* Choose the correct alternative from those given below question [24]

1. What is the starting point of scientific investigation?
   (A) Memorization (B) Observation
   (C) Wonder and curiosity (D) Drawing conclusions

   Ans. : (C) Wonder and curiosity

2. What kind of organisms are studied when examining a single drop of water?
   (A) Plants (B) Birds (C) Microorganisms (D) Insects

   Ans. : (C) Microorganisms

3. What does pressure help to explain?
   (A) Taste of food (B) Movement of planets
   (C) Air movement and weather events (D) Growth of plants

   Ans. : (C) Air movement and weather events

4. What scientific tool helps us see tiny particles and microorganisms?
   (A) Thermometer (B) Barometer (C) Telescope (D) Microscope

   Ans. : (D) Microscope

5. Which natural object helps us measure time through its phases?
   (A) Sun (B) Mars (C) Moon (D) Earth

   Ans. : (C) Moon

6. Why do objects appear bent in water?
   (A) Due to gravity (B) Due to reflection
   (C) Due to sound waves (D) Due to the refraction of light

   Ans. : (D) Due to the refraction of light

7. What is used as an example to show how pressure changes affect results?
   (A) Ice cream (B) Boiling water (C) A puri puffing up (D) Growing plants

   Ans. : (C) A puri puffing up

8. What force causes a ball thrown up to fall back down?
   (A) Friction (B) Magnetism (C) Air resistance (D) Gravity

   Ans. : (D) Gravity

9. Why is classifying materials in science important?
   (A) To waste time
   (B) To make them taste better
   (C) To better understand their properties

(D) To change their colour

Ans. : (C) To better understand their properties

10. What role does science play in protecting Earth's environment?
    (A) Creating pollution
    (B) Observing and understanding changes
    (C) Increasing temperature
    (D) Blocking sunlight

    Ans. : (B) Observing and understanding changes

11. What scientific principle explains why a puri puffs up when fried?
    (A) Air circulation inside the oil
    (B) Evaporation of water forming steam
    (C) Addition of baking soda
    (D) Melting of gluten

    Ans. : (B) Evaporation of water forming steam

12. Which of the following is not a correct step in scientific investigation?
    (A) Forming a hypothesis (B) Ignoring unexpected results
    (C) Conducting experiments (D) Making observations

    Ans. : (B) Ignoring unexpected results

13. Which part of the microscope helps in magnifying small particles or microorganisms?
    (A) Stage (B) Mirror (C) Eyepiece lens (D) Base

    Ans. : (C) Eyepiece lens

14. Why do we classify materials in science?
    (A) To decorate the laboratory
    (B) To reduce their weight
    (C) To study their uses and properties better
    (D) To mix them easily

    Ans. : (C) To study their uses and properties better

15. Which of the following conditions would cause air pressure to decrease?
    (A) Cooling of air (B) Compression of particles
    (C) Heating of air (D) Decrease in altitude

    Ans. : (C) Heating of air

16. Which factor does not affect the refraction of light?
    (A) Medium through which light travels

(B) Colour of the object

(C) Angle at which light enters the material

(D) Density of the material

Ans. : (B) Colour of the object

17. When observing Moon phases, which position causes a new moon to occur?

(A) Moon between Earth and Sun

(B) Earth between Moon and Sun

(C) Sun between Moon and Earth

(D) Moon at right angle to Earth and Sun

Ans.: (A) Moon between Earth and Sun

18. What property of air allows it to exert pressure in different directions?

(A) Its fixed volume

(B) The weight of oxygen only

(C) Movement of its particles

(D) Its colourless nature

Ans. : (C) Movement of its particles

19. A coin placed in a glass of water appears raised due to which phenomenon?

(A) Reflection (B) Diffraction (C) Refraction (D) Scattering

Ans. : (C) Refraction

20. Which force stops a moving object like a rolling ball?

(A) Magnetic force (B) Gravitational force

(C) Frictional force (D) Electrostatic force

Ans. : (C) Frictional force

21. What would happen if there were no atmosphere around the Earth?

(A) Increased rainfall

(B) Reduced gravity

(C) No air pressure or protection from harmful rays

(D) Faster plant growth

Ans. : (C) No air pressure or protection from harmful rays

22. Which of the following best explains why we use models in science?

(A) They replace real experiments

(B) They help understand complex phenomena

(C) They are easier to memorize

(D) They eliminate the need for observation

Ans. : (B) They help understand complex phenomena

23. How does observing Moon phases help in timekeeping?

(A) By helping count stars

(B) By guiding birds in migration

(C) By providing a predictable cycle for calendar months

(D) By increasing light at night

Ans. : (C) By providing a predictable cycle for calendar months

24. What helps scientists predict cyclones and severe storms?

(A) Studying Moon phases

(B) Changes in soil types

(C) Observation of air pressure and wind patterns

(D) Cloud colours

Ans. : (C) Observation of air pressure and wind patterns

*** Fill in the blanks:** **[15]**

25. A _____ is developed in science to explain why a puri puffs up, based on observation and reasoning.

Ans. : Hypothesis

26. When water inside a puri turns to steam, the pressure created causes the puri to _____

Ans. : Puff up

27. _____ helps in studying tiny living organisms not visible to the naked eye.

Ans. : Microscope

28. In gases, particles move _____ and collide with surfaces, creating pressure.

Ans. : Randomly

29. A _____ occurs when the Moon is on the opposite side of the Earth from the Sun.

Ans. : Full moon

30. The apparent bending of a spoon in a glass of water is due to the _____ of light.

Ans. : Refraction

31. Classification in science is useful to identify and group materials based on their _____

Ans. : Properties

32. The Moon reflects light from the _____ to become visible from Earth.

Ans. : Sun

33. Scientific investigations involve careful _____, measurement, and testing of ideas.

Ans. : Observation

34. The pressure in a gas increases when the particles are forced into a _____ space.

Ans. : Smaller

35. Human beings used the predictable phases of the _____ to mark time and create calendars.

Ans. : Moon

36. A scientific approach begins with asking questions such as "why" and "_____."

Ans. : How

37. A _____ surface reflects light evenly, producing clear images.

Ans. : Smooth

38. Cyclones are caused by intense differences in atmospheric _____

Ans. : Pressure

39. Tools like weather balloons and satellites help scientists observe and record _____ conditions.

Ans. : Atmospheric

*** Answer the following questions in short.** **[48]**

40. What symbols are used in the book to represent deep knowledge and imagination, respectively?

Ans. : A root at the bottom of the left pages represents deep knowledge, and a kite on top of the right pages represents curiosity and imagination.

41. What does it mean to investigate like a scientist?

Ans. : It means asking specific questions, designing controlled experiments, making observations, measuring, and drawing conclusions one step at a time.

42. How can human activity affect the Earth's climate?

Ans. : Human actions like burning fossil fuels and deforestation can change the Earth's temperature, disrupt climate patterns, and cause serious consequences.

43. Why is one side of a puri thinner than the other?

Ans. : When a puri is fried, steam forms inside, expanding and pushing one side more, making it thinner. This can depend on dough thickness, temperature, or how it's dropped in oil.

44. What is a systematic investigation?

Ans. : A method where only one variable is changed at a time, others are kept constant, and careful observations and records are made.

45. Probe and Ponder
Is there a question that makes you curious about the world?
Write it here! _____

Ans. : - Why does rice cook faster in a pressure cooker than in an open vessel?
- Why do cut apples turn brown after some time?
- Why does ice melt faster in warm water than in cold water?

46. What is meant by "systematic investigation" in science?

Ans. : self

47. Name one variable that affects how a puri puffs up.

Ans. : self

48. What is the first step in a scientific investigation?

Ans. : self

49. Why is observation important in science?

Ans. : self

50. Explain why only one variable should be changed during an experiment.

Ans. : self

51. How does frying a puri help us understand scientific investigation?

Ans. : self

52. What is the role of curiosity in scientific thinking?

Ans. : self

53. Why is it important to keep notes during an experiment?

Ans. : self

54. How does the chapter encourage students to see science in everyday life? Give examples.

Ans. : self

55. Explain the importance of observation, questioning, and experimentation in science.

Ans. : self

56. Discuss how changing one variable at a time helps in identifying cause-and-effect relationships.

Ans. : self

57. Why does the chapter say that even a kitchen can be a laboratory? Support your answer with examples.

Ans. : self

58. If you observe that a puri puffs only on one side despite following the same cooking process, how would you design an experiment to identify the cause? List the variables you would control.

Ans. : self

59. A student claims that "all microorganisms are harmful." Use scientific reasoning and examples to argue against or support this statement.

Ans. : self

60. Suppose the Moon suddenly stopped orbiting the Earth. Using your understanding of Moon phases and celestial motion, what would be the impact on life and timekeeping on Earth?

Ans. : self

61. How would the behaviour of a balloon change if taken to a high-altitude mountain? Use the concepts of air pressure and particle movement to justify your answer.

Ans. : self

62. Imagine a mirror placed under a stream of flowing water. How might the reflection change compared to a mirror in still air? Explain using light behaviour principles.

Ans. : self

63. A new material is discovered that bends light more than water but less than glass. What could be its possible applications in optical instruments? Explain your reasoning.

Ans. : self

*** State whether the following sentences are true or false. Correct the false sentences and rewrite them.** **[15]**

64. Scientific investigations always lead to the same result, regardless of the method used.

Ans. : false

65. Microorganisms can be found in a single drop of pond water.

Ans. : true

66. Air does not exert pressure on objects in-all directions.

Ans. : false

67. The puffing of a puri is an example of steam formation inside the dough.

Ans. : true

68. Refraction is the bending of light when it passes from one medium to another.

Ans. : true

69. A full moon occurs when the Moon is between the Earth and the Sun.

Ans. : false

70. The Moon has its own light, which helps us see it at night.

Ans. : false

71. Classification of substances in science helps us better understand their behaviour and usage.

Ans. : true

72. A microscope helps us see very small things that are not visible to the naked eye.

Ans. : true

73. Friction is a force that always helps in increasing the speed of an object.

Ans. : false

74. Pressure is caused by the movement and collision of particles in gases.

Ans. : true

75. The shape of a puri depends only on the type of flour used.

Ans. : false

76. Light always travels in a curved path through air.

Ans. : false

77. Observing Moon phases helped early humans develop calendars.

Ans. : true

78. Scientific questions can be investigated through planning, observing, and experimenting.

Ans. : true

*** Answer the following questions in short.** **[12]**

79. Is there a question that makes you curious about the world?
Write it here! _____

Ans. : Why does rice cook faster in a pressure cooker than in an open vessel?
Why do cut apples turn brown after some time?
Why does ice melt faster in warm water than in cold water?

80. Do puris puff better when made fresh or from stored dough?

Ans. : Puris usually puff better when made from fresh dough rather than stored dough. Fresh dough has the right moisture and softness, which helps the puris puff up properly. Stored dough often becomes dry and hard, making it difficult for the puris to puff up well.

81. A group of students was conducting a kitchen science experiment on why puris puff up. They observed that one puri puffed up perfectly into a round shape, while another puffed only on one side. Both were made from the same dough and fried in the same oil at the same time. The group wantedto know why this happened.

Q.1. What possible factors could have caused the difference in puffing between the two puris?

Q.2. How can the students apply the scientific method to investigate the cause?

Q.3. Design a simple controlled experiment to test one of the identified factors.

Ans. : 1. Factors: Thickness of dough, uneven rolling, moisture content, oil temperature, and dough resting time.

2. Ask a question → form a hypothesis → control one variable → observe and record puffing results.

3. Roll multiple puris of varying thickness while keeping the oil temperature and the dough constant. Fry and observe puffing differences.

82. A science club is analyzing a recent cyclone that hit a coastal region. They have access to weather data, including changes in air pressure, wind speed, and satellite images showing spiral cloud patterns. The club wants to understand the formation of the cyclone and how early warning signs could be detected scientifically.

Q.1. Using your knowledge of air pressure and particle movement, explain how the cyclone may have formed.

Q.2. What scientific instruments or tools could help in predicting such a cyclone?

Q.3. How can understanding this case help reduce the impact of future storms?

Ans. : 1. Rapid fall in air pressure creates low pressure center; surrounding high-pressure air rushes in, spirals due to Earth's rotation → cyclone forms.

2. Barometers (air pressure), anemometers (wind speed), satellites, and weather

balloons.

3. Early warnings, evacuation planning, pressure tracking, awareness campaigns.

*** Answer the following questions in details [4 marks]** [24]

83. What scientific topics will be covered in the textbook this year?

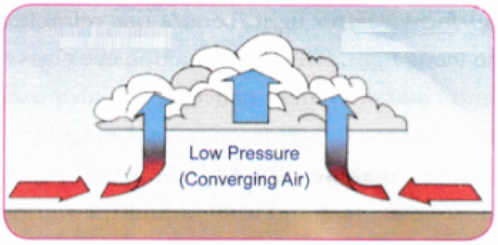
Ans. : The following chapter will be covered this year:

- Microbes and health
- Electricity and its effects
- Force, pressure, and motion
- Particles, elements, compounds, mixtures
- Light: reflection, mirrors, and lenses
- Phases of the Moon and calendars
- Ecosystems and climate change

84. Explain how the scientific method can be applied to everyday observations, using the example of why a puri puffs up unevenly.

Ans. : The scientific method starts with a question based on observation, like "Why is one side of a puri thinner than the other?" We begin by forming hypotheses: maybe the dough is uneven, or one side receives more heat. To test this, we must control variables like dough thickness, oil temperature, and type of flour. We can use tools to measure puff-up time, observe the shape and thickness before and after frying, and record the results. For example, dropping puris of different thicknesses or changing the oil temperature can help determine how these factors affect puffing. Repeating the experiment and changing one variable at a time while keeping others constant allows a systematic study. This shows how even a kitchen observation follows the steps of scientific inquiry.

85. Discuss the role of pressure and particle movement in explaining weather phenomena like winds and cyclones. How does understanding particle behaviour in the air help us predict such events?



Ans. : Air is made up of tiny particles that are constantly moving. When air heats up, particles move faster and spread out, reducing pressure. Cooler air has particles packed closer, creating high pressure. Air always moves from high pressure to low pressure. This movement is what we call wind. If the pressure difference is large and rapid, it can lead to strong winds and even cyclones. Understanding this helps scientists predict storms by measuring temperature and pressure variations. Satellite images and weather balloons help collect this data. Thus, studying air particle behaviour provides insight into how and why weather changes happen.

86. How does light help us perceive the world, and what scientific concepts explain phenomena like reflection, refraction, and the bending of light through different materials? Give real-life examples.

Ans. : Light allows us to see objects when it reflects off them and enters our eyes. Reflection happens when light bounces off smooth surfaces like mirrors. Refraction occurs when light passes through materials like water or glass and bends due to a change in speed. For instance, a spoon in a glass of water appears bent due to refraction. Shiny objects reflect light clearly, while rough surfaces scatter light. Lenses use refraction to focus light, helping in making eyeglasses and cameras. These concepts are also used in telescopes, microscopes, and magnifying glasses, making light a fundamental part of how we explore and understand the world.

87. Describe how scientific principles help us understand the relationship between Moon phases and timekeeping. How did observations of celestial cycles influence early calendars and our routines on Earth?

Ans. : The Moon's phases change regularly due to its orbit around the Earth and the changing angle of sunlight hitting its surface. Ancient humans observed this predictable cycle to mark time. A new moon to full moon and back takes about 29.5 days, forming the basis of lunar months. People used these phases to create calendars and plan agriculture, festivals, and religious events. Scientific understanding now explains this through the relative positions of the Earth, Moon, and Sun. This knowledge also helps predict eclipses and tides. Hence, observation of celestial patterns using scientific methods influenced early timekeeping and continues to shape our routines.

88. Analyse how human activities are influencing Earth's climate using scientific reasoning. What observations and evidence can we use to understand and reduce our impact on the planet?

Ans. : Human actions like burning fossil fuels, deforestation, and pollution increase greenhouse gases in the atmosphere, trapping heat and warming the planet. Scientific evidence includes rising global temperatures, melting glaciers, changing rainfall patterns, and more extreme weather events. Instruments like satellites, thermometers, and climate models provide data over decades, confirming climate change. This has consequences like rising sea levels and threats to biodiversity.

Using science, we can understand these patterns and create solutions such as renewable energy, afforestation, and sustainable living. Observation, measurement, and experimentation help guide our actions to reduce environmental damage and protect Earth's delicate balance.

*** Answer the following questions in on sentence** **[18]**

89. Why has nature created such a vast variety of plants and animals?

Ans. : Nature has created a vast variety of plants and animals to maintain balance in ecosystems.

90. What is the importance of curiosity in Science?

Ans. : Curiosity is the starting point of Science. Asking "why" and "how" helps us begin investigations and discover new knowledge.

91. What is the purpose of asking questions like "Why?" and "How?" in science?

Ans. : Such questions spark curiosity and help initiate scientific investigation by exploring causes and explanations of natural phenomena.

92. How does investigation in science go beyond just finding new facts?

Ans. : It involves forming focused questions, designing experiments, making observations, and using results to deepen understanding.

93. How are microorganisms helpful and harmful at the same time?

Ans. : Microorganisms help in food production and making medicines, but can also cause infections and diseases.

94. How does our body fight infections and stay healthy?

Ans. : Through nutritious food, exercise, medicines, and the immune system that defends against harmful microbes.

95. Why does a ball fall back to the ground after being thrown up?

Ans. : The reason behind this phenomenon is the gravitational force pulling it back toward the Earth.

96. What is the scientific reason behind a car stopping when the brakes are applied?

Ans. : The frictional force between the brake and wheel slows down and stops the car.

97. How does pressure influence the weather?

Ans. : Changes in air pressure cause wind movement and can lead to weather events like storms and cyclones.

98. How do we see objects using light?

Ans. : Light reflects off objects and enters our eyes; smooth surfaces like mirrors reflect it

99. What do we need to understand to know why air can exert pressure?

Ans. : We need to understand that air is made up of moving particles, which can apply force when they collide with surfaces.

100. Why is classifying substances important in science?

Ans. : Classification helps in understanding the properties, behaviour, and uses of different materials.

101. How do particles behave in solids compared to gases?

Ans. : In solids, particles are tightly packed and vibrate in place; in gases, they move freely and rapidly.

102. Why do we see bent images when looking at objects through water?

Ans. : Due to refraction, light changes direction when it passes from one medium (air) to another (water).

103. What causes the phases of the Moon?

Ans. : The phases occur due to the changing relative positions of the Moon, Earth, and Sun, affecting the visible illuminated part.

104. How did observing the Moon help humans create calendars?

Ans. : The Moon's periodic phases allowed humans to track time, leading to the development of early calendars.

105. Why is Earth considered to be at a perfect distance from the Sun?

Ans. : It allows the presence of liquid water, moderate temperatures, and protection from harmful radiation conditions suitable for life.

106. What role can science play in solving climate challenges?

Ans. : Science helps us understand environmental changes, predict effects, and find sustainable solutions using data and observation.

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