 metres and reached a point **Q**. How far and in which direction is the point **Q** from the point **P**?
 (a) 20 Metres West (b) 10 Metres East
 (c) 10 Metres West (d) None of these
- If out of 410 students, 240 study Spanish and 180 study French. If 25 students study neither language, how many study both?
 (a) 25 (b) 35 (c) 60 (d) None of these
- In the given question five alternative figures, marked (A), (B), (C), (D) and (E) are given. From these five figures, we can get two pairs of figures which form squares. You have to select the odd figure which does not fit in any of the other alternative figures to form a complete square.



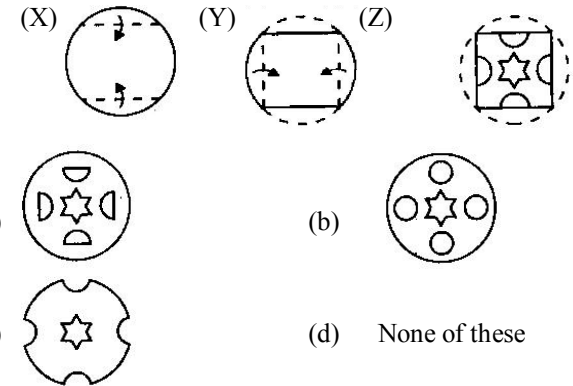
- (a) A (b) B (c) D (d) None of these

- In the given question, group the given figures into three classes using each figure only once.




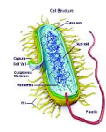


- (a) 1, 2, 6; 3, 4, 7; 5 (b) 1, 3; 2, 6; 4, 5, 7
 (c) 1, 2, 6, 7; 3; 4, 5 (d) None of these

- Following question contains a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures from which you have to choose a figure which would most closely resemble the unfolded form of Fig. (Z).

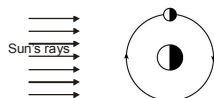


SCIENCE

- The instrument shown in figure is associated with which of the following agricultural process?
 (a) Irrigation (b) Harvesting
 (c) Ploughing (d) None of these
- From year to year, farmers rotate different crops in the fields to improve soil nutrients. Why is crop rotation also an effective pest management method?
 (a) It allows chemicals to kill more pests
 (b) It creates crops that are pest resistant
 (c) It interrupts the life cycles of pests
 (d) It allows pests to over populate
- Which of the following is a virus?
 (a)  (b)  (c)  (d) 
- Which of these will change solid iron to a liquid ?
 (a) Adding water to the iron (b) Raising the air pressure
 (c) Lowering its temperature (d) None of these
- Choose the correct match.

<i>Disease</i>	<i>Causative Organism</i>	<i>Transmission Mode</i>
(i) Tuberculosis	Bacteria	Mosquito
(ii) Typhoid	Bacteria	Water
(iii) Hepatitis B	Virus	Water
(iv) Malaria	Mosquito	Water/Food

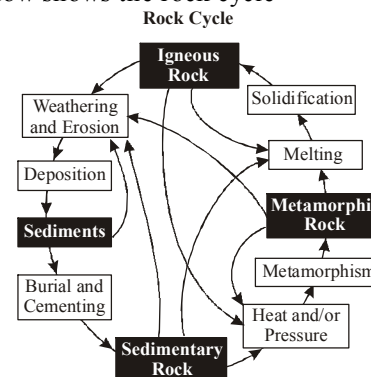
- (a) (i) and (iv) only (b) (i), (iii) and (iv) only
 (c) (ii) and (iii) only (d) None of these
11. BCG vaccine is given to prevent which of the following diseases?
 (a) Pertusis (b) Polio
 (c) Tuberculosis (d) Typhoid
12. Which of the statements is/are true for plastic?
 (i) It is non reactive
 (ii) It is light, strong and durable
 (iii) It is good conductor of heat and electricity
 (iv) It is eco-friendly
 (v) Thermoplastic can be recycled
 (a) (i) and (iv) only
 (b) (i), (ii) and (v) only
 (c) (i), (ii), (iii) and (v) only
 (d) None of these
13. When aluminium metal is dropped into sodium hydroxide solution, bringing a burning match stick near the mouth of the test tube gives a 'pop' sound. This is due to
 (a) Oxygen gas (b) Hydrogen gas
 (c) Burning of aluminium (d) None of these
14. Which of the following reaction can take place?
 (a) $\text{CuSO}_4 + \text{Zn} \rightarrow \text{ZnSO}_4 + \text{Cu}$
 (b) $\text{ZnSO}_4 + \text{Cu} \rightarrow \text{CuSO}_4 + \text{Zn}$
 (c) $\text{FeSO}_4 + \text{Cu} \rightarrow \text{CuSO}_4 + \text{Fe}$
 (d) $\text{ZnSO}_4 + \text{Fe} \rightarrow \text{FeSO}_4 + \text{Zn}$
15. Which of the following is also called 'Black Gold'?
 (a) Coal (b) Petroleum
 (c) Natural Gas (d) CNG
16. The diagram below shows the Moon revolving around Earth as viewed from space



What makes it possible to see the Moon from Earth?

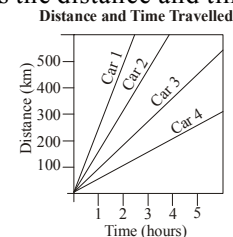
- (a) The surface of the Moon emits its own light, which can be seen from earth.
 (b) The Moon absorbs light during the day and emits light at night.
 (c) Light emitted by Earth illuminates the Moon's surface, making it visible.
 (d) Light emitted by the Sun is reflected to Earth's by the Moon's surface.

17. The diagram below shows the rock cycle



Which two processes result in the formation of igneous rocks?

- (a) Melting and solidification
 (b) Sedimentation and evaporation
 (c) Crystallization and cementation
 (d) Compression and precipitation
18. Fuels have to be heated to a temperature so as to catch fire. Which temperature is this ?
 (a) Ignition temperature (b) Combustion temperature
 (c) Flame temperature (d) Fuel temperature
19. Which of the following is/are green house gas/es?
 (i) Oxygen (ii) Methane
 (iii) Carbon-dioxide (iv) Nitrogen
 (a) (i), (ii), (iii) & (iv) (b) (ii) & (iii)
 (c) (i), (iii) & (iv) (d) None of these
20. Which of the following are example of reducing friction?
 (i) Using the brakes on a car
 (ii) Waxing skin
 (iii) Oiling the chain of a bike
 (iv) Using sandpaper
 (v) The grip areas on tennis racquets
 (vi) Putting on rough soled boots to go hillwalking
 (a) (i), (iv) & (vi) (b) (ii) & (iii)
 (c) (i), (v) & (vi) (d) None of these
21. The graph below shows the distance and time travelled by four cars.



Which car travelled the slowest?

- (a) Car 1 (b) Car 2 (c) Car 3 (d) Car 4

22. A force can affect an object in several ways. Tick all of the following that could occur as a result of a force being applied?

- (i) Change of direction that an object move in
 (ii) Change of mass of the object
 (iii) Change of shape of the object
 (iv) Change of size of the object
 (v) Change of speed of the object

- (a) (i), (ii) and (iv) (b) (i), (ii), (iv) and (v)
 (c) (i), (iii), (iv) and (v) (d) None of these

23. If a sound is high pitched and loud, the sound wave is

- (a) High frequency and high amplitude
 (b) High frequency and low amplitude
 (c) Low frequency and high amplitude
 (d) None of these

24. Potable water is the term used for

- (a) Water which is suitable for drinking
 (b) Water which is suitable for irrigation
 (c) Water which is used for performing chemical reaction
 (d) None of these

25. What does a Red data book include ?

- (a) Records of all migrated birds and animals
 (b) Records of all the endangered animals and plants
 (c) Records of all endemic species of animals and plants
 (d) None of these

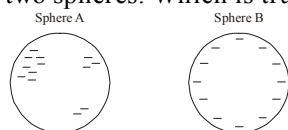
26. A concave lens is generally known as

- (a) Converging lens (b) Diverging lens
 (c) Contact lens (d) Magnifying lens

27. The virus '*Varicella zoster*' is responsible for which of the following diseases?

- (a) Rabies (b) Chicken pox
 (c) Hepatitis B (d) Viral fever

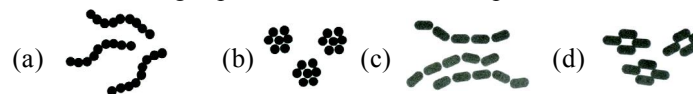
28. One of these isolated charged spheres is copper and the other is rubber. The diagram below depicts the distribution of excess negative charge over the surface of two spheres. Which is true in the given options?



- (a) Sphere A is copper and sphere B is rubber
 (b) Sphere A is rubber and sphere B is copper
 (c) Both are copper, rubber is not present
 (d) None of these

29. Streptococcus bacteria are spherical in shape and form chains of colonies.

Which drawing represents colonies of Streptococcus?



30. An iron rod can be used as the core of an electromagnet. The statement is

- (a) True (b) False (c) Can't say (d) None of these

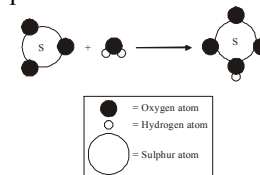
31. Which of the following explains why legume plants are less likely than other terrestrial plants to experience nitrogen limitations?

- (a) Legume plants need less nitrogen than other plants do
 (b) Legume plants have nitrogen fixing bacteria in their roots.
 (c) Legume plants catch insects to supply themselves with nitrogen.
 (d) Legume plants can absorb nitrogen directly from the atmosphere

32. What may occur as a direct result of volcanic eruptions?

- (a) The formation of new land
 (b) New sources of fresh water
 (c) A permanent rise in sea level
 (d) None of these

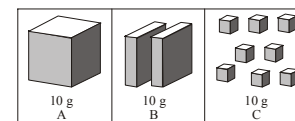
33. The figure below represents a reaction.



What type of reaction is shown?

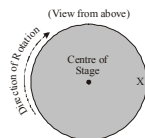
- (a) Synthesis (b) Decomposition
 (c) Single displacement (d) Double displacement

34. Three 10 g samples of sugar are represented below:



Sample A dissolves in water more slowly than sample B. Sample B dissolves more slowly than sample C. Which of the following best explains why sample A dissolves most slowly?

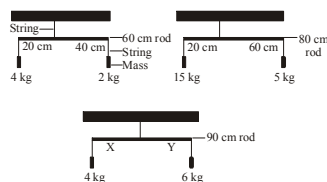
- (a) It has the most volume
 (b) It has the smallest surface area
 (c) It has the largest number of sugar molecules
 (d) It has the fewest bonds between sugar molecules
35. As a diver goes deeper underwater, the diver must be aware that the increased pressure affects the human body by increasing the
- (a) Body's temperature
 (b) Amount of dissolved gases in the body
 (c) Amount of suspended solids in the body
 (d) Concentrations of minerals in the body
36. The diagram shows an aerial view of a rotating stage. The actor (X) is moving at constant speed towards the centre of the stage. The stage rotates twice in the time it takes for the actor to reach the centre.



What is the path followed by the actor as viewed from above?

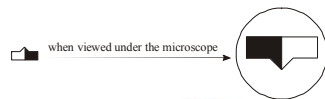
- (a) (b) (c) (d)

37. The sets of scales in the diagrams are balanced.



In order for the set of scales shown on the right to be balanced, the value of X must be

- (a) 24 cm (b) 36 cm (c) 45 cm (d) None of these
38. The diagram below shows how an object appears when viewed under a microscope.



A student wanted to view a cell under the microscope.

How will the cell appear?

- (a) (b) (c) (d) None of these

39. 1 Joule is mathematically equal to

- (a) 1 Newton \times 1 centimetre (b) 1 Newton \times 1 metre
 (c) 1 Newton / 1 metre (d) 1 Metre / 1 Newton.

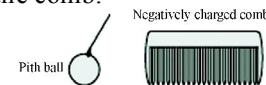
EduSys Interactive Learning

These questions are designed that they can be performed in the class / lab and can be used by the Coordinator Teacher to enhance understanding of basic science concepts.

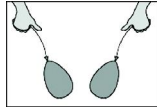
40. Who discovered microscope?
 (a) Charles Darwin (b) Sir Isaac Newton
 (c) Robert Hook (d) Anton Von Leeuwenhoek
41. Which of the following will definitely cause a change in the velocity of a parked car?
 (a) The car experiences an unbalanced force
 (b) All forces acting on the car increase by 1 N
 (c) All forces acting on the car decrease by 1 N
 (d) The forces acting on the car are equal and balanced
42. Which of the following is least likely to result in the generation of static charge?
 (a) Peeling plastic wrap off a CD case
 (b) Combing dry hair with a plastic comb
 (c) Rubbing one's shoes on a synthetic carpet
 (d) Drying one's body with a towel after a shower
43. The distance between Earth and Moon was determined by measuring the time it took for light waves from Earth to travel to the Moon and back. Why was it not possible to use sound waves for this experiment?
 (a) Sound waves must move through a substance
 (b) Sound waves would change frequency on the return to Earth
 (c) Sound waves move too slowly for the technique to be accurate
 (d) Sound waves move more slowly in Earth's atmosphere than in space
44. A student plans to investigate how sound changes when 4 bottles with different amount of liquid are struck with a mallet. In which order must the bottles be placed so that the sound changes from a low pitch to a high pitch ?
 (a) C, D, B, A (b) B, A, D, C (c) B, C, A, D (d) A, B, D, C

Use the following information to answer question 45.

A negatively charged comb is brought near a suspended pith ball and the pith ball is repelled by the comb.



45. The pith ball is positively charged.
- The statement is supported by the information.
 - The statement is refuted by the information.
 - The statement is neither supported nor refuted by the information
 - None of these
46. Two suspended balloons attract as shown when brought close together.



Which of the following conclusions **must** be true?

- Both balloons have similar charges.
 - One of the balloons is neutral.
 - The balloons have opposite charges.
 - At least one of the balloons has a charge.
47. An experiment is being done to determine how light affects the growth of three different types of pea plants. Pea of each type are planted in several cups, and the cups are labelled X, Y, Z to show the type of pea planted in each. Some cups are set in each of the three locations to receive different amount of lights. Which of the following best shows how the plant should be arranged for the experiment ?

- (a)

X	X	X
Location 1		

Y	Y	Y
Location 2		

Z	Z	Z
Location 3		
- (b)

X	Y
Location 1	

Y	Z
Location 2	

Z	X
Location 3	
- (c)

X	Y	Z
Location 1		

X	Y	Z
Location 2		

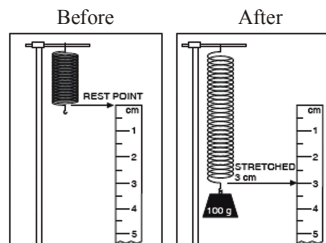
X	Y	Z
Location 3		
- (d)

X
Location 1

Y
Location 2

Z
Location 3

Base your answers to question 48 through 50 on the diagram and data table given below:



48. Relationship between mass attached to the end of the spring and length the spring is stretched is
- Mass attached and length of spring are directly proportional to each other.
 - Mass attached and length of spring are inversely proportional to each other
 - The spring gets longer if the mass increases, one depends on the other
 - Both (a) and (c)
49. Predict how many centimeters the spring will stretch if a total mass of 700 grams were attached.
- 19 cm
 - 21 cm
 - 25 cm
 - None of these
50. What mass would be needed to stretch the spring to a length of 60 cm?
- 500 gms
 - 2000 gms
 - 3000 gms
 - None of these

☺ END OF THE EXAM ☺

ANSWERS

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (c) | 2. (b) | 3. (c) | 4. (d) | 5. (b) |
| 6. (b) | 7. (c) | 8. (c) | 9. (d) | 10. (c) |
| 11. (c) | 12. (b) | 13. (b) | 14. (a) | 15. (b) |
| 16. (d) | 17. (a) | 18. (a) | 19. (b) | 20. (b) |
| 21. (d) | 22. (c) | 23. (b) | 24. (a) | 25. (b) |
| 26. (b) | 27. (b) | 28. (b) | 29. (a) | 30. (a) |
| 31. (c) | 32. (a) | 33. (a) | 34. (b) | 35. (b) |
| 36. (d) | 37. (d) | 38. (d) | 39. (b) | 40. (d) |
| 41. (a) | 42. (d) | 43. (a) | 44. (a) | 45. (b) |
| 46. (d) | 47. (a) | 48. (d) | 49. (b) | 50. (b) |

