School Connect Online

SCO INTERNATIONAL SCIENCE OLYMPIAD

GRADE 7 SAMPLE PAPER SET B

SCO International Science Olympiad

Sample practice paper with answers and explanations for schools, teachers, parents, and students.

Built for preparation, revision, concept-checking, and global science readiness.

Science	Scientific Reasoning	Life Science	Physical Science	Case Study
Scientific Inquiry	Data Skills	Application	Achievers	Class 7

Details	Description
Exam Name	SCO International Science Olympiad
Class / Grade	Class 7
Question Paper	Sample Paper Set B with Answer Explanations
Duration	60 minutes
Type of Exam	Objective multiple-choice questions
Total Questions	40 questions
Answering Rule	Each question has one correct answer unless specifically stated.
Academic Conduct	Read each question carefully. Calculators are not required unless the exam instructions specifically allow them.

Section A: Core Science Concepts

Q1. A train travels 180 km in 3 hours and 240 km in the next 4 hours. What is its average speed for the whole journey?

A. 50 km/h
B. 60 km/h
C. 70 km/h
D. 80 km/h

Answer: B

Explanation: Total distance = 420 km and total time = 7 h. Average speed = 420/7 = 60 km/h.

Q2. A rectangular water tank is 4 m long, 3 m wide and 2 m high. How much water can it hold when completely full? (1 m3 = 1000 L)

A. 12000 L
B. 24000 L
C. 8000 L
D. 16000 L

Answer: B

Explanation: Volume = 4 x 3 x 2 = 24 m3 = 24000 L.

Q3. A car travels at 90 km/h for 3 hours. If the speed increases by 20% for the same time, what distance is covered?

A. 324 km
B. 270 km
C. 108 km
D. 360 km

Answer: A

Explanation: New speed = 90 x 1.2 = 108 km/h. Distance = 108 x 3 = 324 km.

Q4. A cloth costs $45 for 3 m. What is the cost of 12 m of the same cloth?

A. $180
B. $120
C. $150
D. $200

Answer: A

Explanation: Cost per metre = 45/3 = $15. For 12 m, cost = 15 x 12 = $180.

Q5. A circuit has current 3 A and resistance 10 ohm. What is the voltage across the circuit?

A. 30 V
B. 10 V
C. 40 V
D. 50 V

Answer: A

Explanation: Using Ohm's law, V = IR = 3 x 10 = 30 V.

Q6. A cylinder has radius 7 cm and height 14 cm. What is its volume? (Use pi = 22/7)

A. 2156 cm3
B. 1848 cm3
C. 3080 cm3
D. 4312 cm3

Answer: A

Explanation: Volume = pi r2h = 22/7 x 7 x 7 x 14 = 2156 cm3.

Q7. A person walks 20 km. At a speed of 5 km/h the journey takes 4 hours. At 7 km/h, approximately how long will the same journey take?

A. 2.9 hours
B. 3.5 hours
C. 4 hours
D. 5 hours

Answer: A

Explanation: Time = distance/speed = 20/7 = 2.86 hours, approximately 2.9 hours.

Q8. A 60 W bulb is used for 10 hours. How much energy is consumed in joules?

A. 600 J
B. 6000 J
C. 36000 J
D. 2160000 J

Answer: D

Explanation: Energy = power x time = 60 W x 10 h = 600 Wh = 600 x 3600 J = 2160000 J.

Q9. A metal block has mass 150 g and volume 50 cm3. What is its density?

A. 2 g/cm3
B. 3 g/cm3
C. 4 g/cm3
D. 5 g/cm3

Answer: B

Explanation: Density = mass/volume = 150/50 = 3 g/cm3.

Q10. A pump fills a tank in 6 h while a leak empties it in 10 h. Working together, how long will it take to fill the tank?

A. 15 hours
B. 10 hours
C. 7.5 hours
D. 8 hours

Answer: A

Explanation: Net rate = 1/6 - 1/10 = 1/15 tank per hour, so time = 15 hours.

Q11. Assertion: Rusting of iron is a physical change. Reason: Iron rusts when exposed to moist air. Choose the correct option.

A. Both are true and Reason explains Assertion

B. Both are true but Reason does not explain Assertion
C. Assertion is false but Reason is true
D. Assertion is true but Reason is false

Answer: C

Explanation: Rusting occurs in moist air, but it is a chemical change because iron oxide is formed.

Q12. Why does salt generally dissolve faster in hot water than in cold water?

A. Hot water has no molecules
B. Higher temperature increases particle motion and mixing
C. Salt becomes a gas instantly
D. Cold water is always saturated

Answer: B

Explanation: Higher temperature increases molecular motion, speeding up dissolving for many solids.

Q13. Melting ice absorbs heat but remains at nearly the same temperature during melting. What is this heat mainly used for?

A. Increasing the colour of ice
B. Breaking the solid structure into liquid water
C. Producing oxygen
D. Making the ice heavier

Answer: B

Explanation: Latent heat is used to change state rather than raise temperature.

Q14. Which statement about respiration is most accurate?

A. All organisms respire exactly like humans
B. Anaerobic organisms can release energy without oxygen
C. Plants never respire
D. Respiration happens only in lungs

Answer: B

Explanation: Some microorganisms respire anaerobically, releasing energy without oxygen.

Q15. At higher altitudes, water boils at a lower temperature mainly because:

A. atmospheric pressure is lower
B. sunlight is stronger
C. water becomes acidic
D. air contains more water vapour always

Answer: A

Explanation: Lower pressure makes it easier for water molecules to escape as vapour, reducing boiling point.

Q16. Why do stars appear to twinkle when viewed from Earth?

A. Stars switch on and off
B. The Moon blocks their light
C. Atmospheric refraction changes the apparent direction of starlight

D. Stars are moving around Earth

Answer: C

Explanation: Layers of air with changing density refract starlight irregularly, causing twinkling.

Q17. Why does sound travel faster in solids than in gases?

A. Particles in solids are closer and transmit vibrations more effectively
B. Solids have no particles
C. Gas particles are fixed in place
D. Sound does not need a medium

Answer: A

Explanation: Closer particles and stronger elasticity in solids allow quicker transmission of vibrations.

Q18. A magnet attracts iron nails because:

A. iron is a magnetic material
B. iron is always negatively charged
C. nails contain water
D. magnets attract only plastic

Answer: A

Explanation: Iron is ferromagnetic and is attracted by a magnet.

Q19. Which statement about liquid pressure is correct?

A. Pressure increases with depth
B. Pressure decreases with depth
C. Pressure is zero at the bottom
D. Pressure does not depend on liquid height

Answer: A

Explanation: More liquid above a point creates greater pressure at greater depth.

Q20. An electric bulb is marked 60 W, 220 V. What is the approximate resistance of its filament?

A. 807 ohm
B. 484 ohm
C. 220 ohm
D. 121 ohm

Answer: A

Explanation: Using P = V2/R, R = V2/P = 220 x 220 / 60 = 806.7 ohm.

Section B: Case Study and Application-Based Reasoning

Q21. A person weighs 600 N on Earth. What would be the weight on the Moon if lunar gravity is one-sixth of Earth's?

A. 100 N
B. 60 N
C. 36 N
D. 120 N

Answer: A

Explanation: Moon weight = 600/6 = 100 N.

Q22. A sound wave travels at 340 m/s. How long will it take to travel 1700 m?

A. 2 s
B. 5 s
C. 6 s
D. 10 s

Answer: B

Explanation: Time = distance/speed = 1700/340 = 5 s.

Q23. In a chemical reaction, the total mass of reactants equals the total mass of products. Which law is shown?

A. Law of constant proportions
B. Law of conservation of mass
C. Law of multiple proportions
D. Law of conservation of energy only

Answer: B

Explanation: The law of conservation of mass states that mass is not created or destroyed in a chemical reaction.

Q24. Which separation method is suitable for separating different pigments from an ink or dye?

A. Filtration
B. Evaporation
C. Chromatography
D. Sedimentation

Answer: C

Explanation: Chromatography separates substances based on different movement through a medium.

Q25. Which adaptation helps desert plants conserve water?

A. Large broad leaves
B. Thick waxy cuticle
C. Stomata always wide open
D. Very shallow roots only

Answer: B

Explanation: A thick waxy cuticle reduces water loss from the plant surface.

Q26. Why does Mars appear reddish?

A. Copper deposits

B. Iron oxide on its surface
C. Its thin atmosphere glows red
D. It is closer to the Sun

Answer: B

Explanation: Iron oxide gives Mars its characteristic red appearance.

Q27. Acids and bases affect litmus differently. Which is correct?
A. Acids turn blue litmus red; bases turn red litmus blue
B. Acids turn red litmus blue; bases turn blue litmus red
C. Both turn blue litmus red
D. Both turn red litmus blue

Answer: A

Explanation: Acids turn blue litmus red and bases turn red litmus blue.

Q28. When two identical metal spheres touch and share charge, what happens to the charge?
A. Charge is shared between them
B. Charge disappears completely
C. One sphere becomes negative always
D. Only the larger sphere receives charge

Answer: A

Explanation: When conductors touch, charge redistributes until their potentials become equal.

Q29. A gas is heated while its volume remains constant. What happens to pressure?
A. Decreases
B. Increases
C. Remains zero
D. Becomes negative

Answer: B

Explanation: Heating increases particle kinetic energy, so particles collide more strongly with container walls.

Q30. Why is diamond harder than graphite even though both are made of carbon?
A. Diamond has a strong three-dimensional network
B. Graphite has no carbon atoms
C. Diamond is made of water
D. Graphite has stronger layers than diamond

Answer: A

Explanation: Diamond has a rigid 3D covalent network; graphite has layers that slide more easily.

Q31. White light passing through a prism splits into colours. Which colour deviates least?
A. Red
B. Violet
C. Blue
D. Green

Answer: A

Explanation: Red has the longest wavelength and deviates least in a prism.

Q32. A rotating container of water develops a higher water level at the edges. What causes this effect?

A. Outward effect due to rotation
B. Water becomes lighter
C. Gravity stops acting
D. Water turns into vapour

Answer: A

Explanation: Rotation causes water to move outward, producing a raised surface at the edges.

Q33. A solar eclipse can occur only during a new moon because:

A. the Moon is between Earth and Sun
B. the Moon is opposite the Sun
C. Earth is between Sun and Moon
D. the Moon produces its own light

Answer: A

Explanation: During a new moon the Moon can align between Earth and Sun and cast its shadow on Earth.

Q34. At the highest point of a ball thrown vertically upward, which statement is correct?

A. Velocity is zero and acceleration is zero
B. Velocity is zero but acceleration due to gravity remains
C. Velocity is maximum
D. Acceleration becomes upward

Answer: B

Explanation: The ball momentarily stops, but gravity still accelerates it downward.

Q35. Which mirror always forms a virtual and erect image for all object positions?

A. Concave mirror
B. Plane mirror
C. Convex mirror
D. Parabolic mirror

Answer: C

Explanation: A convex mirror always forms a virtual, erect, and diminished image.

Q36. Kinetic energy depends mainly on:

A. mass only
B. speed only
C. both mass and speed
D. neither mass nor speed

Answer: C

Explanation: Kinetic energy = 1/2 mv2; it depends on mass and speed.

Q37. Which process in wastewater treatment uses microorganisms to break down organic matter?

A. Secondary biological treatment
B. Primary screening only
C. Chlorination only
D. Evaporation only

Answer: A

Explanation: Secondary treatment uses microbes to digest dissolved and suspended organic matter.

Q38. Which plant process moves prepared food from leaves to other parts?

A. Xylem transport
B. Phloem transport
C. Transpiration only
D. Pollination

Answer: B

Explanation: Phloem transports sugars prepared in leaves to other plant parts.

Q39. In the food chain grass -> deer -> tiger, what is the deer?

A. Producer
B. Primary consumer
C. Decomposer
D. Abiotic factor

Answer: B

Explanation: The deer eats plants, so it is a primary consumer.

Q40. Which is the best scientific reason for conserving forests?

A. They support biodiversity, carbon storage, soil protection and rainfall cycles
B. They make all animals domestic
C. They stop all storms completely
D. They remove the need for water conservation

Answer: A

Explanation: Forests provide ecosystem services including biodiversity support, climate regulation, soil protection, and water-cycle support.

Answer Key and Explanations

Q.No.	Answer	Chapter / Skill Area	Explanation
1	B	Motion and Time	Total distance = 420 km and total time = 7 h. Average speed = 420/7 = 60 km/h.
2	B	Water and Measurement	Volume = 4 x 3 x 2 = 24 m3 = 24000 L.
3	A	Motion and Time	New speed = 90 x 1.2 = 108 km/h. Distance = 108 x 3 = 324 km.

4	A	Fibre to Fabric / Proportion	Cost per metre = 45/3 = $15. For 12 m, cost = 15 x 12 = $180.
5	A	Electric Current and its Effects	Using Ohm's law, V = IR = 3 x 10 = 30 V.
6	A	Measurement and Scientific Numeracy	Volume = pi r2h = 22/7 x 7 x 7 x 14 = 2156 cm3.
7	A	Motion and Time	Time = distance/speed = 20/7 = 2.86 hours, approximately 2.9 hours.
8	D	Electricity and Energy	Energy = power x time = 60 W x 10 h = 600 Wh = 600 x 3600 J = 2160000 J.
9	B	Matter and Measurement	Density = mass/volume = 150/50 = 3 g/cm3.
10	A	Rate Reasoning	Net rate = 1/6 - 1/10 = 1/15 tank per hour, so time = 15 hours.
11	C	Physical and Chemical Changes	Rusting occurs in moist air, but it is a chemical change because iron oxide is formed.
12	B	Heat / Solutions	Higher temperature increases molecular motion, speeding up dissolving for many solids.
13	B	Heat	Latent heat is used to change state rather than raise temperature.
14	B	Respiration in Organisms	Some microorganisms respire anaerobically, releasing energy without oxygen.
15	A	Heat	Lower pressure makes it easier for water molecules to escape as vapour, reducing boiling point.
16	C	Light	Layers of air with changing density refract starlight irregularly, causing twinkling.
17	A	Sound / Matter	Closer particles and stronger elasticity in solids allow quicker transmission of vibrations.
18	A	Magnetism	Iron is ferromagnetic and is attracted by a magnet.
19	A	Pressure in Fluids	More liquid above a point creates greater pressure at greater depth.
20	A	Electricity	Using P = V2/R, R = V2/P = 220 x 220 / 60 = 806.7 ohm.
21	A	Force and Gravitation	Moon weight = 600/6 = 100 N.
22	B	Sound	Time = distance/speed = 1700/340 = 5 s.
23	B	Physical and Chemical Changes	The law of conservation of mass states that mass is not created or destroyed in a chemical reaction.
24	C	Separation / Physical Changes	Chromatography separates substances based on different movement through a medium.
25	B	Weather, Climate and Adaptation	A thick waxy cuticle reduces water loss from the plant surface.
26	B	Earth and Space Science	Iron oxide gives Mars its characteristic red appearance.

27	**A**	Acids, Bases and Salts	Acids turn blue litmus red and bases turn red litmus blue.
28	**A**	Electricity	When conductors touch, charge redistributes until their potentials become equal.
29	**B**	Heat and Matter	Heating increases particle kinetic energy, so particles collide more strongly with container walls.
30	**A**	Structure of Matter	Diamond has a rigid 3D covalent network; graphite has layers that slide more easily.
31	**A**	Light	Red has the longest wavelength and deviates least in a prism.
32	**A**	Motion and Forces	Rotation causes water to move outward, producing a raised surface at the edges.
33	**A**	Earth and Space Science	During a new moon the Moon can align between Earth and Sun and cast its shadow on Earth.
34	**B**	Motion and Force	The ball momentarily stops, but gravity still accelerates it downward.
35	**C**	Light	A convex mirror always forms a virtual, erect, and diminished image.
36	**C**	Energy	Kinetic energy = 1/2 mv2; it depends on mass and speed.
37	**A**	Wastewater Story	Secondary treatment uses microbes to digest dissolved and suspended organic matter.
38	**B**	Transportation in Plants	Phloem transports sugars prepared in leaves to other plant parts.
39	**B**	Forests and Food Chains	The deer eats plants, so it is a primary consumer.
40	**A**	Forests: Our Lifeline	Forests provide ecosystem services including biodiversity support, climate regulation, soil protection, and water-cycle support.