

Class 5 | Science Olympiad

Instructions: Each question has one correct answer. Choose the best option (A/B/C/D). Answer key is provided at the end. This paper is for practice only — not an official exam paper. Recommended time: **45 minutes**.

Q1. Which organelle is called the 'powerhouse of the cell'?

A. nucleus

B. ribosome

C. mitochondria

D. vacuole

Q2. The process by which DNA copies itself is called:

A. transcription

B. translation

C. replication

D. mutation

Q3. Which type of bond forms when electrons are SHARED between atoms?

A. ionic bond

B. metallic bond

C. covalent bond

D. hydrogen bond

Q4. Newton's Second Law: $F = ma$. If mass = 5 kg and acceleration = 3 m/s^2 , the force is:

A. 8 N

B. 2 N

C. 15 N

D. 53 N

Q5. Which of these is a NOBLE gas?

A. chlorine

B. nitrogen

C. neon

D. fluorine

Q6. The Doppler effect explains why a siren sounds higher-pitched as it:

A. moves away from you

B. approaches you

C. stays stationary

D. decreases in volume

Q7. In photosynthesis: $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{light} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \underline{\hspace{1cm}}$

A. 6CO_2

B. $6\text{H}_2\text{O}$

C. 6O_2

D. $\text{C}_6\text{H}_{12}\text{O}_6$

Q8. Which type of rock forms from pre-existing rocks changed by heat and pressure?

A. sedimentary

B. igneous

C. metamorphic

D. volcanic

Q9. Which of these particles has a NEGATIVE charge?

A. proton

B. neutron

C. positron

D. electron

Q10. The pH scale runs from:

A. 0 to 7

B. 1 to 14

C. 0 to 14

D. -7 to +7

Q11. Which planet is the HOTTEST in our solar system?

A. Mercury

B. Venus

C. Mars

D. Jupiter

Q12. Ohm's Law states: $V = IR$. If $V = 12\text{ V}$ and $R = 4\ \Omega$, the current I is:

A. 48 A

B. 8 A

C. 3 A

D. 16 A

Q13. Which of these gases is a greenhouse gas?

A. nitrogen

B. oxygen

C. methane

D. argon

Q14. The law of conservation of energy states that energy:

A. can be created from nothing

B. is always destroyed in reactions

C. can be neither created nor destroyed, only converted

D. always becomes heat

Q15. Which hormone controls the body's 'fight or flight' response?

A. insulin

B. oestrogen

C. adrenaline

D. thyroxine

Q16. The atomic number of an element equals the number of:

A. neutrons

B. protons

C. electrons in outer shell

D. protons and neutrons combined

Q17. Which of these is an example of ELECTROMAGNETIC INDUCTION?

A. a battery powering a torch

B. rubbing a balloon on hair

C. a generator producing electricity

D. a magnet attracting iron filings

Q18. The carrying capacity of an ecosystem is:

A. the total area of the ecosystem

B. the maximum population the environment can sustain

C. the minimum number of species

D. the amount of rainfall annually

Q19. Which of these correctly describes a EUKARYOTIC cell?

A. no nucleus or membrane-bound organelles

B. found only in bacteria

C. has a nucleus enclosed in a membrane

D. lacks mitochondria

Q20. The bending of light as it passes from one medium to another is called:

A. reflection

B. diffraction

C. refraction

D. dispersion

Q21. Which type of reproduction requires only ONE parent?

A. sexual reproduction

B. asexual reproduction

C. cross-pollination

D. fertilisation

Q22. The SI unit of energy is the:

A. watt

B. newton

C. joule

D. pascal

Q23. In meiosis, the resulting cells have ___ the chromosomes of the parent cell.

A. double

B. triple

C. half

D. the same number of

Q24. Which ecosystem has the GREATEST biodiversity?

A. tundra

B. desert

C. grassland

D. tropical rainforest

Q25. The gravitational potential energy of an object is given by:

A. $E = mc^2$

B. $E = \frac{1}{2}mv^2$

C. $E = mgh$

D. $E = Fd$

Q26. Natural selection was proposed by:

A. Gregor Mendel

B. Charles Darwin

C. Louis Pasteur

D. James Watson

Q27. Which part of the brain controls balance and coordination?

A. cerebrum

B. medulla oblongata

C. cerebellum

D. hypothalamus

Q28. A catalyst in a chemical reaction:

A. is consumed by the reaction

B. increases the activation energy

C. slows the reaction

D. speeds up the reaction without being consumed

Q29. Which of these diseases is caused by a VIRUS?

A. tuberculosis

B. cholera

C. malaria

D. influenza (flu)

Q30. The periodic table organises elements by:

A. alphabetical order

B. atomic mass only

C. colour and texture

D. increasing atomic number

Q31. A black hole is formed when:

A. two stars collide

B. a planet cools completely

C. a massive star collapses under gravity

D. comets cluster together

Q32. The nitrogen cycle involves bacteria that convert nitrogen gas into:

A. oxygen

B. ammonia and nitrates

C. carbon dioxide

D. glucose

Q33. Which of the following is the correct equation for photosynthesis?

A. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \text{energy}$

B. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

C. $6O_2 + \text{glucose} \rightarrow CO_2 + H_2O$

D. $\text{glucose} + O_2 \rightarrow CO_2 + H_2O + \text{ATP}$

Q34. In genetics, a trait that is expressed even when only ONE copy of the allele is present is:

A. recessive

B. codominant

C. dominant

D. polygenic

Q35. The structure of DNA was discovered by:

A. Mendel and Darwin

B. Watson and Crick

C. Curie and Einstein

D. Hooke and Pasteur

Q36. Which of the following correctly describes an EXOTHERMIC reaction?

A. it absorbs heat from surroundings

B. it requires high temperature to start and stop

C. it releases energy (heat) to the surroundings

D. it produces only gases

Q37. The moment of a force is calculated as:

A. force \times mass

B. force \div distance

C. force \times perpendicular distance from pivot

D. mass \times acceleration

Q38. Which of these correctly lists the order of the planets from the Sun?

A. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

B. Mercury, Earth, Venus, Mars, Jupiter, Saturn, Uranus, Neptune

C. Venus, Mercury, Earth, Mars, Saturn, Jupiter, Uranus, Neptune

D. Mercury, Venus, Mars, Earth, Jupiter, Saturn, Neptune, Uranus

Q39. A mutation in DNA can be caused by:

A. drinking water

B. breathing oxygen

C. errors in DNA replication or radiation

D. sleeping

Q40. Which of these best describes the 'lock and key' model in biology?

A. how bones connect at joints

B. how enzymes bind specifically to their substrates

C. how viruses enter cells

D. how antibodies recognise pathogens

Answer Key

Q1: C Q2: C Q3: C Q4: C Q5: C Q6: B Q7: C Q8: C Q9: D Q10: C
Q11: B Q12: C Q13: C Q14: C Q15: C Q16: B Q17: C Q18: B Q19: C
Q20: C Q21: B Q22: C Q23: C Q24: D Q25: C Q26: B Q27: C Q28: D
Q29: D Q30: D Q31: C Q32: B Q33: B Q34: C Q35: B Q36: C Q37: C
Q38: A Q39: C Q40: B