GEEKY SCIENTISTS OLYMPIADS

Grade 7-8

Instructions:

- Total Questions: **30**
- Time Allowed: **60 Minutes**
- Choose the correct option (A, B, C, or D)
- Each question carries **1 mark**

SECTION A (IQ Level: Verbal & Non-Verbal Reasoning)

Q1	**Identify the CORRECT relationship: Archipelago is to islands as constellation is to ___?**
A Planets	**B** Stars
C Galaxies	**D** Meteors

Q2	*All ethical actions promote well-being. Donating to charity is ethical.* **What MUST follow from these statements?**
A Donating to charity harms well-being	**B** Donating to charity promotes well-being
C Not all ethical actions promote well-being	**D** Charity is unrelated to ethics

Q3	**Choose the pair that shows the SAME relationship as: Prologue : Play**
A Chapter : Book	**B** Introduction : Essay
C Overture : Opera	**D** Verse : Poem

Q4	*A 3×3 grid has numbers 1–9. Each row, column, and diagonal must add up to 15. The centre is 5, top-left is 2, bottom-right is 8.* **What number goes in the top-right corner?**
A 4	**B** 6
C 7	**D** 9

Q5	*In a code: CAT = 3120, DOG = 4157.* **Using the same code, what does BAT equal?**

A 2120	**B** 3141
C 2119	**D** 2141

Section B (Subject relevant)

Q6 **The human nervous system sends signals at very high speeds. Which part of the nervous system acts as the main control center for all body functions?**

A Spinal cord	**B** Brain
C Heart	**D** Liver

Q7 ***A patient has a blocked coronary artery. Doctors warn that this could lead to a heart attack. Why does a blocked artery to the heart muscle cause so much damage?***

A The heart is the largest organ	**B** Heart muscle cells die quickly without oxygen — and unlike other cells, they do not regenerate easily
C The blood becomes too thick	**D** The blocked artery stops the lungs from functioning

Q8 **Which organelle is known as the 'powerhouse of the cell' because it produces energy in the form of ATP?**

A Nucleus	**B** Ribosome
C Mitochondria	**D** Vacuole

Q9 ***A student observes two cells under a microscope — one has a cell wall and chloroplasts, and the other does not. What can the student correctly conclude?***

A The cell without chloroplasts is dead	**B** The cell with a cell wall and chloroplasts is a plant cell
C Both cells are from the same organism	**D** The cell without a cell wall cannot reproduce

Q10 **The nucleus controls the activities of the cell. If the nucleus is removed from a living cell, what would MOST LIKELY happen?**

A The cell would grow faster	**B** The cell would continue functioning normally
C The cell would eventually die as it cannot control its own functions	**D** The cell would divide more rapidly

Q11 **Bacteria are prokaryotic organisms. How do they differ structurally from eukaryotic cells such as human cells?**

A Bacteria have a nucleus, human cells do not	**B** Bacteria lack a membrane-bound nucleus, while human cells have one
C Bacteria are larger than human cells	**D** Bacteria have mitochondria; human cells do not

Q12 ***During a flu outbreak at a school, the nurse advises students to wash hands frequently and avoid sharing utensils. What is the scientific reason behind this advice?***

A Flu viruses are transmitted through the air only	**B** Viruses spread through direct contact and contaminated surfaces; hygiene breaks the chain of transmission
C Washing hands kills all types of bacteria and viruses permanently	**D** The flu only spreads through contaminated water

Q13 **Water (H_2O) is a compound, not a mixture. What is the key reason for this?**

A Water contains hydrogen and oxygen mixed together randomly	**B** The hydrogen and oxygen in water are chemically combined in a fixed ratio and cannot be separated physically
C Water is a liquid, so it must be a compound	**D** Compounds always contain exactly two elements

Q14 **An element cannot be broken down into simpler substances by chemical means. Based on this, which of the following is an element?**

A Salt (NaCl)	**B** Water (H_2O)

C Carbon (C)	**D** Carbon dioxide (CO_2)

Q15 ***A student tests four liquids with litmus paper: vinegar turns red, bleach turns blue, milk turns slightly red, and pure water shows no change. Which liquid is a base?***

A Vinegar	**B** Milk
C Bleach	**D** Pure water

Q16 **When an acid reacts with a base, the products are a salt and water. This type of reaction is called:**

A Combustion	**B** Neutralization
C Decomposition	**D** Oxidation

Q17 ***Stomach acid (HCl) causes heartburn. Antacid tablets contain bases such as magnesium hydroxide. How do antacids relieve heartburn?***

A They increase acid production to balance the stomach	**B** They cool down the stomach lining
C They neutralize the excess acid in the stomach by reacting with it	**D** They physically block the acid from rising

Q18 **Iron rusts when exposed to oxygen and water, but gold does not rust under the same conditions. What property of metals does this demonstrate?**

A Conductivity	**B** Malleability
C Reactivity — different metals have different tendencies to react	**D** Lustre

Q19 **Copper wire is used in electrical circuits while plastic covers the wire. Why is plastic used as an insulator?**

A Plastic conducts electricity better than copper	**B** Plastic is a non-metal that does not allow electricity to pass through
C Plastic is cheaper than all metals	**D** Plastic generates electricity on its own

Q20 ***A car on a wet road takes longer to stop than a car on a dry road when brakes are applied with the same force. What explains this?***

A Wet roads increase friction between tires and road	**B** Water reduces friction, so the braking force is less effective
C The engine generates more power on wet roads	**D** The car becomes heavier on wet roads

Q21 **Rolling friction is generally less than sliding friction. This is why:**

A Wheels are made of rubber	**B** Rolling objects are always lighter
C Ball bearings and wheels are used in machines to reduce friction and allow easier movement	**D** Sliding objects move faster than rolling ones

Q22 **Heat always transfers from a region of higher temperature to a region of lower temperature. This is a statement of which law?**

A First law of thermodynamics	**B** Second law of thermodynamics
C Newton's law of cooling	**D** Law of conservation of mass

Q23 ***A metal spoon left in hot soup becomes hot, while a wooden spoon stays cool. What property of materials explains this?***

A Density — metals are denser than wood	**B** Thermal conductivity — metals conduct heat readily while wood is an insulator
C Metals are magnetic, so they absorb heat faster	**D** Wood reflects heat away from itself

Q24 **In a series circuit, one bulb blows out and all the other bulbs go out too. In a parallel circuit, one bulb blows out and the rest stay on. What explains the difference?**

A Parallel circuits use more voltage	**B** In series, there is only one path for current — if it breaks, all bulbs go out; in parallel, each bulb has its own path
C Series circuits have less resistance	**D** Parallel circuits always have more bulbs

Q25 **A charged particle moving through a magnetic field experiences a force. This principle is the basis of which technology?**

A Solar panels	**B** Electric motors
C Thermometers	**D** Periscopes

Q26 ***A scientist wants to find out if a new drug kills bacteria. She grows bacteria on two identical plates, adds the drug to one plate but not the other, and checks results after 24 hours. What is the plate WITHOUT the drug called?***

A The test sample	**B** The control group
C The variable plate	**D** The reaction plate

Q27 **During an exothermic chemical reaction, energy is released as heat. Which of the following is an example of an exothermic reaction?**

A Photosynthesis	**B** Dissolving ammonium nitrate in water
C Burning wood or fossil fuels	**D** Melting ice

Q28 **Two objects with the same mass are heated with the same amount of energy. Object A heats up much more than Object B. This is because Object A has:**

A Greater thermal conductivity	**B** Lower specific heat capacity — it needs less energy per gram to raise its temperature
C Higher density	**D** A smoother surface

Q29 ***Zara adds a teaspoon of salt to water and stirs until it disappears. She then boils the water and the white solid reappears. Which process correctly describes what happened?***

A A chemical reaction occurred — salt changed permanently	**B** The salt dissolved (physical change) and then was recovered by evaporation (physical change)
C The water turned into salt through boiling	**D** Boiling creates new compounds from water

Q30 **The human body maintains a constant internal temperature of about 37°C even when the surrounding temperature changes. Which body system is MOST responsible for this temperature regulation?**

A Skeletal system	**B** Digestive system
C Nervous system working with skin, blood vessels, and sweat glands	**D** Muscular system alone

✨ **End of Paper – Best of Luck!** ✨