

CLASS 10 - SCIENCE | SOF ISO-STYLE LEVEL 1

50 MCQs | Maximum Marks: 60 | Time: 60 minutes

Name: _____ Batch: _____ Date: _____

Choose one correct option. Q1-45: 1 mark each; Q46-50: 3 marks each. No negative marking.

All questions are compulsory. No calculators. Original Prodigy practice paper; not an official SOF paper.

LOGICAL REASONING

- Find the next number: 2, 6, 12, 20, 30, ...
(A) 40 (B) 48 (C) 44 (D) 42
- If each letter is shifted two places forward, MATH is coded as:
(A) NBUI (B) PDWK (C) OCUI (D) OCVJ
- Which is the odd one out?
(A) Triangle (B) Rectangle (C) Square (D) Sphere
- A student faces north, turns right, then right again. Which way does the student face?
(A) East (B) North (C) West (D) South
- Complete the analogy: Hand : Glove :: Foot : ?
(A) Belt (B) Sock (C) Shirt (D) Hat
- Riya is 12th from the front and 19th from the back of a queue. How many people are in the queue?
(A) 32 (B) 30 (C) 29 (D) 31
- Find the next letters: AB, DE, GH, JK, ...
(A) OP (B) MN (C) LM (D) NO
- P is Q's brother. Q is R's mother. P is R's:
(A) Son (B) Grandfather (C) Maternal uncle (D) Father
- Select the next shape in the repeating pattern: ○, △, □, ○, △, □, ○, ...
(A) ○ (B) □ (C) ◇ (D) △
- All pilots are trained. No trained person is careless. Which conclusion must follow?
(A) All careful people are pilots (B) No pilot is careless
(C) All trained people are pilots (D) Some pilots are careless

SCIENCE

- A body's velocity changes from 2 to 10 m/s in 4 s. Its uniform acceleration is:
(A) 2 m/s² (B) 4 m/s² (C) 8 m/s² (D) 3 m/s²
- The signed area under a velocity-time graph gives:
(A) Displacement (B) Force (C) Mass (D) Acceleration
- Newton's first law describes:
(A) Evaporation (B) Inertia (C) Refraction (D) Electrical resistance

- A body of mass 3 kg accelerates at 2 m/s². The resultant force is:
(A) 9 N (B) 6 N (C) 5 N (D) 1.5 N
- The momentum of a 2 kg body moving at 5 m/s is:
(A) 10 kg m/s (B) 2.5 kg m/s (C) 7 kg m/s (D) 25 kg m/s
- A 10 N force acts along a 3 m displacement. The work done is:
(A) 0 J (B) 3.3 J (C) 13 J (D) 30 J
- Sound waves in air are chiefly:
(A) Longitudinal (B) Vacuum waves (C) Stationary always (D) Transverse electromagnetic
- The SI unit of frequency is:
(A) hertz (B) pascal (C) joule (D) newton
- The atomic number of an atom equals its number of:
(A) Electron shells (B) Protons (C) Neutrons (D) Nucleons
- Isotopes have the same atomic number but different:
(A) Chemical symbols always (B) Proton numbers (C) Mass numbers (D) Number of occupied shells necessarily
- Which change is physical?
(A) Melting ice (B) Digesting food (C) Rusting iron (D) Burning magnesium
- The cell organelle responsible for much aerobic ATP production is the:
(A) Golgi apparatus (B) Ribosome (C) Mitochondrion (D) Vacuole
- Xylem chiefly transports:
(A) Oxygen in blood (B) Hormones from the brain (C) Water and minerals (D) Food from leaves only
- The tissue connecting muscle to bone is a:
(A) Ligament (B) Neuron (C) Cartilage cell (D) Tendon
- When magnesium burns in oxygen, the principal product is:
(A) Magnesium chloride (B) Magnesium hydroxide only (C) Magnesium oxide (D) Magnesium carbonate

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26. In $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$, the reaction is:
(A) Decomposition (B) Displacement (C) No chemical change (D) Neutralisation only

27. A solution with pH 2 is:
(A) Necessarily pure water (B) Neutral (C) Acidic (D) Basic

28. Baking soda has formula:
(A) NaHCO_3 (B) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ (C) NaCl (D) CaCO_3

29. Which metal is stored under kerosene because of its high reactivity?
(A) Gold (B) Sodium (C) Silver (D) Copper

30. The main bond type within a methane molecule is:
(A) Hydrogen bond only (B) Ionic (C) Metallic (D) Covalent

31. Members of a homologous series have the same:
(A) Functional group (B) Molecular mass (C) Number of carbon atoms (D) Molecular formula

32. Bile aids fat digestion mainly by:
(A) Absorbing oxygen (B) Emulsifying fats (C) Converting glucose into starch (D) Producing pepsin

33. The functional unit of the kidney is the:
(A) Nephron (B) Villus (C) Neuron (D) Alveolus

34. The hormone that lowers blood glucose is:
(A) Adrenaline (B) Growth hormone (C) Insulin (D) Thyroxine

35. A reflex action is coordinated initially through a:
(A) Reflex arc (B) Pulmonary vein (C) Digestive tract (D) Food chain

36. The fusion of male and female gametes is:
(A) Germination (B) Pollination (C) Fertilisation (D) Binary fission

37. In a monohybrid cross $\text{Tt} \times \text{Tt}$, the probability of tt is:
(A) $\frac{3}{4}$ (B) 1 (C) $\frac{1}{4}$ (D) $\frac{1}{2}$

38. A concave lens is commonly used to correct:
(A) All blindness (B) Cataract by melting it (C) Hypermetropia (D) Myopia

39. A convex lens has focal length +0.5 m. Its power is:
(A) -2 D (B) +0.5 D (C) +2 D (D) -0.5 D

40. A conductor carries 2 A when 12 V is applied. Its resistance is:
(A) 6 Ω (B) 24 Ω (C) 10 Ω (D) $\frac{1}{6} \Omega$

41. Two 4 Ω resistors in series have equivalent resistance:
(A) 16 Ω (B) 4 Ω (C) 2 Ω (D) 8 Ω

42. The magnetic field lines around a straight current-carrying wire are:
(A) Absent outside the wire (B) Concentric circles (C) Ellipses only at the ends (D) Straight parallel rays

43. A fuse wire protects a circuit because excessive current makes it:
(A) Heat up and melt (B) Increase the supply voltage (C) Store current forever (D) Become a stronger permanent magnet

44. In a food chain, energy transfer from one trophic level to the next is typically about:
(A) 100% (B) 90% (C) 50% (D) 10%

45. The ozone layer absorbs much of the Sun's harmful:
(A) Audible sound (B) Visible green light only (C) Radio waves (D) Ultraviolet radiation

ACHIEVERS SECTION (3 MARKS EACH)

46. Two 6 Ω resistors are connected in parallel across 12 V. What is the total current and the total power?
(A) 2 A and 24 W (B) 4 A and 48 W (C) 1 A and 12 W (D) 4 A and 24 W

47. An object is 30 cm in front of a concave mirror of focal length 15 cm. The image is:
(A) Real, inverted and the same size (B) Real, inverted and half the size (C) Virtual, erect and twice the size (D) At infinity

48. Equal volumes of pH 2 and pH 4 acid solutions are tested. Relative to pH 4, pH 2 has hydrogen-ion concentration:
(A) 2 times as large (B) 100 times as large (C) 10 times as large (D) 100 times as small

49. In peas, tallness T is dominant. A tall plant crossed with tt produces 40 tall and 40 dwarf offspring. The most likely genotype of the tall parent is:
(A) Tt (B) TT (C) tt (D) Cannot possibly contain T

50. A food chain is grass $\rightarrow$ grasshopper $\rightarrow$ frog $\rightarrow$ snake. If grass contains 20,000 J available energy, approximately how much reaches the snake using the 10% rule?
(A) 2,000 J (B) 200 J (C) 20 J (D) 2 J