8th All India RPS OLYMPIAD

Online & Offline Mega Event

QUESTION PAPER (PHASE – I)

CLASS - VI

RPS SCIENCE LEAGUE

PHYSICS (20)

Q1. What happens when the north pole of one magnet is brought close to the north pole of another magnet?

(A) They attract each other
(B) They repel each other
(C) They lose their magnetism
(D) They melt

Q2. A magnet attracts a steel paper clip but does not attract a plastic ruler. What can be concluded?

(A) All materials are magnetic
(B) The ruler has no mass
(C) Plastic is stronger than steel
(D) Steel is magnetic but plastic is not

Q3. Which method is most suitable for finding the two poles of a magnet whose poles are not marked?

(A) Heat it strongly
(B) Suspend it freely and observe its direction
(C) Place it in water
(D) Rub it with a wooden stick

Q4. Which object can be temporarily magnetised by placing it near a strong magnet?

(A) A soft iron nail
(B) A wooden pencil
(C) A glass tumbler
(D) A rubber band

Q5. A metal spoon is left in a cup of hot tea. After some time, its handle becomes warm. How did heat reach the handle?

(A) By evaporation only
(B) By conduction through the metal
(C) By reflection of light
(D) By magnet

Q6. When water is heated in a pan, the warmer water rises and the cooler water moves down. This movement is called—

(A) conduction (B) reflection (C) convection (D) freeze

Q7. A student reads a thermometer as 40 °C before placing it in warm water. After placing it in the water, it still reads 40 °C. What is the most likely reason?

(A) The water had no temperature

(B) The reading was taken before it adjusted to the water temperature

(C) Thermometers measure only length

(D) Warm water cannot transfer heat

Q8. Which statement correctly compares temperature and heat?

(A) Heat and temperature are exactly the same

(B) Temperature tells how hot an object is, while heat is transferred energy

(C) Temperature is measured in metres

(D) Heat always moves from cold objects to hot objects

Q9. A black shirt and a white shirt are left in sunlight for the same time. The black shirt usually feels hotter because—

(A) black absorbs more heat radiation (B) white produces cold air

(C) black has less mass (D) white is a magnetic material

Q10. A small mark is made on a fan blade. When the fan rotates, the mark moves in a circle while the blade turns about an axis. Which statement is correct?

(A) The mark is at rest and the blade has random motion.

(B) The mark has rectilinear motion and the blade is at rest

(C) The mark has circular motion and the blade has rotational motion

(D) Both the mark and blade have only oscillatory motion

Q11. A runner completes lap after lap on a circular track, taking the same time for each lap. Which description is most complete?

(A) Random and oscillatory motion (B) Rectilinear and non-repeating motion

(C) Circular and periodic motion (D) Only rotational motion

Q12. A swing moves to and fro about its mean position. This is an example of—

(A) circular motion (B) oscillatory motion

(C) rectilinear motion (D) translatory motion only

Q13. A ceiling fan rotates about its central axis. Which description is most accurate?

(A) Rectilinear motion along a straight line (B) Rotational motion about a fixed axis

(C) Oscillatory motion about a middle point (D) No motion at all

Q14. A bus covers 10 km in the first hour and 30 km in the second hour. What can be said about its motion?

(A) Its motion is uniform (B) It has only circular motion

(C) It is at rest (D) Its motion is non-uniform

Q15. Two students observe a moving train. One student is standing on the platform, and the other is sitting inside the train. Which statement is correct?

(A) The train is at rest relative to everyone

(B) The train is moving relative to the platform but at rest relative to the seated student

(C) The train is moving only relative to the seated student

(D) Motion never depends on the observer

Q16. Which instrument is most suitable for measuring the length of a classroom table?

(A) A clinical thermometer (B) A compass

(C) A measuring tape (D) A weighing balance

Q17. The standard unit of length in the International System of Units is—

(A) centimetre (B) metre (C) kilometre per hour (D) gram

Q18. A ruler has a broken zero mark. Which method will give the correct length of a pencil?

(A) Subtract the starting from the ending reading

(B) Use only the ending reading

(C) Guess the length from its colour

(D) Measure it with a thermometer

Q19. Which conversion is correct?

(A) 3 m = 30 cm (B) 3 m = 300 cm (C) 3 m = 3 cm (D) 3 m = 3,000 cm

Q20. A student wants to measure the length of a curved line drawn on paper. Which method is most appropriate?

(A) Place a ruler across the curve directly

(B) Count the number of colours in the curve

(C) Place a thread along the curve and measure the straightened thread

(D) Use a clinical thermometer

CHEMISTRY (20)

Q21. Which statement correctly explains why water droplets appear on the outer surface of a glass containing ice-cold water?

(A) Water passes through the glass from inside to outside.

(B) Water vapour in the surrounding air condenses on the cold surface.

(C) Ice inside the glass melts and comes out.

(D) Water vapour freezes directly into liquid water.

Q22. Two identical wet handkerchiefs are placed under the same conditions. One is spread out, while the other is folded. Which one will most likely dry faster, and why?

(A) The folded one, because it absorbs more heat.

(B) Both will dry at the same rate.

(C) The spread-out one, because more surface area is exposed to air.

(D) The folded one, because less water is exposed to air.

Q23. Consider the following statements:

I. Evaporation can take place at temperatures below the boiling point of water.

II. Boiling takes place throughout the liquid at a particular temperature under fixed pressure.

III. Evaporation occurs only when water is heated.

Which of the statements are correct?

(A) I and II only

(B) II and III only

(C) I and III only

(D) I, II and III

Q24. A student places equal amounts of water in two identical plates. Plate P is kept under a fan, while plate Q is kept in still air at the same temperature. After some time, P contains less water than Q.

What is the best conclusion?

(A) Moving air generally increases the rate of evaporation.

(B) Moving air changes water into ice.

(C) Still air always causes faster evaporation.

(D) The fan increases the boiling point of water.

Q25. Water droplets form on grass early in the morning even when it has not rained. Which process is mainly responsible?

(A) Freezing (B) Melting (C) Condensation (D) Sublimation

Q26. A student wants to obtain salt from salty water. Which method is most suitable if the aim is to leave the dissolved salt behind?

(A) Freezing the salty water

(B) Evaporating the water

(C) Condensing the salty water

(D) Filtering the salty water through ordinary filter paper

Q27.

Assertion (A): Wet clothes generally dry faster on a hot, windy day than on a cold, still day.

Reason (R): Higher temperature and moving air can increase the rate of evaporation.

Choose the correct option:

(A) Both A and R are true, and R correctly explains A.

(B) Both A and R are true, but R does not explain A.

(C) A is true, but R is false.

(D) A is false, but R is true.

Q28. Which sequence correctly represents the changes involved when water is heated to form water vapour and the vapour is then cooled?

(A) Freezing → Melting (B) Condensation → Evaporation

(C) Evaporation → Freezing (D) Evaporation → Condensation

Q29. A student observes that water in a shallow tray disappears faster than water in a deep container kept in the same room. Which is the most reasonable explanation?

(A) Water in the shallow tray has a larger exposed surface area.

(B) Water in the deep container cannot evaporate.

(C) Shallow water always has a lower boiling point.

(D) Water in the deep container changes into ice.

Q30. Consider the following statements about the water cycle:

I. The Sun provides energy for evaporation.

II. Water vapour cools and condenses to form tiny droplets in clouds.

III. Rainwater can collect in rivers, lakes and oceans.

Which option is correct?

(A) Only I is correct.

(B) I and II are correct, but III is incorrect.

(C) I, II and III are all correct.

(D) Only II and III are correct.

Q31. Which property is most useful for identifying a material used to make electric wires?

(A) Transparency

(B) Electrical conductivity

(C) Solubility in water

(D) Hardness

Q32. A shopkeeper packs cooking oil in a plastic bottle instead of a paper bag because plastic is:

(A) soluble in oil

(B) transparent only

(C) waterproof and does not leak easily

(D) always biodegradable

Q33. Which of the following materials is attracted by a magnet?

(A) Iron

(B) Wood

(C) Glass

(D) Rubber

Q34.Consider the following statements:

I. All shiny materials are metals.

II. Some non-metals are lustrous.

III. Materials can be grouped according to their properties.

Which statements are correct?

(A) I only

(B) II only

(C) II and III only

(D) I, II and III

Q35. Which material is most suitable for making a window that allows light to pass through clearly?

(A) Cardboard

(B) Clear glass

(C) Wooden board

(D) Aluminium sheet

Q36. Sugar disappears when stirred in water. This shows that sugar is:

(A) insoluble in water

(B) soluble in water

(C) transparent

(D) magnetic

Q37. A steel spoon and a wooden spoon are placed in hot tea. Why does the steel spoon usually feel hotter at its handle?

(A) Steel is a better conductor of heat than wood. (B) Wood produces coldness.

(C) Steel absorbs no heat. (D) Wood is soluble in tea.

Q38. Which material is different from the others on the basis of transparency?

(A) Clear glass (B) Clean water

(C) Transparent plastic (D) Wooden plank

Q39. Assertion (A): Materials are grouped according to their properties.

Reason (R): Grouping materials helps us study and compare them easily.

(A) Both A and R are true, and R correctly explains A.

(B) Both A and R are true, but R does not explain A.

(C) A is true, but R is false.

(D) A is false, but R is true.

Q40. A student tests four materials in water. Which material is most likely to float?

(A) An iron nail (B) A small stone

(C) A dry piece of wood (D) A glass marble

BIOLOGY (20)

Q41.Science is often compared to a giant and unending jigsaw puzzle. What does each new scientific discovery represent in this analogy?

(A) A finished picture (B) Another piece added to the puzzle

(C) A rule that cannot be changed (D) The end of all questioning

Q42. Aaditya's fountain pen suddenly stopped writing during an exam. He thought, "Maybe the ink cartridge is empty or the nib is blocked." He replaced the old cartridge with a new one, and the pen started writing again. Which step of the scientific method does Aaditya's action represent?

(A) Making an initial observation

(B) Formulating a wild guess without reason

(C) Testing the hypothesis through an action/experiment

(D) Publishing a scientific theory

Q43. Rohan spilled iodine on rice and it turned blue-black. What biomolecule is present?

(A) Protein (B) Carbohydrate

(C) Fat (D) Nucleic Acid

Q44.Which of the following is a mismatched pair?

(A) Fibrous roots - Wheat, Rice (B)Parallel Venation - Banana, Sugarcane

(C)Reticulate Venation - Mustard, Hibiscus (D)Dicotyledon seed - Maize, Chickpea

Q45. Which fat-soluble vitamin is crucial for blood clotting?

(A) Vitamin A (B) Vitamin D

(C) Vitamin K (D) Vitamin E

Q46. During respiration, what happens to the oxygen we breathe in, _____.

(A) it is stored in the lungs

(B) it is used to break down food and produce energy

(C) it is released back into the atmosphere

(D) it is converted into carbon dioxide

Q47. Which one of the following is an example of carbohydrate?

(A) Glucose (B) Fructose

(C) Starch (D) All of these

Q48.Which is the primary role of dietary fibres (roughage) in our food, even though they do not provide energy?

(A) To build muscles and repair damaged tissues

(B) To provide instant energy during a marathon race

(C) To help the body get rid of undigested food and prevent constipation

(D) To protect the eyes and skin from infections

Q49. Consider the following statements regarding nutrients and their functions:

1. Proteins are known as body-building foods because they are essential for the growth and repair of body tissues.

2. Vitamins and minerals are protective nutrients required by the body in large quantities to prevent diseases.

3. Calcium is a mineral necessary for keeping bones and teeth healthy.

Which of the statements given above is/are correct?

(A) 1 and 3 only (B) 2 only

(C) 2 and 3 only (D) 1, 2 and 3

Q50. Which feature is typically observed in plants adapted to live entirely submerged in aquatic habitats?

(A) Narrow, ribbon-like leaves that bend with water flow

(B) Deep, extensive taproots penetrating dry bedrock

(C) Extremely thick and woody supportive stems

(D) Broad, heavy leaves covered in thick thorns

Q51. Which set of characteristics correctly describes organisms adapted to survive in a desert habitat like a camel?

(A) Frequent sweating and large volumes of liquid urine

(B) Webbed feet and streamlined fins for swimming

(C) Excretion of small amounts of urine and dry dung

(D) A thick layer of blubber under moist, bare skin

Q52. Refer to the following features of plants.

(i) Roots are much reduced in size. **(ii) Stems have air spaces inside them.**

(iii) Roots penetrate deep into the soil. **(iv) Stomata are never present in these plants.**

Which of the above features are typical of aquatic plants?

(A) (i) and (ii) only (B) (ii) and (iii) only

(C) (iii) and (iv) only (D) (i) and (iii) only

Q53. Fish have (i) body shape which helps them to move inside water. Fish have (ii) and (iii)that help them to change directions and keep their body balanced in water. (iv) present in fish help them to use oxygen dissolved in water.

Which of the following correctly fills (i), (ii), (iii) and (iv) respectively?

(A) Streamlined, Scales, Fins, Lungs (B) Streamlined, Fins, Tails, Gills

(C) Streamlined, Scales, Legs, Gills (D) Conical, Fins, Tails, Lungs

Q54. Select the correct option regarding the type of venation and the plant in which it is present.

(A) Reticulate venation in peepal (B) Reticulate venation in maize

(C) Parallel venation in China rose (D) Parallel venation in pea

Q55. Leaves of cactus plant are modified into spines. This helps the plant to

(A) synthesise food without using water (B) increase the rate of transpiration

(C) reduce the loss of water through transpiration (D) survive in aquatic habitats

Q56. Select the correct match of animal and its adaptive feature.

(A) Snow leopard – Large ears

(B) Deer – Eyes on the front of the head

(C) Polar bear – Strong and sharp claws

(D) Dolphin – Presence of gills

Q57. A doctor examines two children suffering from protein-energy malnutrition. Child A has adequate energy intake but insufficient protein in the diet. Child B suffers from a severe deficiency of both energy and protein. Which of the following correctly identifies their diseases?

(A) Child A – Marasmus; Child B – Kwashiorkor

(B) Child A – Kwashiorkor; Child B – Marasmus

(C) Both Child A and Child B – Marasmus

(D) Both Child A and Child B – Kwashiorkor

Q58. A student adds copper sulphate solution and caustic soda solution to a food sample. The sample turns violet. What does this indicate?

(A) Presence of starch

(B) Presence of protein

(C) Presence of fat

(D) Presence of vitamin

Q59. Consider the following symptoms of deficiency diseases:

1. Bowed legs and weak bones

2. Bleeding gums

3. Swollen neck

4. Pale skin and tiredness

Which of the following correctly matches the symptoms with the deficiency diseases?

(A) 1– Rickets, 2– Scurvy, 3– Goitre, 4– Anaemia

(B) 1– Scurvy, 2– Rickets, 3– Anaemia, 4– Goitre

(C) 1– Goitre, 2– Anaemia, 3– Rickets, 4– Scurvy

(D) 1– Anaemia, 2– Goitre, 3– Scurvy, 4– Rickets

Q60. Consider the following statements about food miles:

1. Food miles refer to the distance food travels from its place of production to the consumer.

2. Transporting food over long distances can increase fuel consumption and greenhouse gas emissions.

3. Food miles alone determine the nutritional value of food.

Which of the statements given above is/are correct?

(A) 1 and 2 only

(B) 2 and 3 only

(C) 1 and 3 only

(D) All 1, 2 and 3