



NSEJS 2024

Question-wise Chapter & Concept Analysis

STUDENT GUIDE FOR CLASSES 7, 8 AND 9

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BIOLOGY

20 questions

CHEMISTRY

20 questions

PHYSICS

20 questions

60 QUESTIONS | 120 MINUTES | 216 MARKS

Every question mapped to its chapter, main idea, concepts, skill and revision task

QUESTION 20 - DROPPED IN THE SUPPLIED FINAL KEY

The topic is still included for learning, but no option is treated as the official answer.

Student name: _____

Class: _____ Date: _____

How to use this analysis

This guide does not simply name a chapter. It tells you what each question is really testing and what a younger student should study before attempting it again.

Step 1 - Find the chapter

Write the chapter name beside the question in your paper. This turns a difficult-looking question into a familiar topic.

Step 2 - Find the skill

Notice whether the question needs memory, a diagram, a calculation, matching, a graph or statement-by-statement checking.

Step 3 - Repair the gap

Use the "What to revise" line as a small task. Return to the question only after completing that task.

Paper at a glance

Part	Questions	What the student must do
Section A-1	1-48	Choose one correct option. Accuracy and clear elimination matter.
Section A-2	49-60	One or more options may be correct. Check every statement independently.
Subject balance	20 each	Biology, Chemistry and Physics carry equal question weight.
Question 20	DROP	Study the chapter idea, but do not assign an official option or score.

The most important lesson from this paper

NSEJS does not test only Class 9 or 10 textbook facts. It joins school science with selected higher ideas, scientific vocabulary, diagrams, daily-life applications and multi-step reasoning. A Class 7 or 8 student should build the bridge slowly rather than trying to memorise every advanced answer.

Frequent question skills

Skill	Examples from the paper	Best practice method
Diagram and table reading	Brain, metabolic pathway, nucleosome, anther, wave graph, circuits	Cover the options first and explain every label in your own words.
Numerical modelling	Density, mole concept, acceleration, electricity, optics, echo	Write known data, unknown quantity, formula and unit before calculation.
Classification and matching	Animal groups, plants, algae, special biological structures	Use comparison tables rather than separate lists.
Multiple-correct checking	Questions 49-60	Judge option (a), then (b), then (c), then (d) as four separate true/false statements.

BIOLOGY - QUESTION-WISE ANALYSIS

Biology in this paper combines classification, anatomy, genetics, plant science, immunity and environmental awareness. Learn the meaning of each scientific term instead of memorising isolated answers.

Q1 Animal Kingdom - Metamerism

Concept + Recall

What the question checks: The question checks whether you know that metamerism means a body built from a row of repeated segments, and in which animal group this feature first became clear.

Concepts involved: Bilateral symmetry; true segmentation; evolutionary order of animal phyla; Annelida.

What to revise: Make a one-page table of major animal phyla, one key feature and two examples for each.

Q2 Evolution - Early Humans

Classification + Recall

What the question checks: You must separate early hominid stocks, prehistoric humans and modern human forms by reading fossil names carefully.

Concepts involved: Australopithecus; Homo habilis; Homo erectus; Neanderthals; fossil sequence in human evolution.

What to revise: Learn the broad timeline of human evolution and one important feature of each form.

Q3 Neural Control - Human Brain

Diagram + Matching

What the question checks: A labelled side-view of the brain must be matched with functions such as breathing control, homeostasis, coordination and communication between the two cerebral hemispheres.

Concepts involved: Pons; hypothalamus; cerebellum; corpus callosum; functions and disorders; reading a brain diagram.

What to revise: Practise a neat labelled brain diagram and write one simple function beside every major part.

Q4 Crop Protection and Pest Management

Applied Recall

What the question checks: The paper tests the meaning of a systemic insecticide: it is absorbed by the plant and reaches sap-sucking insects through plant tissues.

Concepts involved: Crop pests; sap-sucking insects; contact and systemic insecticides; Metasystox.

What to revise: Revise common crop pests and the basic difference between contact, stomach and systemic pesticides.

Q5 Locomotion and Movement - Joints

Anatomy + Concept

What the question checks: The atlas rotates around the odontoid process of the axis, allowing the head to turn from side to side.

Concepts involved: Atlas and axis vertebrae; odontoid process; pivot joint; hinge, saddle and gliding joints.

What to revise: Prepare a chart of joint types with one body example for each.

Q6 Animal Kingdom - Special Structures

Matching + Recall

What the question checks: This matching question links a larval stage, an excretory cell, a respiratory organ and goose flesh with the correct organism or condition.

Concepts involved: Hexacanth larva; renette cell; respiratory tree; piloerection; Taenia, Ascaris and sea cucumber.

What to revise: Keep a glossary of unusual zoological terms and the organism in which each is found.

Q7 Sensory Organs - Human Ear

Anatomy + Recall

What the question checks: You must identify the two membrane-covered windows through which the middle ear communicates with the inner ear.

Concepts involved: Tympanic cavity; oval window; round window; transmission of vibrations; middle and inner ear.

What to revise: Revise a labelled ear diagram from pinna to cochlea and the path followed by sound.

Q8 Environmental Issues - Vehicle Emissions

Environment + Awareness

What the question checks: The question asks for the Bharat Stage emission standard that applied to new vehicles at the time of the 2024 examination.

Concepts involved: Air pollution; vehicle exhaust; Bharat Stage norms; control of particulate matter and harmful gases.

What to revise: Study the purpose of emission standards and the major pollutants released by vehicles.

Q9 Biochemistry and Inborn Metabolic Disorders

Diagram + Biochemical Reasoning

What the question checks: A pathway diagram shows how blocks in phenylalanine and tyrosine metabolism cause different inherited disorders.

Concepts involved: Phenylketonuria; tyrosinosis; alkaptonuria; albinism; enzymes and accumulation of intermediates.

What to revise: Learn how an enzyme block causes the substance before the block to build up.

Q10 Plant Diversity and Morphology

Matching + Botany

What the question checks: The student must match wheat, banyan, banana and pine with their special structures or life-history features.

Concepts involved: Glumes and lodicules; prop roots; pseudostem; monocarpy; gymnosperm seeds without fruits.

What to revise: Compare important plant groups and note one special feature of common examples.

Q11 Cell Biology - Chromatin and Nucleosomes

Diagram + Molecular Biology

What the question checks: The question asks what proteins form the bead-like nucleosome unit that helps pack DNA inside the nucleus.

Concepts involved: DNA packaging; histone octamer; H2A, H2B, H3 and H4; linker histone H1.

What to revise: Draw the bead-on-a-string model and mark the core histones and linker histone.

Q12 Neural Control - Rods and Vision

Assertion-Reason

What the question checks: The assertion-reason format tests why animals living in darkness depend mainly on rods in the retina.

Concepts involved: Rods and cones; dim-light vision; colour vision; light sensitivity; spatial detail.

What to revise: Make a two-column comparison of rods and cones.

Q13 Reproduction in Flowering Plants - Anther

Diagram + Ploidy

What the question checks: A cross-section of an anther is used to test the chromosome-set level in pollen grains and anther-wall tissues.

Concepts involved: Haploid pollen; diploid wall layers; polyploid tapetum; anther structure; ploidy.

What to revise: Revise the layers of the anther and the stages leading to pollen formation.

Q14 Transport in Plants - Ascent of Sap

Concept + Numerical Data

What the question checks: The question uses cohesion theory to compare the strong attraction between water molecules with the forces opposing water rise in tall trees.

Concepts involved: Cohesion; adhesion; transpiration pull; continuous water column; ascent of sap.

What to revise: Understand the full pathway of water from soil to root, xylem and leaf.

Q15 Genetics - Y-linked Inheritance

Genetics + Recall

What the question checks: Hypertrichosis of the ear pinna is used as the classical example of a trait carried on the Y chromosome and passed from father to son.

Concepts involved: Holandric gene; Y-linked trait; father-to-son inheritance; sex-linked inheritance.

What to revise: Compare X-linked, Y-linked and autosomal inheritance using simple family trees.

Q16 Environmental Issues - Ozone Protection

Environment + Recall

What the question checks: The question asks which international agreement was designed to phase out ozone-depleting substances.

Concepts involved: Stratospheric ozone; CFCs; ozone depletion; Montreal Protocol; international environmental action.

What to revise: Revise ozone formation, ozone destruction and why the ozone layer is important.

Q49 Plant Morphology - Fruits and Seeds

Multiple Correct + Botany

What the question checks: The multiple-correct question checks whether the edible part of litchi, rambutan, cashew and nutmeg is an aril or some other structure.

Concepts involved: Aril; accessory fruit; seed covering; edible plant parts; litchi, rambutan, cashew and nutmeg.

What to revise: Prepare a list of familiar fruits and identify the exact plant part that is eaten.

Q50 Microbiology - Viruses

Multiple Correct +
Statement Check

What the question checks: Each statement must be checked separately for viral infectivity, replication, envelope composition and the absence of ribosomes.

Concepts involved: Acellular nature; genetic material; host dependence; viral envelope; ribosomes.

What to revise: Compare viruses with bacteria and living cells in a clear table.

Q51 Biological Classification - Algae

Multiple Correct +
Classification

What the question checks: The question compares major algal groups according to whether motile stages possess two flagella.

Concepts involved: Chlorophyta; Phaeophyta; Rhodophyta; Cyanophyta; flagellated stages.

What to revise: Revise colour pigments, reserve food, cell wall and flagella of the main algal groups.

Q52 Human Health - Immunity

Multiple Correct +
Physiology

What the question checks: The statements cover antibodies, eosinophils, cilia of the windpipe and immunoglobulins displayed on B cells.

Concepts involved: Immunoglobulins; glycoproteins; innate barriers; eosinophils; B lymphocytes; IgM and IgD.

What to revise: Separate innate immunity, acquired immunity, immune cells and antibodies in your notes.

CHEMISTRY - QUESTION-WISE ANALYSIS

Chemistry moves from density and mole calculations to periodic trends, pH, materials, inorganic applications and reaction reasoning. Question 20 is retained only as a learning topic because it was dropped in the final key.

Q17 Measurements and Density of Mixtures

Numerical + Density

What the question checks: The mass and volume of fat are removed from the whole milk sample so that the density of the remaining skimmed milk can be calculated.

Concepts involved: Density = mass/volume; volume percent; two-component mixtures; unit conversion between litre and cubic metre.

What to revise: Practise mixture problems by drawing a mass-volume table before calculating.

Q18 Mole Concept and Stoichiometry

Numerical + Stoichiometry

What the question checks: The required mass of sodium ions is first found from concentration and volume, then converted to the mass of sodium nitrate using molar masses.

Concepts involved: Mass concentration; molar mass; formula mass; mass ratio of an element in a compound.

What to revise: Revise mole-mass conversions and percentage composition of compounds.

Q19 Chemical Bonding - Molecular Geometry

Geometry + Numerical

What the question checks: Two equal C-I bonds form a tetrahedral angle. Geometry is used to find the distance between the two iodine atoms.

Concepts involved: Tetrahedral angle; bond length; chord/triangle geometry; three-dimensional molecular shape.

What to revise: Draw a tetrahedron and practise finding distances using a symmetric triangle.

Q20 Periodic Trends - Nature of Oxides

Periodic Reasoning

OFFICIAL STATUS: DROPPED IN FINAL KEY

What the question checks: The question attempts to classify oxides as acidic, basic or amphoteric across the periodic table. The supplied final key marks this question as DROP, so no option is treated as official.

Concepts involved: Metallic and non-metallic character; acidic oxides; basic oxides; amphoteric oxides; periodic trends and exceptions.

What to revise: Study the broad trend from basic to acidic oxides across a period, but also learn important exceptions.

Q21 Mole Concept - Mass of Electrons

Numerical + Scientific Notation

What the question checks: The mass of one electron is multiplied by Avogadro number to get the mass of one mole of electrons, then scaled to one kilogram.

Concepts involved: Electron mass; Avogadro number; mole; scientific notation; very small and very large numbers.

What to revise: Practise powers of ten and check units at every step.

Q22 Mole Concept with Electrostatics

Multi-step Numerical

What the question checks: This interdisciplinary problem first uses Coulomb law to find charge, then converts charge to number of electrons and compares that with the number of carbon atoms.

Concepts involved: Coulomb law; elementary charge; Avogadro number; carbon-12; ratio of microscopic particles.

What to revise: Break long problems into stages: force to charge, charge to electrons, mass to atoms, then ratio.

Q23 Periodic Properties and Electronic Configuration

Table + Multi-concept

What the question checks: A table asks for the correct choice in four rows: ionic radius, electronegativity, electron affinity and magnetic moment.

Concepts involved: Periodic trends; ionic size; electron affinity; electronegativity; unpaired electrons; magnetic moment.

What to revise: Revise each periodic property separately and practise reading electron configurations of ions.

Q24 Physical Measurement - Temperature Scales

Numerical + Conversion

What the question checks: A body temperature given in Fahrenheit must be converted to Celsius using the linear relation between the two scales.

Concepts involved: Freezing and boiling reference points; Fahrenheit-Celsius conversion; proportional scales.

What to revise: Learn both conversion formulae and test them using $32^\circ\text{F} = 0^\circ\text{C}$ and $212^\circ\text{F} = 100^\circ\text{C}$.

Q25 Ionic Equilibrium - Neutral Water

Concept + pH

What the question checks: Heating changes the ionisation of water. Neutrality still means equal hydrogen and hydroxide ion concentrations even though neutral pH need not remain 7.

Concepts involved: Ionic product of water; effect of temperature on K_w ; neutral, acidic and basic solutions.

What to revise: Remember: neutral means $[\text{H}^+] = [\text{OH}^-]$, not always pH 7.

Q26 Ionic Equilibrium - pH Calculation

Numerical + Logarithm

What the question checks: The hydronium-ion concentration is found directly from the definition $\text{pH} = -\log[\text{H}_3\text{O}^+]$.

Concepts involved: pH; logarithms; antilogarithm; concentration in mol/L; powers of ten.

What to revise: Practise converting pH values with decimals into scientific notation.

Q27 Organic Chemistry - Geometrical Isomerism

Structure + Reasoning

What the question checks: The two alkene structures are cis-trans isomers. Their molecular polarity changes the intermolecular attraction and therefore the boiling point.

Concepts involved: Restricted rotation about $\text{C}=\text{C}$; cis and trans isomers; dipole moment; intermolecular forces; boiling point.

What to revise: Use a sketch to decide whether bond dipoles cancel or add.

Q28 Carbon Materials and Nanoscience

Scientific Awareness

What the question checks: The question compares the tensile strength of familiar materials and the one-atom-thick carbon sheet called graphene.

Concepts involved: Graphene; carbon bonding; tensile strength; structure-property relationship; modern materials.

What to revise: Compare diamond, graphite, graphene and fullerenes by structure and properties.

Q29 p-Block Elements - Inert Pair Effect

Periodic Reasoning

What the question checks: The stable oxidation states of boron and thallium are compared. The heavier element shows greater stability of the lower oxidation state.

Concepts involved: Group 13; +1 and +3 oxidation states; inert pair effect; stability down a group.

What to revise: Revise how the inert pair effect changes the oxidation states of heavier p-block elements.

Q30 Applied Chemistry - Automobile Air Bags

Application + Recall

What the question checks: The question asks which compound rapidly releases nitrogen gas in traditional automobile air-bag systems.

Concepts involved: Sodium azide; decomposition reaction; rapid gas generation; application of chemistry in safety devices.

What to revise: Learn a few important compounds used in daily-life technologies and the purpose they serve.

Q31 f-Block Elements - MRI Contrast

Application + Recall

What the question checks: The question links a lanthanide metal with contrast agents used in magnetic resonance imaging.

Concepts involved: Gadolinium; lanthanides; paramagnetism; contrast agents; medical application of elements.

What to revise: Revise common uses of selected d-block and f-block elements.

Q32 Organic Chemistry - Esterification

Mechanism + Structure

What the question checks: An oxygen isotope label is followed through an acid-catalysed esterification to decide whether it remains in the ester or leaves in water.

Concepts involved: Carboxylic acid and alcohol; ester formation; isotope labelling; bond breaking and bond formation; reaction mechanism.

What to revise: Track labelled atoms step by step rather than memorising only the overall equation.

Q53 Surface Chemistry - Colloids in Medicine

Multiple Correct + Application

What the question checks: Each colloid is checked for a medicinal use, such as an antiseptic, skin preparation or antacid.

Concepts involved: Colloidal silver; sulphur sol; milk of magnesia; applications of colloids; Purple of Cassius.

What to revise: Make a table of important colloids, dispersed phase, medium and use.

Q54 Redox Reactions - Oxidation Number

Multiple Correct + Redox

What the question checks: For every nitrogen transformation, the oxidation number before and after the change must be calculated to decide whether nitrogen is reduced.

Concepts involved: Oxidation number; oxidation; reduction; nitrogen compounds; electron gain and loss.

What to revise: Write the oxidation number above nitrogen in both reactant and product before judging the change.

Q55 p-Block Oxyacids - Basicity

Multiple Correct + Structure

What the question checks: The amount of sodium hydroxide used tells how many ionisable hydrogens the phosphorus oxyacid has. P-H hydrogens are not acidic like O-H hydrogens.

Concepts involved: Basicity of acids; H_3PO_2 ; ionisable hydrogen; acid salts; neutralisation equivalents.

What to revise: Draw the structure of phosphorus oxyacids and count only hydrogens attached to oxygen.

Q56 Atomic Structure - Electronic Configuration

Multiple Correct + Configuration

What the question checks: The shell population 2, 8, 9, 2 is converted into the subshell configuration of a 21-electron atom, after which unpaired, d and p electrons are counted.

Concepts involved: Shell and subshell configuration; scandium; $3d^1 4s^2$; unpaired electrons; metallic character.

What to revise: Practise writing subshell configurations from atomic number and then count each type of electron.

PHYSICS - QUESTION-WISE ANALYSIS

Physics is strongly application-based. Most questions become manageable after drawing the situation, choosing the correct equation and checking units or graph meaning.

Q33 Kinematics - Acceleration

Numerical + Comparison

What the question checks: Four motions are converted to the same SI units and their acceleration magnitudes are compared.

Concepts involved: Acceleration; stopping; free fall; motion from rest; $s = ut + \frac{1}{2}at^2$; km/h to m/s.

What to revise: Always convert units first, then choose the shortest suitable equation for each case.

Q34 Waves and Sound - Reading a Wave Graph

Graph + Numerical

What the question checks: A snapshot of displacement against position is used to read amplitude and wavelength, then find frequency and the later position of crests or troughs.

Concepts involved: Amplitude; wavelength; wave speed; frequency; wave travel distance; phase shift.

What to revise: Practise reading one full cycle from a graph and use $v = f\lambda$.

Q35 Mechanical Properties of Fluids - Buoyancy

Diagram + Concept

What the question checks: The same sphere sinks in one liquid and floats half-submerged in another. Archimedes principle is used to compare the two buoyant forces.

Concepts involved: Buoyant force; displaced volume; density; floating equilibrium; sinking body.

What to revise: Draw the force diagram and write buoyant force = density of liquid x displaced volume x g.

Q36 Laws of Motion - Uniform Velocity

Statement Reasoning

What the question checks: The statements separate zero acceleration and zero net force from the incorrect idea that no force acts or that the engine does no work.

Concepts involved: Balanced forces; net force; uniform velocity; kinetic energy; momentum; work against resistance.

What to revise: Remember: zero net force does not mean that every individual force is zero.

Q37 Circular Motion - Speed and Frequency

Numerical + Circular Motion

What the question checks: The time for a 45-degree arc gives the time for one complete revolution. The circumference then gives the linear speed.

Concepts involved: Arc fraction; period; frequency; circumference; uniform circular motion.

What to revise: Convert the given angle into a fraction of 360 degrees before calculating the period.

Q38 Hydrostatics - Pressure and Vessel Shape

Diagram + Reasoning

What the question checks: Three differently shaped vessels have the same liquid height and base area. Pressure depends on depth, while liquid weight depends on total volume.

Concepts involved: Hydrostatic pressure; $p = \rho gh$; vessel shape; volume; hydrostatic paradox.

What to revise: Separate the question: first compare pressure at the base, then compare the amount of liquid.

Q39 Ray Optics - Moving Object in a Concave Mirror

Concept + Optics

What the question checks: As an ant moves from far away toward the focus, the mirror formula is used to understand how the image speed changes.

Concepts involved: Concave mirror; focal point; centre of curvature; image distance; magnification; image velocity.

What to revise: Make a ray diagram at $5f$, $2f$ and just beyond f , and compare image positions.

Q40 Units and Current Electricity

Units + Dimensional Check

What the question checks: Each expression is reduced to base electrical quantities to see whether it can represent ampere.

Concepts involved: Current = charge/time; $V = J/C$; $P = VI$; $V = IR$; dimensional consistency.

What to revise: Convert complicated units through familiar equations instead of guessing.

Q41 Modern Physics - Mass-Energy Equivalence

Numerical + Modern Physics

What the question checks: Einstein equation $E = mc^2$ is applied to one atomic mass unit and the energy is converted from joules to electronvolts.

Concepts involved: Atomic mass unit; speed of light; joule; electronvolt; MeV; scientific notation.

What to revise: Learn the conversion $1 \text{ eV} = 1.602 \times 10^{-19} \text{ J}$ and practise powers of ten.

Q42 Current Electricity - Symmetric Network

Circuit + Symmetry

What the question checks: A tetrahedron made of equal resistors is simplified by symmetry: two non-terminal vertices are at equal potential.

Concepts involved: Equivalent resistance; symmetry; equipotential points; series and parallel reduction.

What to revise: When a network is symmetric, first mark points that must have the same potential.

Q43 Momentum and Kinetic Energy

Numerical + Relation

What the question checks: For equal kinetic energies, momentum is proportional to the square root of mass.

Concepts involved: $K = p^2/(2m)$; momentum; kinetic energy; ratios; non-relativistic motion.

What to revise: Learn to rearrange formulas before substituting numbers.

Q44 Electromagnetic Induction - Lenz Law

Diagram + Multi-case Reasoning

What the question checks: For each moving magnet, the direction of change of magnetic flux is found first; Lenz law and the right-hand rule then give the induced current direction.

Concepts involved: Magnetic flux; approaching and receding poles; Lenz law; right-hand grip rule; viewed direction.

What to revise: Use the same three steps every time: flux change, opposing field, current direction.

Q45 Electricity - Heating Effect

Numerical + Electricity

What the question checks: Changing the wire length and diameter changes resistance. At fixed voltage this changes power and therefore the heating time.

Concepts involved: $R = \rho L/A$; cross-sectional area proportional to diameter squared; $P = V^2/R$; heat and time.

What to revise: Write the ratio $R_{\text{new}}/R_{\text{old}}$ before calculating power or time.

Q46 Kinematics - Uniform Retardation

Numerical + Graph Idea

What the question checks: The detached wagon slows from speed v to zero while the train keeps speed v for the same time. Their distances follow from average speed.

Concepts involved: Uniform retardation; average speed; velocity-time graph; distance ratio.

What to revise: Draw both velocity-time graphs; the area under each graph gives distance.

Q47 Ray Optics - Myopia Correction

Numerical + Human Eye

What the question checks: A concave lens must form a virtual image of a distant object at the person's far point.

Concepts involved: Myopia; far point; concave lens; focal length; power in dioptres; sign convention.

What to revise: Draw the correction ray diagram and remember $P = 1/f$ with f in metres.

Q48 Gravitation - Surface Gravity

Numerical + Gravitation

What the question checks: The surface gravity of two planets is compared by changing both mass and radius in $g = GM/R^2$.

Concepts involved: Gravitational acceleration; mass; radius; inverse-square dependence; ratio method.

What to revise: Use proportional reasoning before inserting any numerical value.

Q57 Ray Optics - Two Lens Positions

Multiple Correct + Optics

What the question checks: For a fixed object-screen distance, a convex lens can form a sharp image at two positions. The two object distances and image sizes are compared.

Concepts involved: Lens formula; $u + v = \text{fixed distance}$; $uv = fD$; magnification; large and small real images.

What to revise: Practise the two-position or displacement method with a quadratic equation.

Q58 **Current Electricity - Real Voltmeter**

Multiple Correct + Circuit

What the question checks: The voltmeter has finite resistance, so it changes the circuit. Parallel and series combinations are needed before finding readings, currents and power.

Concepts involved: Loading effect; voltmeter resistance; parallel combination; branch current; electrical power.

What to revise: Never treat a real voltmeter as infinite resistance when its resistance is given.

Q59 **Sound - Echo from a Moving Train**

Multiple Correct + Sound

What the question checks: Sound travels to the hill and the reflected wave meets a train that is still moving. Time, meeting position and wavelength are all tested.

Concepts involved: Echo; speed of sound; moving observer; relative closing speed; wavelength = speed/frequency.

What to revise: Draw a distance-time sketch showing the train and the outward and reflected sound paths.

Q60 **Motion Graphs - Area and Slope**

Multiple Correct + Graph

What the question checks: Three velocity-time graphs are compared. Area gives distance, while slope gives acceleration; a horizontal line shows uniform motion.

Concepts involved: Area under v-t graph; triangular and rectangular areas; acceleration from slope; uniform velocity.

What to revise: For every v-t graph, label two things immediately: area means distance and slope means acceleration.

Chapter clusters and preparation priority

Subject	Major cluster	Questions	Why it matters
Biology	Diversity, evolution and classification	1, 2, 6, 10, 50, 51	Many questions depend on precise terms and comparison of groups.
	Human anatomy and physiology	3, 5, 7, 12, 52	Labelled diagrams and functions must be connected.
	Genetics, cell and molecular biology	9, 11, 15	Pathways and inheritance require cause-and-effect thinking.
	Plant structure, physiology and reproduction	4, 13, 14, 49	Diagrams, plant parts and transport concepts recur.
	Environment	8, 16	Scientific awareness is tested through real-world action.
Chemistry	Mole, measurement and multi-step calculation	17, 18, 21, 22, 24	Units and scientific notation decide accuracy.
	Atomic structure, periodicity and inorganic chemistry	20, 23, 29, 30, 31, 55, 56	Trends must be understood together with exceptions and applications.
	Acid-base and redox	25, 26, 54	Definitions and oxidation numbers must be applied carefully.
	Organic structure and reaction reasoning	19, 27, 32	Shape, polarity and atom tracking are more useful than memorising.
	Materials and colloids	28, 53	Links chemistry with technology and medicine.
Physics	Mechanics and motion	33, 36, 37, 43, 46, 48, 60	Equations, graphs and proportional reasoning appear repeatedly.
	Fluids	35, 38	Pressure and buoyancy are tested through diagrams.
	Waves and sound	34, 59	Graph reading and relative motion are combined.
	Ray optics	39, 47, 57	Sign, image position and magnification must be visualised.
	Electricity and magnetism	40, 42, 44, 45, 58	Networks, power, induction and units form a major block.
	Modern physics	41	Scientific notation and energy units are essential.

Preparation roadmap for Classes 7, 8 and 9

CLASS 7 - BUILD THE LANGUAGE

- Learn scientific words and units.
- Observe diagrams before reading options.
- Strengthen fractions, ratios and powers of ten.
- Cover cells, plants, force, heat, light and simple acids-bases.
- Attempt only the basic layer of advanced questions first.

CLASS 8 - CONNECT IDEAS

- Compare and classify organisms and materials.
- Use equations for density, speed, pressure and electricity.
- Understand atoms, molecules and simple chemical reactions.
- Practise one diagram question and one numerical question daily.
- Begin selected Class 9 bridge topics.

CLASS 9 - BUILD THE NSEJS BRIDGE

- Master Class 9 motion, force, work-energy, atoms, tissues and diversity.
- Add mole concept, bonding, genetics, fluids, optics and magnetism.
- Practise assertion-reason, matching and multiple-correct questions.
- Keep an error notebook arranged chapter-wise.
- Take mixed, timed science tests.

A useful weekly routine

Day	Task	Suggested time
Monday	Read one chapter and make a one-page summary.	45-60 min
Tuesday	Solve 10 basic questions from the same chapter.	45 min
Wednesday	Practise diagrams, tables, graphs or scientific terms.	30-45 min
Thursday	Solve 5 Olympiad bridge questions.	45-60 min
Friday	Review mistakes and re-solve without looking at the answer.	30 min
Saturday	Take a mixed science quiz.	60 min
Sunday	Revise the week and update the chapter checklist.	30 min

For younger students

A Class 7 or 8 student does not need to solve every advanced question immediately. First understand the chapter name and the basic idea. Return to the question after learning the bridge topic.

My NSEJS 2024 chapter checklist

Tick a box only when you can explain the topic in your own words and solve at least five questions without help.

Done	Biology	Done	Chemistry	Done	Physics
☐	Animal phyla and metamerism	☐	Density and mixture calculations	☐	Acceleration and motion equations
☐	Human evolution	☐	Mole concept and Avogadro number	☐	Wave graphs and sound
☐	Brain, eye and ear	☐	Molecular geometry and bonding	☐	Buoyancy and hydrostatic pressure
☐	Joints and movement	☐	Periodic trends and oxides	☐	Uniform motion and circular motion
☐	Metabolic disorders	☐	pH and ionic equilibrium	☐	Mirrors, lenses and myopia
☐	Nucleosome and DNA packing	☐	Geometrical isomerism	☐	Current, power and resistor networks
☐	Anther and ploidy	☐	p-block and f-block applications	☐	Electromagnetic induction
☐	Ascent of sap	☐	Esterification and isotope labels	☐	Momentum and kinetic energy
☐	Genetics and immunity	☐	Colloids and redox	☐	Gravitation and modern physics
☐	Environment and ozone	☐	Electronic configuration	☐	Velocity-time graphs and echo

Question review sheet

Question	My mistake	Chapter to revise	Date solved again

Important: Question 20 remains marked DROP. Use it only to revise the nature of oxides; do not assign an official option.