

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	Choose the pair that best reflects the relationship: Ephemeral : Permanence	
A Transient : Brevity	B Verbose : Wordiness	
C Stoic : Emotionlessness	D Capricious : Stability	

Q2	<p><i>Five scientists rank a hypothesis from most to least likely. Dr. A ranks it higher than Dr. B. Dr. C ranks it higher than Dr. A. Dr. D ranks it lower than Dr. B but higher than Dr. E.</i></p> <p>Who considers the hypothesis LEAST likely?</p>	
A Dr. A	B Dr. B	
C Dr. D	D Dr. E	

Q3	The passage states: 'Linguistic relativity posits that language shapes thought.' Which statement BEST paraphrases this?	
A Thought is impossible without language	B The structure of a language may influence how its speakers perceive the world	
C All languages convey identical concepts	D Speakers of different languages cannot understand each other	

Q4	<p><i>A code maps each letter: A=1, B=2, ... Z=26. MIND = 13+9+14+4 = 40. SOUL = 19+15+21+12 = 67.</i></p> <p>Using this system, what is the value of LOGIC?</p>	
A 52	B 54	
C 57	D 60	

Q5	<p><i>A 4×4 magic square requires each row, column, and diagonal to sum to 34. The first row is: 16, 3, 2, 13.</i></p> <p>What must the SECOND row sum to?</p>	
A 32	B 30	
C 34	D 36	

Section B (Subject relevant)

Q6	<p>An element has atomic number 17 and mass number 35. How many neutrons does it have, and in which group of the periodic table does it most likely appear?</p>	
A 18 neutrons, Group I	B 17 neutrons, Group VII (halogens)	
C 18 neutrons, Group VII (halogens)	D 35 neutrons, transition metals	

Q7	<p>Isotopes of the same element have the same number of protons but different numbers of neutrons. Carbon-12 and Carbon-14 are isotopes. How does this affect their chemical behavior?</p>	
A Carbon-14 is more reactive because it has more neutrons	B Their chemical properties are nearly identical because chemical behavior is determined by the number of electrons (same as protons)	
C Carbon-12 forms more stable compounds	D They behave completely differently in all chemical reactions	

Q8	<p>Moving across Period 3 from left to right, the metallic character of elements generally:</p>	
A Increases steadily	B Remains constant	
C Decreases, as elements become more non-metallic	D First increases then decreases	

Q9	<p><i>A chemist is designing a new alloy that must conduct electricity and resist corrosion. Based on periodic trends, which area of the periodic table should she look at for candidate elements?</i></p>	
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A Noble gases (Group 18)	B Halogens (Group 17)
C Transition metals (d-block)	D Non-metals in Period 2

Q10

Balance the following equation: $\text{Fe} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3$. What are the correct coefficients?

A $2\text{Fe} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3$	B $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$
C $\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$	D $2\text{Fe} + 2\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$

Q11

A student mixes hydrochloric acid with zinc metal and observes bubbles forming. She collects the gas and a burning splint makes a squeaky pop. What type of reaction is this and what gas was produced?

A Decomposition reaction; carbon dioxide	B Neutralization reaction; oxygen
C Displacement reaction; hydrogen gas	D Combustion reaction; water vapor

Q12

In electrolysis of water, which gas is produced at the cathode (negative electrode)?

A Oxygen	B Hydrogen
C Carbon dioxide	D Chlorine

Q13

In a galvanic cell, a zinc electrode is placed in copper sulfate solution. Zinc dissolves and copper deposits. Which electrode is the anode, and what type of reaction occurs there?

A Copper electrode; reduction	B Zinc electrode; oxidation — zinc loses electrons
C Zinc electrode; reduction — zinc gains electrons	D Both electrodes undergo oxidation

Q14

Ethanol ($\text{C}_2\text{H}_5\text{OH}$) belongs to which functional group of organic compounds?

A Carboxylic acids	B Aldehydes
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C Alcohols	D Esters
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Q15 *A chemist has two unlabeled solutions — one is an acid and the other is a base. She adds universal indicator to each. One turns red and the other turns dark blue/purple. Which statement correctly identifies the solutions?*

A The red solution is the base; the blue is the acid	B The red solution is the acid; the blue/purple is the base (high pH)
C Both solutions are neutral at different temperatures	D Universal indicator only works in acidic solutions

Q16 **According to Newton’s Third Law, when a rocket expels gas downward, the rocket is propelled upward. Which statement best explains this?**

A The gas pushes against the air and the air pushes the rocket	B Every action has an equal and opposite reaction — the gas pushes down and the rocket is pushed up with equal force
C The rocket is lighter than air so it floats upward	D Newton’s Third Law only applies to objects in contact

Q17 **A 5 kg object accelerates at 4 m/s² when a force is applied. If the same force is applied to a 20 kg object, what will its acceleration be?**

A 16 m/s ²	B 4 m/s ²
C 1 m/s ²	D 80 m/s ²

Q18 **A machine lifts a 200 N load through a height of 5 m in 10 seconds. What is the power output of the machine?**

A 1000 W	B 400 W
C 100 W	D 2000 W

Q19 **A pendulum swings back and forth. At the highest point of its swing, it has maximum potential energy and zero kinetic energy. At the lowest point, it has maximum kinetic energy and minimum potential energy. What principle does this demonstrate?**

A Friction converts all energy to sound	B Conservation of energy — total mechanical energy remains constant (ignoring friction)
C Energy is created at the lowest point of the swing	D Kinetic energy and potential energy are independent of each other

Q20 Two positively charged spheres are placed near each other. Describe the force between them and what happens to that force if the distance between them is doubled.

A They attract; force doubles when distance doubles	B They repel; force reduces to one-quarter when distance is doubled (inverse square law)
C They repel; force halves when distance doubles	D They attract; force reduces to one-quarter when distance doubles

Q21 Three resistors of 2Ω , 4Ω , and 6Ω are connected in series to a 12V battery. What is the total current in the circuit?

A 6 A	B 2 A
C 1 A	D 3 A

Q22 A student balances the equation: $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$. The correctly balanced form is:

A $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$	B $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
C $\text{H}_2 + 2\text{O}_2 \rightarrow \text{H}_2\text{O}_2$	D $4\text{H}_2 + \text{O}_2 \rightarrow 4\text{H}_2\text{O}$

Q23 In electrolysis of water, which gas is produced at the cathode?

A Oxygen	B Chlorine
C Carbon dioxide	D Hydrogen

24 A 10 kg object experiences a net force of 50 N. What is its acceleration?

A 500 m/s^2	B 0.2 m/s^2
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C 5 m/s ²	D 50 m/s ²
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Q25 Which material would make the best electrical conductor?	
A Rubber	B Wood
C Copper wire	D Plastic

(For Biology Students)

Q26 A scientist observes that a cancerous cell divides uncontrollably. At the cellular level, what has most likely gone wrong?	
A The mitochondria have stopped producing ATP	B The cell membrane has ruptured
C The DNA regulatory mechanisms controlling the cell cycle have been disrupted	D The ribosomes have stopped producing proteins

Q27 Taxonomy is the branch of biology concerned with classifying organisms. In the five-kingdom system, which kingdom contains organisms that are prokaryotic and lack a nuclear membrane?	
A Protista	B Fungi
C Monera	D Plantae

Q28 A researcher studies how deforestation affects the water cycle in a region. She is working at the intersection of which biological fields?	
A Genetics and cytology	B Ecology and environmental biology
C Microbiology and anatomy	D Embryology and taxonomy

Q29 During mitosis, a cell with 46 chromosomes divides. How many chromosomes will each daughter cell contain, and what is the significance of this?	
A 23 chromosomes — used for sexual reproduction	B 46 chromosomes — ensures identical genetic information is passed to each daughter cell
C 92 chromosomes — the cell duplicates all DNA	D 23 chromosomes — because mitosis always halves chromosomes

Q30

Meiosis produces gametes with half the chromosome number. A human egg cell fuses with a human sperm cell during fertilization. What is the chromosome number of the resulting zygote?

A 23 chromosomes

B 92 chromosomes

C 46 chromosomes — restored to the full diploid number

D It depends on the sex of the offspring

(For Computer Students)

Q26

*A student wants to protect her computer from ransomware. She is advised to regularly back up her data, avoid clicking unknown links, and keep her antivirus updated. Which of the following **BEST** describes why all three steps are needed?*

A Each step targets a different stage of a ransomware attack — backup for recovery, link awareness for prevention, antivirus for detection

B Only antivirus software is needed; the other steps are optional

C Backing up data automatically removes all viruses

D Ransomware can only enter through email attachments

Q27

In a spreadsheet, the formula =SUM(B2:B10)/COUNT(B2:B10) calculates which statistical measure?

A The total sum of all values

B The median of the dataset

C The arithmetic mean (average) of values in B2 to B10

D The maximum value in the range

Q28

The Internet uses the TCP/IP protocol suite. When you type a web address into a browser, which protocol is responsible for finding the corresponding IP address?

A HTTP

B FTP

C DNS (Domain Name System)

D SMTP

Q29

A LAN (Local Area Network) connects computers in a single building. A WAN (Wide Area Network) connects computers across cities or countries. Which technology is **MOST responsible for making the global internet a WAN?**

A Bluetooth and infrared signals	B Fiber optic cables, satellites, and undersea data cables
C USB connections between buildings	D CD-ROM data sharing between cities

Q30	A hacker installs software that records every keystroke a user types. This type of malware is called a:
A Virus	B Keylogger
C Worm	D Firewall

✧ End of Paper – Best of Luck! ✧

