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Logical Reasoning Tricks and Techniques for

Exam: IAS, PCS, UPSC, Bank PO, NDA, RRB, SSC, Indian Air Force, Etc.

VERBAL REASONING- ASSERTION AND REASON(ENGLISH)

Q1: Assertion (A): The sky appears blue.

Reason (R): Blue light is scattered more than other colors by the atmosphere.

Long Method: The assertion is correct because the sky does appear blue. The reason given is also correct and it explains the assertion. According to Rayleigh scattering, shorter wavelengths of light (blue and violet) are scattered more than longer wavelengths (red). Since our eyes are more sensitive to blue light and some of the violet light is absorbed by the upper atmosphere, the sky appears blue to us. Therefore, both the assertion and reason are true, and the reason correctly explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q2: Assertion (A): Plants need sunlight to perform photosynthesis.

Reason (R): Photosynthesis occurs in the mitochondria of plant cells.

Long Method: The assertion is correct because plants do need sunlight to perform photosynthesis, which is the process they use to convert light energy into chemical energy. However, the reason is incorrect. Photosynthesis occurs in the chloroplasts, not the mitochondria, which are involved in cellular respiration. Therefore, the assertion is true, but the reason is false.

Short Method: A is true, R is false.

Q3: Assertion (A): Water boils at 100°C at sea level.

Reason (R): Boiling point of water decreases with altitude.

Long Method: The assertion is correct; water does boil at 100°C at sea level. The reason is also correct because the boiling point of water decreases as altitude increases due to lower atmospheric pressure. The reason correctly explains why water boils at a different temperature at higher altitudes. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q4: Assertion (A): Diamond is used as a cutting tool.

Reason (R): Diamond is the hardest natural substance known.

Long Method: The assertion is correct; diamond is indeed used as a cutting tool. The reason given is also correct; diamond is the hardest natural substance, which makes it very effective for cutting other materials. The reason correctly explains why diamonds are used as cutting tools. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

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Q5: Assertion (A): Lightning is seen before thunder is heard.

Reason (R): Light travels faster than sound.

Long Method: The assertion is correct; we do see lightning before we hear thunder. The reason is also correct because light travels faster than sound. Light travels at approximately 299,792 km/s, while sound travels at about 343 m/s in air. This difference in speed explains why we see lightning before hearing thunder. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q6: Assertion (A): Iron rusts in the presence of moisture.

Reason (R): Rust is the result of the reaction between iron and oxygen.

Long Method: The assertion is correct; iron does rust in the presence of moisture. The reason given is also correct; rust is formed when iron reacts with oxygen, especially in the presence of water, forming iron oxide. The reason explains why iron rusts in moist conditions. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q7: Assertion (A): The Great Wall of China can be seen from space with the naked eye.

Reason (R): The Great Wall of China is very wide.

Long Method: The assertion is actually a myth; the Great Wall of China cannot be seen from space with the naked eye. The reason is also incorrect; while the Great Wall is long, it is not wide enough to be visible from space without aid. Therefore, the assertion is false, and the reason is false.

Short Method: A is false, R is false.

Q8: Assertion (A): Sound cannot travel through a vacuum.

Reason (R): Sound requires a medium to propagate.

Long Method: The assertion is correct; sound cannot travel through a vacuum. The reason given is also correct because sound requires a medium (solid, liquid, or gas) to propagate as it travels through the vibration of particles in the medium. In a vacuum, there are no particles to vibrate, so sound cannot travel. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

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Q9: Assertion (A): The boiling point of water is 100°C.

Reason (R): The boiling point of water is the temperature at which its vapor pressure equals atmospheric pressure.

Long Method: The assertion is correct; water boils at 100°C under standard atmospheric pressure (1 atm). The reason is also correct; the boiling point is defined as the temperature at which the vapor pressure of the liquid equals the atmospheric pressure. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q10: Assertion (A): Helium balloons rise in the air.

Reason (R): Helium is lighter than air.

Long Method: The assertion is correct; helium balloons do rise in the air. The reason given is also correct because helium is less dense than air, causing helium-filled balloons to rise. The reason correctly explains why helium balloons rise. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q11: Assertion (A): Photosynthesis occurs in green plants.

Reason (R): Photosynthesis converts carbon dioxide and water into glucose and oxygen using sunlight.

Long Method: The assertion is correct; photosynthesis does occur in green plants. The reason given is also correct; the process of photosynthesis involves the conversion of carbon dioxide and water into glucose and oxygen, utilizing sunlight and chlorophyll. The reason explains the process involved in photosynthesis. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q12: Assertion (A): The speed of light in a vacuum is the fastest speed in the universe.

Reason (R): Light travels at approximately 300,000 km/s in a vacuum.

Long Method: The assertion is correct; the speed of light in a vacuum is considered the ultimate speed limit in the universe. The reason given is also correct; the speed of light in a vacuum is approximately 299,792 km/s (rounded to 300,000 km/s). The reason provides a factual basis for the assertion. Thus, both the assertion and reason are true, and the reason explains the assertion.

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Q13: Assertion (A): All metals are good conductors of electricity.

Reason (R): Metals have free electrons that facilitate the flow of electric current.

Long Method: The assertion is generally correct as most metals are good conductors of electricity. The reason given is also correct; metals have free electrons that allow them to conduct electric current efficiently. The reason explains why metals are good conductors. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q14: Assertion (A): The Pacific Ocean is the largest ocean on Earth.

Reason (R): The Pacific Ocean covers more than 63 million square miles.

Long Method: The assertion is correct; the Pacific Ocean is indeed the largest ocean on Earth. The reason given is also correct because the Pacific Ocean covers an area of over 63 million square miles, making it the largest ocean by surface area. The reason provides a factual basis for the assertion. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q15: Assertion (A): $E=mc^2$ is a famous equation in physics.

Reason (R): $E=mc^2$ represents the equivalence of mass and energy.

Long Method: The assertion is correct; $E=mc^2$ is indeed a famous equation formulated by Albert Einstein. The reason given is also correct; this equation expresses the principle that mass and energy are interchangeable, highlighting their equivalence. The reason explains the significance of the equation. Thus, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q16: Assertion (A): The Earth revolves around the Sun.

Reason (R): The Sun's gravitational pull keeps the Earth in orbit.

Long Method: The assertion is correct; the Earth does revolve around the Sun in an elliptical orbit. The reason given is also correct because the gravitational pull of the Sun is the central force that keeps the Earth and other planets in their orbits. This gravitational force provides the necessary centripetal force to maintain the Earth's orbit. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

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Q17: Assertion (A): Ice floats on water.

Reason (R): Ice is less dense than water.

Long Method: The assertion is correct; ice does float on water. The reason given is also correct because the density of ice is less than that of liquid water. When water freezes, it expands and its molecules form a crystalline structure that is less dense than liquid water. This difference in density is why ice floats. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q18: Assertion (A): All acids turn blue litmus paper red.

Reason (R): Acids release hydrogen ions (H⁺) in aqueous solutions.

Long Method: The assertion is correct; acids do turn blue litmus paper red, which is a standard test for acidity. The reason given is also correct because acids release hydrogen ions (H⁺) when dissolved in water, and these ions are responsible for the acidic properties of the solution, including the color change of litmus paper. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q19: Assertion (A): The Amazon Rainforest is known as the "lungs of the Earth."

Reason (R): The Amazon Rainforest produces a significant portion of the world's oxygen.

Long Method: The assertion is correct; the Amazon Rainforest is often referred to as the "lungs of the Earth." The reason given is partially correct. While the Amazon Rainforest does produce a large amount of oxygen through photosynthesis, it is also a significant carbon sink, absorbing large amounts of CO₂. However, much of the oxygen produced is used by the rainforest's own ecosystem. Despite this, the reason helps explain the significance of the rainforest in global oxygen cycles. Therefore, both the assertion and reason are true, and the reason helps explain the assertion.

Short Method: A is true, R is true, and R partially explains A.

Q20: Assertion (A): Antibiotics are effective against viral infections.

Reason (R): Antibiotics kill or inhibit the growth of bacteria.

Long Method: The assertion is incorrect; antibiotics are not effective against viral infections. Antibiotics work by targeting specific bacterial processes, such as cell wall synthesis or protein synthesis, which are not present in viruses. The reason given is correct; antibiotics are designed to kill or inhibit the growth of bacteria, not viruses. Therefore, the assertion is false, but the reason is true.

Short Method: A is false, R is true.

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Q21: Assertion (A): The Great Wall of China was built for defense purposes.

Reason (R): The Great Wall of China was constructed during the Ming Dynasty.

Long Method: The assertion is correct; the Great Wall of China was indeed built for defense purposes to protect against invasions. The reason given is also correct; significant portions of the Great Wall that exist today were constructed during the Ming Dynasty. However, the construction of the wall began much earlier, and the reason does not fully explain the assertion's focus on its purpose. Therefore, the assertion is true, and the reason is true but does not fully explain the assertion.

Short Method: A is true, R is true, but R does not fully explain A.

Q22: Assertion (A): Solar eclipses can only occur during a new moon.

Reason (R): A solar eclipse happens when the moon passes between the Earth and the Sun.

Long Method: The assertion is correct; solar eclipses can only occur during a new moon when the moon is between the Earth and the Sun. The reason given is also correct and it directly explains the assertion. During a new moon, the alignment necessary for a solar eclipse is possible, where the moon blocks the Sun's light from reaching the Earth. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q23: Assertion (A): Plants release oxygen during the day.

Reason (R): Photosynthesis occurs in the presence of sunlight.

Long Method: The assertion is correct; plants do release oxygen during the day. The reason given is also correct because photosynthesis, the process by which plants convert carbon dioxide and water into glucose and oxygen, occurs in the presence of sunlight. During the day, when sunlight is available, photosynthesis takes place, resulting in the release of oxygen. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q24: Assertion (A): The Sahara Desert is the largest desert in the world.

Reason (R): Deserts are characterized by low precipitation.

Long Method: The assertion is incorrect; the Sahara Desert is the largest hot desert, but the Antarctic Desert is the largest desert overall. The reason given is correct because deserts are defined by their low levels of precipitation, not their temperature. Therefore, the assertion is false, but the reason is true.

Short Method: A is false, R is true.

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Q25: Assertion (A): Milk is a good source of calcium.

Reason (R): Calcium is essential for bone health.

Long Method: The assertion is correct; milk is a well-known source of calcium, which is important for maintaining strong bones and teeth. The reason given is also correct because calcium plays a crucial role in bone health. The reason supports the assertion by explaining why calcium (which is abundant in milk) is beneficial. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q26: Assertion (A): All birds can fly.

Reason (R): Birds have wings and feathers.

Long Method: The assertion is incorrect; not all birds can fly (e.g., ostriches, penguins). The reason given is correct; birds do have wings and feathers, which are adaptations for flight. However, the reason does not account for the fact that some birds are flightless. Therefore, the assertion is false, and the reason is true.

Short Method: A is false, R is true.

Q27: Assertion (A): Photosynthesis produces glucose.

Reason (R): Chlorophyll absorbs light energy for the photosynthesis process.

Long Method: The assertion is correct; photosynthesis produces glucose as one of its products. The reason given is also correct because chlorophyll in the chloroplasts absorbs light energy, which is essential for the photosynthesis process. The reason explains how photosynthesis is powered, leading to glucose production. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q28: Assertion (A): The Moon has no atmosphere.

Reason (R): The Moon's gravitational force is too weak to retain an atmosphere.

Long Method: The assertion is correct; the Moon effectively has no significant atmosphere. The reason given is also correct because the Moon's gravitational force is too weak to hold onto atmospheric particles, which escape into space. The reason correctly explains why the Moon lacks an atmosphere. Therefore, both the assertion and reason are true, and the reason explains the assertion.

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Q29: Assertion (A): Deserts have very high temperatures.

Reason (R): Deserts receive very little rainfall.

Long Method: The assertion is partially correct; many deserts have high temperatures, but this is not a defining characteristic (e.g., cold deserts exist). The reason given is correct because the primary characteristic of deserts is low precipitation. While low rainfall contributes to extreme temperatures in some deserts, it does not fully explain the temperature aspect. Therefore, the assertion is partially true, and the reason is true but does not fully explain the assertion.

Short Method: A is partially true, R is true, but R does not fully explain A.

Q30: Assertion (A): Bats are mammals.

Reason (R): Bats give birth to live young and feed them with milk.

Long Method: The assertion is correct; bats are classified as mammals. The reason given is also correct because one of the defining characteristics of mammals is that they give birth to live young and produce milk to feed them. This reason supports the assertion by explaining a key trait of mammals, including bats. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R

Q31: Assertion (A): Birds are the only animals that can fly.

Reason (R): Birds have wings adapted for flight.

Long Method: The assertion is incorrect; birds are not the only animals that can fly. Bats (mammals) and many insects can also fly. The reason given is correct; birds do have wings adapted for flight, but this does not exclude other animals from being capable of flight. Therefore, the assertion is false, but the reason is true.

Short Method: A is false, R is true.

Q32: Assertion (A): The human heart has four chambers.

Reason (R): The human circulatory system is a double circulatory system.

Long Method: The assertion is correct; the human heart does have four chambers (two atria and two ventricles). The reason given is also correct; the human circulatory system is a double circulatory system, meaning blood passes through the heart twice during each circuit (once to the lungs and once to the rest of the body). The reason provides a contextual explanation for the structure of the heart. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

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Q33: Assertion (A): Sound travels faster in water than in air.

Reason (R): Water is denser than air.

Long Method: The assertion is correct; sound does travel faster in water than in air. The reason given is also correct because water is denser than air, and the molecules are closer together, allowing sound waves to transmit more quickly. The reason explains why sound travels faster in water. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q34: Assertion (A): Carbon dioxide is a greenhouse gas.

Reason (R): Greenhouse gases trap heat in the Earth's atmosphere.

Long Method: The assertion is correct; carbon dioxide (CO₂) is indeed a greenhouse gas. The reason given is also correct; greenhouse gases, including CO₂, trap heat in the Earth's atmosphere by absorbing and emitting infrared radiation. This process contributes to the greenhouse effect and global warming. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q35: Assertion (A): Mercury is the closest planet to the Sun.

Reason (R): Mercury has the shortest orbit period around the Sun.

Long Method: The assertion is correct; Mercury is the closest planet to the Sun. The reason given is also correct because Mercury's proximity to the Sun gives it the shortest orbital period of all the planets in the Solar System, taking about 88 Earth days to complete one orbit. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q36: Assertion (A): Blood appears red in color.

Reason (R): Hemoglobin in blood binds with oxygen.

Long Method: The assertion is correct; blood appears red. The reason given is also correct; hemoglobin, a protein in red blood cells, binds with oxygen to form oxyhemoglobin, which is bright red in color. The presence of oxyhemoglobin gives arterial blood its red color. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q37: Assertion (A): The boiling point of water decreases at higher altitudes.

Reason (R): Atmospheric pressure decreases with altitude.

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Long Method: The assertion is correct; the boiling point of water does decrease at higher altitudes. The reason given is also correct because as altitude increases, atmospheric pressure decreases. Lower atmospheric pressure reduces the temperature at which water boils. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q38: Assertion (A): Gold is a good conductor of electricity.

Reason (R): Gold is a metal with free-moving electrons.

Long Method: The assertion is correct; gold is indeed a good conductor of electricity. The reason given is also correct; gold, like other metals, has free-moving electrons that allow electric current to pass through it easily. The reason provides the physical basis for the assertion. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q39: Assertion (A): All living organisms need water to survive.

Reason (R): Water is essential for metabolic processes.

Long Method: The assertion is correct; all living organisms require water for survival. The reason given is also correct; water is essential for numerous metabolic processes, including digestion, transport of nutrients, and temperature regulation. The reason explains why water is vital for life. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

Q40: Assertion (A): The Moon does not produce its own light.

Reason (R): The Moon reflects sunlight.

Long Method: The assertion is correct; the Moon does not generate its own light. The reason given is also correct; the Moon appears bright in the sky because it reflects sunlight. This reflection of sunlight is what makes the Moon visible to us at night. Therefore, both the assertion and reason are true, and the reason explains the assertion.

Short Method: A is true, R is true, and R explains A.

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