8th All India RPS OLYMPIAD

Online & Offline Mega Event

QUESTION PAPER (PHASE – I)

CLASS - V

RPS SCIENCE LEAGUE

Q1. The male reproductive organ of a flower is the _____.

(A) petals (B) stamen (C) pistil (D) ovule

Q2. X is a stem modified to store food, while Y is a root modified to store food. X and Y are respectively_____.

(A) Cactus and ginger (B) Onion and potato

(C) Ginger and sweet potato (D) Sweet potato and ginger

Q3. Seeds of drumstick and maple are carried to long distances by wind because they possess_____.

(A) winged seeds (B) large and hairy seeds

(C) long and ridged fruits (D) spiny seeds

Q4. A plant that does not grow commonly through vegetative propagation is _____.

(A) Rose (B) Papaya (C) Banana (D) Orange

Q5. Seeds planted very deep in the soil fail to germinate because _____.

(A) too much groundwater chokes the seed (B) availability of oxygen is less

(C) temperature is too high for germination (D) all of these statements are correct

Q6. Water is necessary for germination because_____.

(A) it softens seed coat for embryo to emerge. (B) it deactivates the embryo.

(C) it hardens the seed coat for protection. (D) none of these

Q7. The presence of life in a seed is called_____.

(A) longevity (B) germination (C) motility (D) viability

Q8. The plumule in a plant embryo develops into the_____.

(A) root system (B) seed coat (C) shoot system (D) endosperm

Q9. Read the given passage.

P, Q and R are the vertebrates which possess flippers. P is cold blooded animal whereas Q and R are warm blooded animals. Q possesses feathers as body covering whereas R possesses hair as body covering.

Which option correctly identifies P-R?

(A) P - Frog; Q - Penguin; R – Turtle (B) P - Seal; Q - Frog; R - Penguin

(C) P - Turtle: Q - Seal; R – Platypus (D) P – Sea turtle; Q - Penguin; R - Seal

Q10. The aquatic animal that does not have a streamlined shape is_____.

(A) Octopus (B) Pigeon (C) Dolphin (D) Whale

Q11.On the basis of body covering, Rohit made four groups of three organisms each, In an attempt of doing so, he classified organisms incorrectly in one of the groups. Identify this group and select the correct option.

(A) Tortoise, Snail, Oyster (B) Penguin, Ostrich, Bat

(C) Fish, Snake, Lizard (D) Hippopotamus, Whale, Cow

Q12. Animal 'X' eats plant parts. It gives birth to young ones and feeds them with milk.

Identify the animal 'X'

(A) Fox (B) Goat (C) Tiger (D) Lion

Q13. Earthworms and birds breathe through the following organs respectively_____.

(A) lungs and skin (B) spiracles and lungs

(C) skin and lungs (D) special head and lungs

Q14. Which of the following statements are correct?

1. Gills help fishes to breathe.

2. All mammals lay eggs.

3. Frogs can breathe through their skin.

4. Birds breathe through lungs.

(A) 1 and 3 (B) 2, 3 and 4 (C) 1, 2 and 4 (D) 1, 3 and 4

Q15. Choose out arboreal animals.

(A) Squirrel (B) Monkey (C) Koala (D) All of these

Q16. Which of the following processes is an example of sublimation?

(A) Ice melting into water

(B) Water evaporating into steam

(C) Dry ice turning into carbon dioxide gas

(D) Liquid nitrogen boiling into nitrogen gas

Q17. The property that allows a liquid to flow and take the shape of its container is known as_____.

(A) compressibility (B) viscosity (C) density (D) fluidity

Q18. A scientist wants to obtain pure solid iodine from its mixture with sand. Which of the following process should they use?

(A) Melting (B) Sublimation

(C) Freezing (D) Condensation

Q19. Matter around us can exist in three different states, namely, solid, liquid and gas. The correct order of their compressibility is :

(A) Liquid < Gas < Solid (B) Solid < Liquid < Gas

(C) Gas < Liquid < Solid (D) Solid< Gas < Liquid

Q20. A student by chance mixed acetone with alcohol. The mixture of acetone and alcohol can be separated by_____.

(A) filtration (B) separating funnel

(C) fractional crystallisation (D) fractional distillation

Q21. Gases can be liquified by _____.

(A) decreasing temperature (B) increasing pressure

(C) both (A) and (B) (D) decreasing pressure

Q22. The state of matter which consists of super energetic particles in the form of ionised gases.

(A) Plasma state (B) Gaseous state

(C) Liquid state (D) Bose- Einstein condensate

Q23. An inclined plane makes lifting a heavy load easier by_____.

(A) reducing the distance moved

(B) increasing the force required

(C) reducing the required force over a longer distance

(D) reducing the mass of the load

Q24. A mechanic uses a spanner with a longer handle to loosen a tight nut. The longer handle helps because it_____.

(A) decreases the turning effect of force

(B) increases the turning effect of force

(C) decreases the mass of the nut

(D) eliminates friction completely

Q25. Which of the following is a third-class lever?

(A) Crowbar

(B) Wheelbarrow

(C) Human forearm lifting a book

(D) Pliers

Q26. A person uses a crowbar to lift a heavy stone. To reduce the effort needed, where should the person place the fulcrum?

(A) Very close to the effort

(B) Very close to the load

(C) Exactly at the effort point

(D) Far away from both the load and effort

Q27. A blunt nail is difficult to push into wood. Why is a pointed nail generally more effective?

(A) Its pointed end concentrates force over a smaller area.

(B) Its pointed end reduces the weight of the hammer.

(C) It eliminates friction between the nail and wood.

(D) It creates additional energy.

Q28. Which statement about wedges is scientifically correct?

(A) All wedges are used only for cutting food.

(B) Wedges can be used for cutting, splitting, piercing, or holding objects in place.

(C) Wedges always reduce the total work to zero.

(D) None of these

Q29. Which simple machine is commonly used in a doorstop to prevent a door from moving?

(A) Lever (B) Pulley (C) Wedge (D) Wheel and axle

Q30. A village uses muddy water for drinking. The villagers add potassium permanganate, but the water remains muddy. What is the best conclusion?

(A) Potassium permanganate removes all suspended particles.

(B) The water is safe because it has been chemically treated.

(C) Additional suitable treatment, such as settling and filtration needed.

(D) Muddy water cannot be purified.

Q31. The last step in the treatment of sewage is ____.

(A) aeration (B) chlorination

(C) evaporation (D) decantation

Q32. Water that is fit for drinking purposes is known as ____.

(A) portable water (B) sanitary water

(C) bottled water (D) potable water

Q33. Two identical balloons are filled with equal volumes of air at the same temperature. Balloon A is taken to a high-altitude location, while Balloon B remains at sea level. Assuming the balloons can expand freely, what is most likely to happen to Balloon A?

(A) It contracts because atmospheric pressure decreases.

(B) It expands because the external atmospheric pressure is lower.

(C) Its volume remains unchanged because the amount of air is constant.

(D) It bursts immediately because oxygen concentration becomes zero.

Q34. Suppose Earth had no atmosphere but continued receiving the same incoming solar energy. Which effect would be expected?

(A) Sound would travel normally through the airless surroundings.

(B) There would be no atmospheric weather, and the absence of the natural greenhouse effect would make Earth's surface temperature distribution very different.

(C) Earth's surface would maintain exactly the same average temperature and daily temperature range.

(D) Liquid water would remain stable everywhere on the surface under all conditions.

Q35. A scientist observes that the temperature of the troposphere generally decreases with altitude, while the temperature of the stratosphere generally increases with altitude over much of that layer. What is the best explanation?

(A) The troposphere is heated mainly from Earth's surface, while ozone absorption of ultraviolet radiation warms the stratosphere.

(B) The stratosphere is heated only by ocean currents.

(C) The troposphere receives no solar energy.

(D) Gravity heats the stratosphere but cools the troposphere directly.

Q36. A student claims that the mesosphere is the hottest atmospheric layer because meteoroids burn up there. Which evaluation is best?

(A) Correct, because burning objects always prove that the surrounding air is the hottest.

(B) Incorrect, because meteoroid heating is not evidence that the mesosphere has the highest atmospheric temperature; the thermosphere reaches much higher temperatures.

(C) Correct, because the mesosphere absorbs all solar radiation.

(D) Incorrect, because meteoroids never enter Earth's atmosphere.

Q37. Which of the following statements is false about nutrients in milk?

(A) Milk is a good source of calcium (B) Milk is a good source of protein

(C) Milk is a good source of vitamin C (D) Milk is a good source of vitamin D

Q38. Which of the following food items provides dietary fibre?

(A) Pulses (B) Wholegrain

(C) Fruits and vegetables (D) All of the above

Q39. A student eats enough food but mainly consumes polished rice with very little dietary variety. The student develops weakness and nerve problems. Which deficiency is a likely concern?

(A) Vitamin B1 (B) Vitamin D (C) Vitamin K (D) Vitamin A

Q40. A person has poor blood clotting and prolonged bleeding. Which vitamin deficiency may be involved?

(A) Vitamin A (B) Vitamin B1 (C) Vitamin D (D) Vitamin K

Q41. A child has swollen legs and a protruding abdomen after prolonged severe protein deficiency, often with skin and hair changes. Which condition is classically associated with this pattern?

(A) Goitre

(B) Scurvy

(C) Kwashiorkor

(D) None of these

Q42. A person eats enough protein but very little vitamin C. Which function may be impaired despite adequate protein intake?

(A) Collagen formation and wound healing

(B) Thyroid hormone production

(C) Haemoglobin formation

(D) Calcium absorption

Q43. Two people have similar symptoms of tiredness. One has iron-deficiency anaemia, while the other has vitamin B12 deficiency. Why is symptom-based self-diagnosis unreliable?

(A) Tiredness occurs only in vitamin deficiency

(B) Different nutrient deficiencies and other medical conditions can produce overlapping symptoms

(C) All deficiencies cause identical blood-test results

(D) Tiredness always indicates inadequate calories

Q44. A child with a restricted diet has mouth soreness and anaemia. Which approach is best for identifying the cause?

(A) Assume vitamin C deficiency without testing

(B) Assess diet and symptoms and arrange appropriate clinical evaluation and tests

(C) Prescribe every available supplement immediately

(D) Use skin colour alone to identify the missing nutrient

Q45. Which statement is correct?

(A) Minerals form elements, and elements form rocks.

(B) Minerals form rocks, and rocks form elements.

(C) Elements form minerals, and minerals form rocks.

(D) Rocks form minerals, and minerals form elements.

Q46. Clay particles are of size_____.

(A) More than 0.004 mm (B) Less than 0.04 mm

(C) More than 0.02 mm (D) Less than 0.002 mm

47. Which sequence correctly represents the formation of a sedimentary rock?

(A) Magma → cooling → sedimentary rock

(B) Weathering → erosion and transport → deposition → compaction and cementation

(C) Heat and pressure → melting → sedimentary rock

(D) Evaporation → condensation → crystallisation of magma

Q48. Rock X contains fossils and is arranged in distinct layers. Rock Y has bands of light and dark minerals and no visible fossils. Which inference is most appropriate?

(A) Both rocks are definitely igneous.

(B) Rock X is likely sedimentary, while Rock Y may be metamorphic.

(C) Rock X is metamorphic, while Rock Y is sedimentary.

(D) None of these

Q49. What is the chemical formula of calcite?

(A) $CaSO_4$ (B) $CaCO_3$

(C) CaO (D) $CaMg(CO_3)_2$

Q50. A rock sample has a banded texture. Another sample is made of interlocking calcite crystals. A third sample splits into thin sheets. Which interpretation is most consistent with these observations?

(A) Gneiss, marble, slate (B) Marble, slate, gneiss

(C) Slate, quartzite, marble (D) Quartzite, gneiss, sandstone

Q51. A geologist finds a dark, fine-grained rock near an ancient volcanic flow. Which additional observation would most strongly support its identification as basalt?

(A) It contains alternating light and dark mineral bands.

(B) It is formed from lava that cooled at or near the surface.

(C) It contains rounded pebbles cemented together.

(D) It splits into thin sheets due to foliation.

Q52. Which of the following is the chief ore of aluminium?

(A) Hematite (B) Bauxite (C) Galena (D) Magnetite

Q53. A power station burns coal to produce electricity. Which sequence best represents the energy conversion?

(A) Chemical → thermal → mechanical → electrical

(B) Electrical → chemical → thermal → mechanical

(C) Thermal → chemical → electrical → mechanical

(D) Mechanical → thermal → chemical → electrical

Q54. 'Hammer', 'anvil' and 'stirrup' are bones found in which part of the body?

(A) The vertebral column

(B) The elbow

(C) The ear

(D) More than one of the above

Q55. A person can bend their elbow but finds it difficult to straighten it. Which explanation is most likely?

(A) The biceps has stopped attaching to the shoulder.

(B) The triceps or its tendon may be damaged.

(C) The cartilage in the skull has become weak.

(D) The ribs can no longer move during breathing.

Q56. Which two bones are connected by the clavicle?

(A) Sternum and scapula

(B) Humerus and radius

(C) Sternum and humerus

(D) Scapula and vertebral column

Q57. The adult human skull consists of_____.

(A) 8 cranial bones and 14 facial bones

(B) 14 cranial bones and 8 facial bones

(C) 12 cranial bones and 10 facial bones

(D) 6 cranial bones and 16 facial bones

Q58. Which of the following is the only freely movable bone of the skull?

(A) Maxilla

(B) Mandible

(C) Frontal bone

(D) Zygomatic bone

Q59. The cervical curve is located in the_____.

(A) neck region

(B) chest region

(C) lower back

(D) pelvic region

Q60. Which of the following pairs is correctly matched?

(A) Shoulder — hinge joint

(B) Elbow — ball-and-socket joint

(C) Atlas and axis — pivot joint

(D) Skull sutures — gliding joint