

BHAVAN'S SCIENCE OLYMPIAD (BSO) - 2023

Class: 5 | Subject: Science | Answer Key & Detailed Short Solutions

GENERAL SECTION (QUESTIONS 1 – 40)

1. Kavya is going to a hilly area for her summer vacation. Which of the following will she most probably find there?

- a) Spruce b) Coconut c) Venus flytrap d) None of these

Answer: a) Spruce — Spruce is a coniferous tree adapted to cool, hilly/mountainous climates.

2. I have a tail and gills like a fish, I swim in water but I can jump on land when I'll grow up. Who am I?

- a) Maggot b) Nymph c) Caterpillar d) Tadpole

Answer: d) Tadpole — A tadpole is the larval stage of a frog; it breathes with gills and develops legs to jump on land as an adult.

3. On which day every year "World Environment Day" is celebrated?

- a) 24 April b) 22 March c) 5 June d) 5 July

Answer: c) 5 June — World Environment Day is observed globally on June 5th every year.

4. Identify the part labeled as X in the given figure of an egg.

- a) Yolk b) Air Space c) Albumen d) Embryo

Answer: a) Yolk — The central yellow region labeled 'X' in an egg structure is the yolk, providing nutrition to the embryo.

5. In which of the following parts of digestive system does complete digestion of food occurs?

- a) Large Intestine b) Small Intestine c) Stomach d) Mouth

Answer: b) Small Intestine — Complete digestion and absorption of nutrients take place in the small intestine.

6. Which of the following plant does not grow in coastal areas?

- a) Teak b) Mangrove c) Coconut d) Rubber

Answer: a) Teak — Teak grows in deciduous forest regions, whereas mangroves, coconut, and rubber thrive in coastal/humid areas.

7. Which of the following is not a marsupial?

- a) Wallabies b) Kangaroo c) Wombats d) Duck billed Platypus

Answer: d) Duck billed Platypus — Platypus is a monotreme (egg-laying mammal), not a pouched marsupial.

8. Which natural fibre is made from the fibres of the flax plant?

- a) Cotton b) Jute c) Linen d) Silk

Answer: c) Linen — Linen fabric is obtained from the stem fibers of the flax plant.

9. Which of the following process causes presence of humidity in air?

- a) Blowing wind b) Evaporation c) Condensation d) Rotation

Answer: b) Evaporation — Evaporation converts liquid water into water vapor, adding moisture/humidity to the atmosphere.

10. Which among the following is not a type of soil?

- a) Sandy b) Clayey c) Gravel d) Loamy

Answer: c) Gravel — Sandy, clayey, and loamy are soil types; gravel refers to loose rock fragments.

11. Select the INCORRECT match from the following:

- a) Incisor- Cutting b) Canine- Tearing c) Molar- Biting d) Premolar- Crushing

Answer: c) Molar- Biting — Molars are meant for grinding and chewing food; incisors are meant for biting/cutting.

12. Why do we prefer to wear white or light coloured clothes in summer?

- a) These clothes reflect the heat and keep the body cool.
- b) These clothes absorb the heat and keep the body cool.
- c) These clothes absorb the heat and keep the body warm.
- d) These clothes reflect the heat and keep the body warm.

Answer: a) These clothes reflect the heat and keep the body cool. — Light colors reflect most of the sun's heat rays.

13. Rita needs an object that does not melt easily and we can see through it clearly. She should use:

- a) Wood
- b) Metal
- c) Crayon
- d) Glass

Answer: d) Glass — Glass is transparent (see-through) and has a high melting point.

14. Whenever we use the air conditioner, refrigerator, etc., we send P gases into the air. Which of these is P gas?

- a) CNG
- b) CFCs
- c) Oxygen
- d) Nitrogen

Answer: b) CFCs — Chlorofluorocarbons (CFCs) are released by cooling appliances like ACs and refrigerators.

15. Pluto was demoted to be a _____ planet on _____.

- a) Dwarf, 24th August 2006
- b) Giant, 24th August 2006
- c) Dwarf, 15th August 2005
- d) Giant, 15th August 2005

Answer: a) Dwarf, 24th August 2006 — The International Astronomical Union reclassified Pluto as a dwarf planet on Aug 24, 2006.

16. A ball takes P (6s), Q (15s), R (10s), S (18s) to cover the same distance. Which surface is the smoothest?

- a) P
- b) R
- c) S
- d) Q

Answer: a) P — Smoother surfaces offer less friction, allowing the ball to travel faster (minimum time of 6s).

17. A sea breeze blows when the air above land is _____ and the air above sea is _____.

- a) Colder, Warmer
- b) Warmer, Lighter
- c) Heavier, Colder
- d) Warmer, Colder

Answer: d) Warmer, Colder — During daytime, land heats faster (warmer air rises), causing cooler air from sea to blow towards land.

18. A compass works with the help of:

- a) Solar Energy
- b) Moon's gravity
- c) Earth's Magnetic field
- d) Earth's gravity

Answer: c) Earth's Magnetic field — The magnetic needle of a compass aligns itself along Earth's magnetic north-south lines.

19. Select the animal pair who has similar breathing mechanisms:

- a) Bat: Fish
- b) Turtle: Lizard
- c) Butterfly: Mouse
- d) Earthworm: Cockroach

Answer: b) Turtle: Lizard — Both turtles and lizards are reptiles and breathe through lungs.

20. Select the correct match from the following:

- a) Venus - It has 2 moons
- b) Saturn - Its rings are made of ice, rocks and dust
- c) Jupiter - Largest and farthest planet
- d) Mercury - Hottest planet

Answer: b) Saturn - Its rings are made of ice, rocks and dust — Saturn's planetary ring system consists primarily of ice particles, rocky debris, and dust.

21. What will happen to the water level in the tub, when some air is sucked out of the inverted glass?

- a) Water level in the tub will go down
- b) Water level in the tub will rise.
- c) Bubbles will appear in the tub.
- d) Water level in the tub will remain the same.

Answer: a) Water level in the tub will go down — Sucking air out reduces pressure in the glass, causing water from the tub to enter the glass, lowering the tub's level.

22. When oxides of nitrogen and sulphur react with water vapour in the air they cause:

- a) Ozone depletion
- b) Global warming
- c) Acid rain
- d) Oil spill

Answer: c) Acid rain — Nitrogen oxides and sulphur dioxide dissolve in water droplets to form nitric and sulphuric acids (acid rain).

23. X majorly helps in the formation of teeth and bones. Select the option that gives X on unscrambling:

- a) ONRI (IRON) b) IALCCUM (CALCIUM) c) ULUSPHR (SULPHUR) d) PPECOR (COPPER)

Answer: b) IALCCUM — Unscrambles to CALCIUM, which is vital for strong bones and teeth.

24. _____ is the organic component of the soil formed by action of soil microorganism.

- a) Gravel b) Humus c) Sand d) Clay

Answer: b) Humus — Humus is dark organic matter formed by the decomposition of plant and animal material.

25. During which of the following stages, the butterfly forms a cocoon/chrysalis?

- a) Embryo b) Nymph c) Pupa d) Caterpillar

Answer: c) Pupa — The pupa (chrysalis) stage is the transformation stage enclosed in a protective casing.

26. Which of the following nutrients is required in small amount in our body?

- a) Fats b) Carbohydrates c) Proteins d) Vitamins and minerals

Answer: d) Vitamins and minerals — Vitamins and minerals are micronutrients needed in small quantities for immunity and body functions.

27. Which is the hardest substance in our body?

- a) Bone b) Enamel c) Dentine d) Cartilage

Answer: b) Enamel — Tooth enamel is the hardest and most highly mineralized substance in the human body.

28. Which of the following forces causes wear and tear of machine parts?

- a) Frictional Force b) Gravitational Force c) Muscular Force d) Magnetic Force

Answer: a) Frictional Force — Friction between rubbing mechanical parts produces heat and causes wear and tear.

29. Which of the following is the most fertile layer of the soil?

- a) Bedrock b) Subsoil c) Top soil d) Partially weathered rocks

Answer: c) Top soil — Topsoil contains rich humus and minerals essential for plant growth.

30. Which of the following statement about work is correct?

- a) Work is done when force is applied.
b) Work is done only when an object is displaced.
c) Work is not related to the amount of force applied.
d) Work is not related to energy.

Answer: b) Work is done only when an object is displaced. — In physics, Work = Force × Displacement; displacement is mandatory.

31. Select the correct option regarding solution:

- a) Solute + Solution = Solvent b) Solvent - Solute = Solution
c) Solvent + Solution = Solute d) Solute + Solvent = Solution

Answer: d) Solute + Solvent = Solution — A solution is a homogeneous mixture formed when a solute dissolves in a solvent.

32. Which of the following leads to pollution of water?

- a) Reducing the use of fossil fuels b) Carbon dioxide released in respiration
c) Avoiding washing and cleaning of animals in water bodies d) Throwing untreated industrial waste in water bodies

Answer: d) Throwing untreated industrial waste in water bodies — Toxic chemicals in untreated industrial effluents severely pollute aquatic ecosystems.

33. 500 ml of water in flask X is heated until completely evaporated. The amount of water collected in flask Y will be about:

- a) 300 ml b) 450 ml c) 400 ml d) 500 ml

Answer: d) 500 ml — According to the conservation of mass, all evaporated vapor condenses back into 500 ml of water.

34. Which deficiency disease is caused due to the lack of vitamin C?

- a) Night blindness b) Scurvy c) Rickets d) Beri - Beri

Answer: b) Scurvy — Vitamin C deficiency causes Scurvy, characterized by bleeding gums and weak immunity.

35. Which of the following is a kharif crop?

- a) Rice b) Wheat c) Pulses d) Mustard

Answer: a) Rice — Rice is grown during the monsoon/summer season (Kharif), while wheat and mustard are Rabi crops.

36. Which of the following aquatic plant do not have stomata?

- a) Floating plant b) Fixed plant c) Underwater plant d) None of these

Answer: c) Underwater plant — Submerged/underwater plants absorb gases directly through their body surface and lack stomata.

37. Choose the correct statement:

- a) Birds are cold blooded animals. b) Kiwi can fly.
c) Polar bears hibernate. d) Amphibians lay their eggs in water.

Answer: d) Amphibians lay their eggs in water. — Amphibians like frogs lay jelly-covered eggs in water to prevent desiccation.

38. Arrangement of major gases in air in decreasing order of their percentage:

- a) Oxygen < Nitrogen < Carbon dioxide b) Nitrogen < Oxygen < Carbon dioxide
c) Nitrogen > Oxygen > Carbon dioxide d) Carbon dioxide > Nitrogen > Oxygen

Answer: c) Nitrogen > Oxygen > Carbon dioxide — Air composition: ~78% Nitrogen > ~21% Oxygen > ~0.04% Carbon dioxide.

39. Refer to flow chart (1-Herbivore, 2-Carnivore, 3-Omnivore). Select correct option:

- a) 1 - Cow, 3 - Bear b) 2 - Crow, 3 - Squirrel
c) 1 - Fox, 3 - Lion d) 1 - Eagle, 2 - Sparrow

Answer: a) 1 - Cow, 3 - Bear — 1 (Herbivore) = Cow; 3 (Omnivore) = Bear.

40. What do we call the pores on the underside of the leaves?

- a) Stomata b) Petiole c) Stalk d) Lamina

Answer: a) Stomata — Stomata are microscopic pores on leaf surfaces responsible for gas exchange.

ACHIEVER SECTION (QUESTIONS 41 – 45)

41. Unscramble the given options and select the one that is NOT a cause for soil erosion:

- a) GIULOPGHN (PLOUGHING) b) AFRSAOFETITON (AFFORESTATION)
c) FORTDESTAIONE (DEFORESTATION) d) AVERONGRZIG (OVERGRAZING)

Answer: b) AFRSAOFETITON (AFFORESTATION) — Afforestation (planting trees) prevents soil erosion, unlike deforestation, overgrazing, or ploughing.

42. In the given food web, which consumers are both plant and animal-eaters (omnivores)?

- a) P and S b) Q and U c) R and T d) P and U

Answer: d) P and U — In the diagram, P receives arrows from Plant and Q; U receives arrows from Plant and T. Both feed on plants and animals.

43. When a mixer grinder is switched on, _____ energy changes to _____ and kinetic energy.

- a) Mechanical, Sound b) Electrical, Heat c) Electrical, Sound d) Potential, Mechanical

Answer: c) Electrical, Sound (or b) Electrical, Heat) — Input is Electrical energy; transformed into Kinetic (rotational), Sound, and Heat energy.

44. The given figure shows Earth layers (P: Inner Core, Q: Outer Core, R: Mantle, S: Crust). Correct statement:

- a) P and Q are liquid layers. b) Layer S makes up most volume.
c) Layer above R is called crust (S). d) All of these

Answer: c) Layer above R is called crust. — Layer R is the mantle; the outermost layer above R is S, known as the Earth's crust.

45. Planet X is closer to Sun than planet Y. It can be inferred that:

- a) Planet Y has longer revolution period than planet X.
- b) Planet X has longer revolution period than planet Y.
- c) Planet X has longer rotation period than planet Y.
- d) Planet Y has longer rotation period than planet X.

Answer: a) Planet Y has longer revolution period than planet X. — Kepler's Third Law: Planets farther from the Sun have larger orbits and take longer time to revolve around it.