School Connect Online

SCO INTERNATIONAL BIOLOGY OLYMPIAD

CLASS 8 SAMPLE PAPER

Practice Paper | Set H

A professional sample paper with answers and explanations

Designed from Class 8 Biology Olympiad pathways and aligned with SCO's professional question-paper format, guided preparation, reporting, and future-ready academic growth.

- compact question-number tags and clean academic question blocks
- answers, explanations, and section-wise paper structure for school/student review
- necessary diagrams placed inside question blocks only, with no unnecessary decorative visuals

Biology	Microbes	Cells	Genetics	Health
Agriculture	Conservation	Pollution	Achievers	Research Skills

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SCO International Biology Olympiad - Class 8

Sample Practice Question Paper | Set H

Exam Name	SCO International Biology Olympiad
Class / Grade	Class 8 / Grade 8
Duration	60 minutes
Type of Exam	Objective Type Multiple Choice Questions
Number of Questions	50 questions
Sections	General Biology, Case Study, Reason and Assertion, Achievers Section
Marking Note	Achievers Section carries higher-order application focus; no negative marking unless separately notified.

Candidate Guidelines

- Read each question carefully and select only one correct option.
- Use an HB pencil or a blue/black ballpoint pen for marking the OMR sheet, as instructed by the invigilator.
- Calculators and electronic devices are not allowed unless specifically permitted by the examination authority.
- All passages, data tables, images, and diagrams required for a question are placed inside that question block.
- Achievers Section questions assess higher-order scientific reasoning and application-based thinking.

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Section A - General Biology

Concepts, principles, observations, and core application questions

Q.1 A scientist compares two plots of land—one treated with conventional chemical fertilizer and the other with organic compost. After one growing season, she finds that the organic plot has a similar yield but significantly improved soil structure and higher levels of beneficial microorganisms. Which observation most strongly supports the benefits of organic compost in sustainable agriculture?

A. The organic plot had lower yield but improved pest resistance.

B. The organic plot had similar yield and improved soil health.

C. The conventional plot had higher yield but a rapid decline in soil fertility.

D. The conventional plot showed faster initial growth and lower water retention.

Answer: B

Explanation: The observation that the organic plot produced a similar yield while also improving soil structure and boosting beneficial microorganisms supports the idea that organic compost contributes to long-term soil health and sustainability.

Q.2 A researcher is testing a natural plant extract as a pest control method. The extract reduces pest damage without harming beneficial insects. Which pest management strategy does this finding best support?

A. Exclusive reliance on chemical pesticides.

B. Integrated Pest Management (IPM).

C. Monoculture farming.

D. Genetic modification of crops.

Answer: B

Explanation: Integrated Pest Management (IPM) combines biological, cultural, and chemical methods to control pests in a sustainable way. Using a natural extract that targets pests without affecting beneficial insects is a key component of IPM.

Q.3 In a study on crop rotation, a farmer alternates between growing a nitrogen-fixing legume and a cereal crop. What is the most likely benefit of this rotation?

A. Increased pest infestation in the legume phase.

B. Depletion of soil nutrients over time.

C. Improved soil fertility and reduced pest buildup.

D. Reduced yield of the cereal crop due to nutrient competition.

Answer: C

Explanation: Legumes fix nitrogen in the soil, enhancing soil fertility. Alternating them with cereal crops also helps break pest cycles, reducing pest buildup and benefiting overall crop production.

Q.4 A microbiologist studies yogurt fermentation and finds that specific bacteria convert lactose into lactic acid. How does this process benefit yogurt production?

A. It raises the milk's pH, promoting bacterial growth.

B. It lowers the pH, preserving the yogurt by inhibiting harmful bacteria.

C. It causes the milk to curdle excessively, reducing quality.

D. It breaks down proteins, making the yogurt watery.

Answer: B
Explanation: The bacteria produce lactic acid, which lowers the pH. This acidic environment preserves the yogurt by inhibiting the growth of spoilage-causing and pathogenic bacteria.

Q.5 While testing an antibiotic on a bacterial culture, a researcher notices that a few bacteria survive treatment. What is the most likely reason for their survival?

A. The bacteria have a naturally thick cell wall that repels all drugs.
B. The bacteria have developed resistance through mutation or gene transfer.
C. The antibiotic was mixed with another compound that neutralized it.
D. The surviving bacteria were not exposed to the antibiotic due to uneven application.

Answer: B
Explanation: Bacteria can acquire resistance through genetic mutations or horizontal gene transfer. This resistance allows them to survive antibiotic treatment even when most bacteria are killed.

Q.6 Scientists discover that certain bacteria can break down oil spills in contaminated water. What is this process called?

A. Fermentation.
B. Photosynthesis.
C. Bioremediation.
D. Antibiotic production.

Answer: C
Explanation: Bioremediation is the process by which microorganisms are used to degrade environmental pollutants—in this case, oil—thereby cleaning up contaminated sites.

Q.7 A conservation biologist studies a bird species whose habitat has become fragmented by urban development. She notices that isolated bird populations are showing decreased genetic diversity. Why is this a concern?

A. Reduced genetic diversity can make populations more vulnerable to diseases and environmental changes.
B. Lower genetic diversity increases the birds' migration distances.
C. Genetic diversity is unrelated to a species' survival.
D. Reduced diversity ensures uniform behavior among individuals.

Answer: A
Explanation: Low genetic diversity reduces a population's ability to adapt to environmental changes and resist diseases, increasing the risk of extinction over time.

Q.8 To protect an endangered animal with a low reproductive rate, conservationists decide to use captive breeding and reintroduction programs. What is the primary goal of this strategy?

A. To create a population that is entirely dependent on captivity.
B. To increase the population size and genetic diversity before reintroducing them into the wild.
C. To eliminate the species from its natural habitat.
D. To produce animals that are less adaptable to natural conditions.

Answer: B
Explanation: Captive breeding aims to bolster the population numbers and enhance genetic diversity, making reintroduction into the wild more successful and sustainable.

Q.9 A biologist studying an invasive plant species finds that it spreads rapidly, outcompeting native flora. Which control method might best help manage its spread?

A. Introducing a natural predator that feeds on the invasive plant.
B. Increasing fertilizer use to boost the growth of native plants.
C. Encouraging the invasive plant's growth in home gardens.
D. Changing the soil type to one that the invasive plant prefers.

Answer: A
Explanation: Biological control, such as introducing a natural predator or herbivore that specifically targets the invasive species, can help reduce its population and allow native plants to recover.

Q.10 A researcher examines a cell under the microscope and observes many mitochondria with complex internal membrane structures. What is the primary function of these mitochondria?

A. Protein synthesis.
B. Energy production through cellular respiration.
C. Storage of genetic information.
D. Waste elimination.

Answer: B
Explanation: Mitochondria are known as the “powerhouses” of the cell because they produce ATP (energy) through cellular respiration, which is critical for cell function.

Q.11 In an experiment, a scientist damages the rough endoplasmic reticulum (ER) in cultured cells. Which cellular process is most likely to be disrupted as a result?

A. Lipid breakdown.
B. Protein synthesis and processing.
C. DNA replication.
D. Waste removal.

Answer: B
Explanation: The rough ER is studded with ribosomes and is responsible for synthesizing and processing proteins. Damage to the rough ER can impair protein production and proper folding.

Q.12 A biology class studies plant cells and observes chloroplasts with stacked thylakoids. What process occurs within these structures?

A. Cellular respiration.
B. Photosynthesis.
C. Protein degradation.
D. Cell division.

Answer: B
Explanation: Thylakoids within chloroplasts contain chlorophyll and are the sites of the light-dependent reactions of photosynthesis, where sunlight is converted into chemical energy.

Q.13 In a study of amphibian reproduction, a researcher finds that some species use external fertilization in water, while others use internal fertilization. What is a key advantage of internal fertilization in these animals?

A. It increases the number of eggs produced.
B. It protects gametes from being washed away in water.
C. It requires less energy expenditure.
D. It eliminates the need for parental care.

Answer: B
Explanation: Internal fertilization protects the gametes by ensuring that fertilization occurs inside the body, reducing the risk of gamete loss due to dilution or washing away in aquatic environments.

Q.14 A researcher studying insect life cycles observes that many species undergo complete metamorphosis (egg, larva, pupa, adult). What is the primary benefit of complete metamorphosis?

A. It allows the larval and adult stages to occupy different ecological niches.
B. It speeds up the reproductive process.
C. It results in larger adult insects.
D. It reduces the overall energy required for growth.

Answer: A
Explanation: Complete metamorphosis allows larvae and adults to exploit different resources and habitats, reducing competition for food and space between the two stages.

Q.15 A zoologist notes that certain mammalian species have a longer gestation period than others. Which factor most likely contributes to a longer gestation period?

A. The number of offspring produced.
B. The complexity and size of the offspring at birth.
C. The amount of parental care post-birth.
D. The frequency of mating occurrences.

Answer: B
Explanation: Species that give birth to larger or more complex young typically require a longer gestation period to ensure proper development before birth.

Q.16 A public health researcher studies nutritional effects on adolescent development. Which observation would most strongly suggest that nutrition impacts the timing of puberty?

A. Adolescents with balanced diets experience an earlier onset of puberty.
B. Adolescents with poor nutrition grow taller than their peers.
C. Nutritional status has no observable effect on puberty timing.
D. Only female adolescents show changes in puberty timing with improved nutrition.

Answer: A
Explanation: Better nutrition often provides the necessary energy and nutrients for earlier hormonal changes, leading to an earlier onset of puberty.

Q.17 A psychologist investigates behavioral changes during adolescence and finds that teenagers often engage in increased risk-taking activities. Which factor is most directly related to these behavioral changes?

A. Improved memory and learning capacity.
B. Hormonal changes affecting emotional regulation.
C. Enhanced visual and auditory processing.
D. Increased physical strength alone.

Answer: B
Explanation: Hormonal changes during adolescence influence mood and behavior, often leading to increased risk-taking and emotional variability.

Q.18 An environmental scientist monitors the air quality near an industrial area and finds high levels of sulfur dioxide. What environmental problem is most directly associated with elevated sulfur dioxide levels?

A. Ozone depletion.
B. Acid rain formation.
C. Global warming due to increased greenhouse gases.
D. Increased particulate matter in the air.

Answer: B
Explanation: Sulfur dioxide reacts with water vapor in the atmosphere to form sulfuric acid, leading to acid rain, which can harm ecosystems and man-made structures.

Q.19 A researcher measures dissolved oxygen levels in a river downstream from a wastewater discharge point. The levels are significantly lower than upstream. What is the most likely cause of this decrease?

A. Increased sunlight boosting photosynthesis.
B. Bacterial decomposition of organic matter consuming oxygen.
C. A natural increase in water flow.
D. Reduced water temperature at the discharge point.

Answer: B
Explanation: Organic matter in wastewater is decomposed by bacteria, a process that consumes dissolved oxygen and can lead to hypoxic conditions in the water.

Q.20 Scientists are testing a new filtration system to remove pollutants from industrial wastewater. Which property of the filter material is most critical for effectively trapping contaminants?

A. The color of the filter.
B. The size and porosity of the filter medium.
C. The weight of the filter material.
D. The manufacturer's brand reputation.

Answer: B
Explanation: The size and porosity of the filter medium determine how effectively it can trap and remove particles and contaminants from wastewater. A finer and appropriately porous material is key to efficient filtration.

Section B - Case Study and Contemporary Biology

Applied biology, sustainability, health, pollution, and research scenarios

Q.21 A research team installs soil moisture sensors and an automated irrigation system in a field. Over one season, they record a 30% reduction in water usage without affecting the crop yield. Which aspect of precision irrigation is most responsible for this water saving?

A. Using sensors to measure soil moisture and irrigate only when needed.
B. Increasing the overall water pressure in the irrigation system.
C. Replacing traditional irrigation pipes with high-capacity hoses.
D. Irrigating at fixed intervals regardless of soil conditions.

Answer: A
Explanation: Precision irrigation relies on real-time soil moisture data to deliver water only when necessary. This targeted approach minimizes water wastage while ensuring crops receive adequate moisture, thereby reducing water usage without compromising yield.

Q.22 In a study comparing fields left fallow with those planted with cover crops, researchers find that cover-cropped fields have increased organic matter and reduced soil erosion. What mechanism best explains these benefits?

A. Cover crops add organic material to the soil and stabilize the soil surface.
B. Cover crops absorb all available nutrients, leaving less for erosion.
C. Cover crops increase the soil's acidity, which prevents erosion.
D. Cover crops require additional chemical fertilizers that improve soil structure.

Answer: A
Explanation: Cover crops contribute organic matter through their decaying biomass and their root systems hold the soil in place. This dual action improves soil structure, reduces erosion, and enhances soil fertility.

Q.23 A researcher studying legume crops observes that certain bacteria form nodules on the roots and convert atmospheric nitrogen into ammonia. What is the name of this process?

A. Nitrification
B. Nitrogen fixation
C. Denitrification
D. Ammonification

Answer: B
Explanation: Nitrogen fixation is the process by which certain bacteria (such as Rhizobium) convert inert atmospheric nitrogen (N_2) into ammonia (NH_3), a form that plants can readily use. This natural process enhances soil fertility and reduces the need for chemical fertilizers.

Q.24 A study on fragmented habitats shows that constructing wildlife corridors between isolated patches increases genetic exchange among animal populations. What is the primary benefit of these corridors?

A. They encourage the rapid growth of invasive species.
B. They reduce the physical distance between feeding areas.
C. They facilitate gene flow, reducing inbreeding and enhancing genetic diversity.
D. They create larger areas of undisturbed land for agriculture.

Answer: C
Explanation: Wildlife corridors enable animals to move between isolated habitat patches. This movement promotes gene flow, reducing inbreeding and helping maintain genetic diversity, which is crucial for the adaptability and long-term survival of species.

Q.25 In an experiment, scientists treat cultured cells with a chemical that disrupts the nuclear envelope. Which cellular process is most directly affected by this disruption?

A. Protein synthesis in the cytoplasm
B. Mitochondrial ATP production
C. Cell membrane repair
D. Regulation of gene expression and nucleocytoplasmic transport

Answer: D
Explanation: The nuclear envelope regulates the exchange of molecules between the nucleus and the cytoplasm. Its disruption impairs the transport of mRNA and proteins necessary for proper gene expression and other nuclear functions.

Q.26 In a study of reptiles, researchers find that eggs incubated at higher temperatures produce a higher proportion of females. Which factor is most directly affected by the incubation temperature in these species?

A. The timing of hatching
B. The ratio of male-to-female sex hormones during embryonic development
C. The total number of eggs laid
D. The nutrient content of the egg yolk

Answer: B
Explanation: In reptiles with temperature-dependent sex determination, incubation temperature influences the balance of sex hormones during embryonic development, which in turn determines the sex of the offspring.

Q.27 A longitudinal study on adolescent health finds that regular physical activity is associated with higher levels of growth hormone and improved bone density. What is the most likely long-term outcome of these physiological changes?

A. Decreased muscle mass and increased fat accumulation
B. Enhanced bone strength and muscle development
C. Increased risk of early puberty and hormonal imbalance
D. Reduced cardiovascular fitness over time

Answer: B
Explanation: Regular exercise stimulates the secretion of growth hormone, which promotes muscle development and increases bone density. These effects contribute to better overall physical strength and a healthier body composition during adolescence.

Q.28 A study measuring air quality near busy highways detects high levels of PM2.5 (fine particulate matter). What is the most significant health risk associated with prolonged exposure to these particles?

A. Improved lung capacity due to constant exposure
B. Increased incidence of respiratory and cardiovascular diseases
C. Enhanced immune system function
D. Rapid recovery from respiratory infections

Answer: B
Explanation: PM2.5 particles are small enough to penetrate deep into the lungs and enter the bloodstream, contributing to respiratory problems, cardiovascular disease, and other serious health issues.

Q.29 In an innovative water treatment study, scientists use algae to remove heavy metals from industrial wastewater. What process does this strategy best represent?

A. Chemical precipitation
B. Biosorption
C. Thermal decomposition
D. Electrolysis

Answer: B
Explanation: Biosorption involves the use of living organisms, such as algae, to absorb and accumulate pollutants (like heavy metals) from the environment. This method is an eco-friendly way to clean contaminated water.

Q.30 A community-based conservation project engages local villagers in protecting a threatened forest ecosystem. What is the primary benefit of involving local communities in conservation efforts?

A. It shifts responsibility away from government agencies.
B. It ensures local people benefit from and support sustainable resource management.
C. It reduces the need for scientific research in conservation planning.
D. It guarantees immediate economic profit for the community.

Answer: B
Explanation: Involving local communities in conservation projects builds stewardship and ensures that the people who depend on the ecosystem have a vested interest in protecting it. This approach can lead to sustainable resource management and better long-term conservation outcomes.

Q.31 Assertion: Cover cropping improves soil fertility by adding organic matter.

Reason: Cover crops reduce soil erosion and enhance microbial activity.

Answer: A
Explanation: Both statements are true, and the addition of organic matter plus erosion control directly helps improve soil fertility.

Q.32 Assertion: Overuse of antibiotics leads to the emergence of antibiotic-resistant bacterial strains.

Reason: Excessive antibiotic use exerts selective pressure, favoring the survival of resistant bacteria.

Answer: A
Explanation: Both statements are true, and the reason correctly explains how antibiotic overuse promotes resistance.

Q.33 Assertion: Wildlife corridors help maintain genetic diversity in fragmented habitats.

Reason: Corridors facilitate gene flow between isolated animal populations.

Answer: A
Explanation: Both statements are true; connecting isolated populations increases genetic exchange, which directly supports the assertion.

Q.34 Assertion: The rough endoplasmic reticulum is essential for protein synthesis in cells.

Reason: Ribosomes attached to the rough ER synthesize proteins.

Answer: A
Explanation: Both statements are true, and the presence of ribosomes on the rough ER is the direct reason why it is crucial for protein synthesis.

Q.35 Assertion: The nuclear envelope plays a critical role in regulating gene expression.

Reason: The nuclear envelope synthesizes messenger RNA.

Answer: C
Explanation: While the assertion is true (the nuclear envelope regulates transport between the nucleus and cytoplasm), the reason is false because mRNA synthesis occurs in the nucleus (by RNA polymerase), not in the nuclear envelope.

Section C - Reason and Assertion

Select the option that best describes the relation between assertion and reason

Q.36 Assertion: Temperature-dependent sex determination in reptiles results in varying sex ratios among offspring.

Reason: Higher incubation temperatures lead to a greater proportion of female offspring.

Answer: A
Explanation: Both statements are true, and in many reptilian species, increased temperatures during incubation indeed bias the sex ratio toward females.

Q.37 Assertion: Complete metamorphosis in insects reduces competition between larval and adult stages.

Reason: Larvae and adults use the same resources and occupy the same ecological niche.

Answer: C
Explanation: The assertion is true—complete metamorphosis often allows larvae and adults to exploit different resources, thereby reducing intraspecific competition. However, the reason is false because the statement claims they use the same resources, which contradicts the ecological separation that is key to the advantage of metamorphosis.

Q.38 Assertion: Regular physical exercise during adolescence improves bone density.

Reason: Exercise increases mechanical stress on bones, which stimulates bone growth and remodeling.

Answer: A
Explanation: Both statements are true, and the mechanical stress from exercise is a well-established stimulus for bone formation, directly explaining the assertion.

Q.39 Assertion: Exposure to fine particulate matter (PM2.5) is linked to respiratory diseases.

Reason: PM2.5 particles are small enough to penetrate deep into the lungs and enter the bloodstream.

Answer: A
Explanation: Both statements are true, and the ability of PM2.5 to reach deep lung tissues and the bloodstream is the key reason for its harmful health effects.

Q.40 Assertion: Captive breeding programs always result in successful reintroduction of endangered species into the wild.

Reason: Captive-bred animals often lack the necessary survival skills and genetic diversity to thrive in natural habitats.

Answer: D
Explanation: The assertion is false because captive breeding does not guarantee immediate or successful reintroduction into the wild; many challenges exist. However, the reason is true—captive-bred animals may indeed lack critical survival skills and sufficient genetic diversity, which explains why such programs are not always successful.

Section D - Achievers Section

Higher-order reasoning and advanced application questions

Q.41 A researcher studying plant water uptake examines how water moves upward from the roots through capillary action. Which factor, explained by the physics of capillarity, most directly influences the efficiency of water absorption in plants?

A. The soil's pH level
B. The size of soil particles determining pore spaces
C. The amount of organic matter in the soil
D. The soil's color and reflectivity

Answer: B
Explanation: Capillarity depends on the adhesion between water and solid surfaces and the narrowness of the pores. Smaller soil particles create smaller pore spaces, which enhances capillary rise, thereby improving water absorption by plant roots.

Q.42 In a yogurt fermentation experiment, a microbiologist observes that increasing the incubation temperature (up to an optimum point) accelerates lactic acid production by bacteria. Which scientific principle best explains this observation?

A. Boyle's law

B. The Arrhenius equation

C. Archimedes' principle

D. Dalton's law of partial pressures

Answer: B

Explanation: The Arrhenius equation describes how reaction rates increase with temperature because higher temperatures provide reactant molecules (and enzymes) with more kinetic energy, leading to more frequent and effective collisions that drive faster fermentation.

Q.43 A wildlife biologist examines two bird species with the same mass but different wing areas. Using physics principles, which statement best explains how an increased wing area affects a bird's flight?

A. A larger wing area decreases lift, forcing the bird to flap harder.

B. A larger wing area increases lift and reduces wing loading, facilitating easier takeoff and improved maneuverability.

C. A larger wing area has no effect on flight performance.

D. A larger wing area increases drag without affecting lift.

Answer: B

Explanation: Physics tells us that lift is influenced by wing area; a larger wing area produces more lift for the same weight, resulting in lower wing loading. This reduction in wing loading enhances takeoff ability and maneuverability in flight.

Q.44 A cell biologist uses Fick's law to study the diffusion of nutrients across a cell membrane. If the concentration gradient of a nutrient is doubled, what happens to the diffusion rate, assuming all other factors remain constant?

A. The diffusion rate halves

B. The diffusion rate remains the same

C. The diffusion rate doubles

D. The diffusion rate increases fourfold

Answer: C

Explanation: Fick's first law states that the diffusion rate is directly proportional to the concentration gradient. Therefore, if the concentration gradient doubles, the diffusion rate will also double.

Q.45 In certain reptile species, the incubation temperature of eggs affects the rate of embryonic development. Using principles of chemical kinetics, what is the most likely effect of increasing the incubation temperature (within a safe range) on the development rate?

A. The development rate decreases due to enzyme inhibition

B. The development rate increases as reaction rates accelerate

C. The development rate remains unchanged

D. The development rate becomes unpredictable

Answer: B

Explanation: According to chemical kinetics, increasing temperature (within limits) increases molecular motion and reaction rates. In developing embryos, this means that metabolic reactions proceed faster, leading to an increased development rate.

Q.46 During adolescence, regular physical exercise improves bone density. Which physics principle explains how mechanical stress from exercise stimulates bone remodeling?

A. Newton's First Law of Motion
B. Hooke's Law of elasticity
C. Mechanotransduction, where mechanical stress is converted into biochemical signals
D. Bernoulli's principle

Answer: C
Explanation: Mechanotransduction refers to the process by which cells convert mechanical stimuli into chemical activity. In bones, mechanical stress from exercise signals osteoblasts to produce new bone tissue, thereby increasing bone density.

Q.47 A researcher studying polluted water finds that heavy metal ions can diffuse through aquatic organisms' membranes. Which two factors best determine the toxic effect of these heavy metals in the water?

A. Water temperature and pH only
B. Concentration and bioavailability of the heavy metal ions
C. The color and odor of the water
D. The water's hardness and salinity

Answer: B
Explanation: The toxicity of heavy metals depends on their concentration in the water and their bioavailability—how easily they diffuse through membranes and interact with biological tissues. These factors govern the level of exposure and the resulting toxic effects

Q.48 Acid rain is known to damage plant leaves. Which chemical process, supported by principles of chemistry, best explains how acid rain damages the cell membranes of plant leaves?

A. Polymerization of membrane proteins
B. Acid hydrolysis of membrane lipids
C. Reduction of chlorophyll concentration
D. Oxidation of cell wall carbohydrates

Answer: B
Explanation: Acid rain contains strong acids that can hydrolyze the ester bonds in lipids, thereby breaking down cell membranes. This acid hydrolysis disrupts the integrity of the membrane, leading to cell damage.

Q.49 A biologist uses UV-Visible spectroscopy to estimate chlorophyll concentration in plant leaves. Which chemical characteristic of chlorophyll allows it to be detected by this method?

A. Its high molecular weight
B. Its network of conjugated double bonds
C. Its low solubility in water
D. Its crystalline structure

Answer: B
Explanation: Chlorophyll contains a system of conjugated double bonds that strongly absorb light in the blue and red regions of the visible spectrum. This absorption is the basis for its detection using UV-Visible spectroscopy.

Q.50 A researcher examines how a reduction in oxygen levels affects ATP production in cells during adolescence. Which statement, based on principles of chemistry and biology, best describes the outcome?

A. Lower oxygen levels lead to increased ATP production via anaerobic respiration

B. Reduced oxygen levels limit the electron transport chain, decreasing ATP production

C. Oxygen concentration does not affect ATP production

D. Lower oxygen levels cause a switch to photosynthesis for energy production

Answer: B

Explanation: In aerobic respiration, oxygen is the final electron acceptor in the electron transport chain. When oxygen levels are reduced, the chain cannot operate efficiently, leading to decreased ATP production. Anaerobic respiration produces far less ATP and does not fully compensate for the loss.

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Answer Key

Q.No.	Ans.	Q.No.	Ans.	Q.No.	Ans.	Q.No.	Ans.	Q.No.	Ans.
1	B	2	B	3	C	4	B	5	B
6	C	7	A	8	B	9	A	10	B
11	B	12	B	13	B	14	A	15	B
16	A	17	B	18	B	19	B	20	B
21	A	22	A	23	B	24	C	25	D
26	B	27	B	28	B	29	B	30	B
31	A	32	A	33	A	34	A	35	C
36	A	37	C	38	A	39	A	40	D
41	B	42	B	43	B	44	C	45	B
46	C	47	B	48	B	49	B	50	B

Space for Rough Work