



Einstein
PUBLIC SCHOOL
Nurturing a better tomorrow

SUMMER *Holidays*



HOMESCHOOLWORK

CLASS IX



Hindi

भाग-क : लिखित कार्य

1. अपठित गद्यांश

- किसी समाचार पत्र / पत्रिका से एक अपठित गद्यांश चुनिए और उससे जुड़े 5 प्रश्न स्वयं बनाकर उत्तर लिखिए।

2. अनुच्छेद लेखन (किसी एक विषय पर 120–150 शब्द)

पर्यावरण संरक्षण

जल ही जीवन है

अनुशासन का महत्व

मेरा प्रिय खेल

3. पत्र लेखन

किसी एक का चयन करें—

- मित्र को ग्रीष्मावकाश का अनुभव बताते हुए पत्र
- नगर निगम को स्वच्छता संबंधी शिकायत पत्र

4. व्याकरण कार्य

निम्नलिखित के 5–5 उदाहरण लिखिए—

- उपसर्ग



- प्रत्यय
- पर्यायवाची शब्द
- विलोम शब्द

5. पाठ्यपुस्तक आधारित कार्य

- किसी एक कवि/लेखक का संक्षिप्त परिचय (80–100 शब्द) लिखिए—

(कक्षा 9 की निर्धारित पुस्तक से)

भाग-ख : गतिविधि (Activity Based Learning)

6. गतिविधि-1 : पोस्टर निर्माण

- विषय – “स्वच्छ भारत, स्वस्थ भारत”
- चार्ट पेपर पर आकर्षक चित्र
- एक प्रभावशाली नारा
- नीचे 5 पंक्तियों में संदेश

7. गतिविधि-2 : दोहा/कविता लेखन

किसी एक संत कवि के दो दोहे सुंदर लिखावट में लिखिए और प्रत्येक का भावार्थ लिखिए।

8. गतिविधि-3 : मूल्यपरक कार्य



एक पौधा लगाइए और उसके संरक्षण पर 5 वाक्य लिखिए
(चाहें तो फोटो संलग्न करें)

9. गतिविधि-4 : रचनात्मक लेखन

विषय – “मेरा आदर्श व्यक्ति” (10–12 वाक्य, सरल व स्पष्ट भाषा में)

➤ आवश्यक निर्देश

- ❖ कार्य स्वच्छ, सुंदर और समय पर पूरा करें
- ❖ गतिविधियों में रचनात्मकता का विशेष ध्यान रखें
- ❖ गृहकार्य का मूल्यांकन आंतरिक आकलन में किया जाएगा

English

Complete the work in a separate notebook.

1. Answer each question in 40–50 words.
 - i. The grandmother touched the feet of her granddaughter. How did she justify this gesture of hers?
 - ii. Avva or the narrator’s grandmother was a wonderful student. Justify with the help of the story.
 - iii. The grandmother in the story “How I Taught My Grandmother to Read” was a very determined woman, yet at the same time very emotional. Justify.
 - iv. How did the newspapers and magazines reach villages in the days of ‘Kashi Yatre’?



- v. Why did it become necessary for the little granddaughter to read out the story to her grandmother?
 - vi. Why did the grandmother think of learning to read and write at the age of sixty-two?
2. Answer the following in about 40-50 words.
- i. How does the poet use natural features like the Himavant and the Ganga to highlight the greatness of Bharat?
 - ii. Why does the poet call Bharat a “peerless” land? Give reasons based on the poem.
 - iii. What role do the Upanishads play in showing the cultural richness of India in the poem?
 - iv. How does the poet describe the contributions of warriors and sages to the glory of Bharat?
 - v. What does the poet mean by saying that “Brahma – knowledge has taken root” in Bharat?
 - vi. How does the mention of Buddha and ancient heritage reflect the spiritual importance of Bharat?
3. Prepare a Tense Table including:

All 12 tenses

Helping verbs

Verb forms (V1, V2, V3, V-ing)

Make it clear, neat, and well-organized.

4. Read at least 5 short English stories.

While reading, note down:

New words

Idioms/phrases

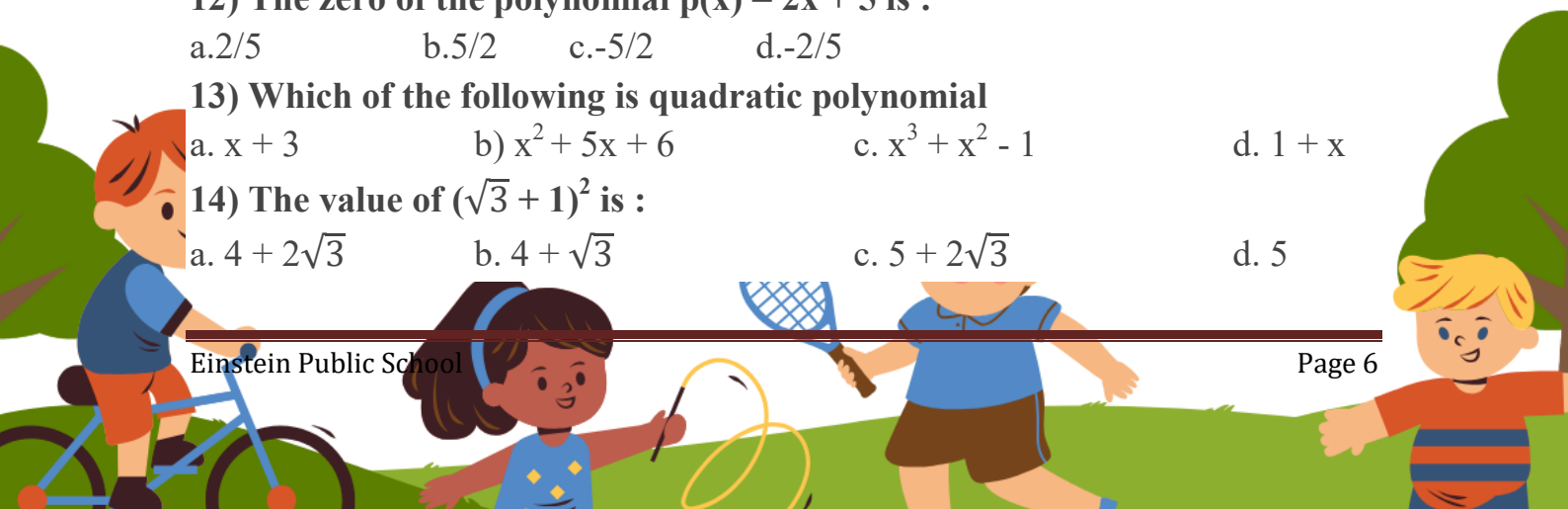
Be ready to share your learning in class.



Maths

MCQ TYPE QUESTION

- What is the decimal representation of the rational number $\frac{3}{4}$?
a) 0.75 b) 0.25 c) 1.25 d) 0.333.
- Which of the following is a rational number?
a) $\sqrt{3}$ b) π c) 0.75 d) $\sqrt{-4}$
- What is the value of $\frac{3}{4}$ as a decimal?
a) 0.75 b) 0.5 c) 1.25 d) 0.25
- Which of the following is an irrational number?
a) 0.25 b) $\sqrt{9}$ c) $\frac{1}{2}$ d)
- What is the square root of 10.24?
a) 4 b) +3.2 c) -3.2 d) both b and c
- Which of the following is not a polynomial?
a) $3x^2 + 5x + 2$ b) $4x^3 - 2x^2 + 7x - 1$ c) $\sqrt{x} + 3$ d) $x^4 - 9x^2 + 4$
- What is the degree of the polynomial $2x^3 - 5x^2 + 3x - 7$?
a) 3 b) 2 c) 4 d) 1
- Which of the following is a quadratic polynomial?
a) $2x^3 - 5x^2 + 3x - 7$ b) $x^2 + 4x - 3$
c) $3x^4 + 2x^3 - 5x^2 + x - 1$ d) $4x^2 - 9x + 6$
- What is the sum of the coefficients of the polynomial $3x^2 - 2x + 7$?
a) 8 b) 10 c) 3 d) 12
- The decimal expansion of an irrational number is :
a) Terminating b) Non-terminating and recurring
c) Non-terminating and non-recurring d) None of these
- The degree of zero polynomial is:
a) 0 b) 1 c) 2 d) Not defined
- The zero of the polynomial $p(x) = 2x + 5$ is :
a. $\frac{2}{5}$ b. $\frac{5}{2}$ c. $-\frac{5}{2}$ d. $-\frac{2}{5}$
- Which of the following is quadratic polynomial
a. $x + 3$ b) $x^2 + 5x + 6$ c. $x^3 + x^2 - 1$ d. $1 + x$
- The value of $(\sqrt{3} + 1)^2$ is :
a. $4 + 2\sqrt{3}$ b. $4 + \sqrt{3}$ c. $5 + 2\sqrt{3}$ d. 5



15) A binomial of degree 20 is:

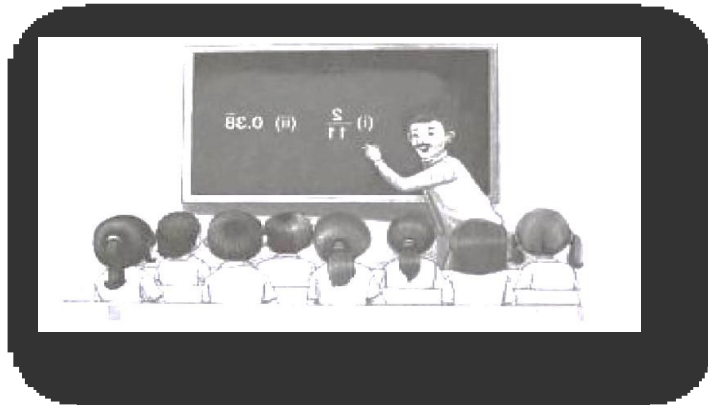
- a. $20x + 1$ b. $x^{20} + 1$ c. $x^2 + 20$ d. 20

CASE BASE TYPE QUESTION

16) An AI logistics company is organizing their automated storage boxes in a smart warehouse. The total area of their new rectangular server plot is given by the polynomial $A(x) = x^2 + 10x + 21$ sq. meters

- What is the degree of the polynomial representing the area of the plot?
- If the plot is $(x + 7)$ meters long, what polynomial expression represents its breadth?
- Calculate the exact area of the plot when $x = 5$ meters.

17. to judge the preparation of students class 9th on topic “number system” Mathematics teacher write two numbers on black board (as shown in fig.) and ask some question about the numbers, which are following, then answer the question :

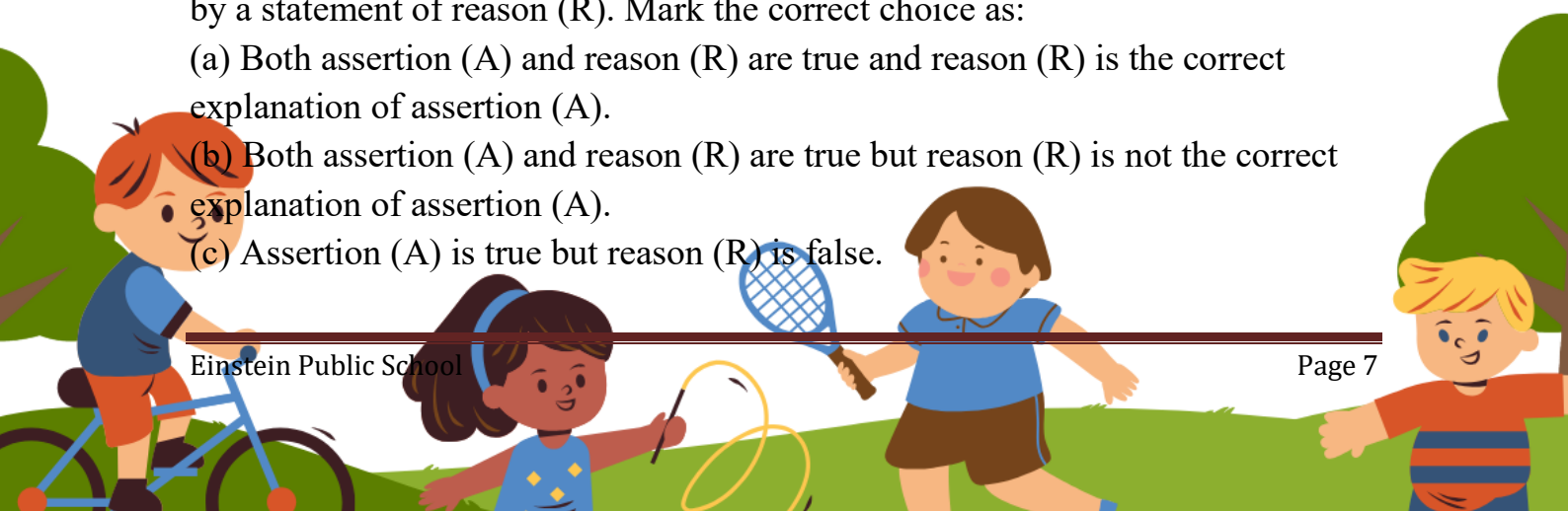


- Write the decimal form of $2/11$?
- Write the $\frac{p}{q}$ form of $0.3\bar{8}$?
- Write the type of decimal expression of $2/11$?
- If p/q form of $0.3\bar{8}$ is m/n , then value of $\{m+n\}$ is ?
- Write the type of decimal expression of $0.3\bar{8}$?

ASSERTION AN REASON TYPE QUESTION

Directions: In the questions 18 to 22, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- Assertion (A) is true but reason (R) is false.



(d) Assertion (A) is false but reason (R) is true.

18. Assertion: The number 0 is a whole number.

Reason: Whole numbers include all positive integers along with zero.

19. Assertion: Every natural number is a whole number.

Reason: Whole numbers include all natural numbers along with zero.

20. Assertion: Every quadratic polynomial has exactly two roots.

Reason: A quadratic polynomial is of degree 2.

21. Assertion: A polynomial of degree 3 is called a cubic polynomial.

Reason: Cubic polynomials have three terms.

22. Assertion: The number -7 is a constant polynomial.

Reason (R): The degree of a constant polynomial is zero.

SHORT ANSWER TYPE QUESTION TYPE-I (LOTS)

23. What is a rational number?

24. Find five rational numbers between 1 and 2.

25. Find five rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.

26. Locate $\sqrt{3}$ on the number line.

27. Find the decimal expansions of $\frac{10}{3}$, $\frac{7}{8}$ and $\frac{1}{7}$.

28. What can the maximum number of digits be in the repeating block of digits in the decimal expansion of $\frac{1}{17}$? Perform the division to check your answer.

29. Find three different irrational numbers between the rational numbers $\frac{5}{7}$ and $\frac{9}{11}$.

30. Visualise 3.765 on the number line, using successive magnification.

31. Give an example of a monomial and a binomial having degrees of 82 and 99, respectively.

32. Find the value of the polynomial $5x - 4x^2 + 3$ at $x = 2$ and $x = -1$.

33. Find the value of $x^3 + y^3 + z^3 - 3xyz$ if $x^2 + y^2 + z^2 = 83$ and $x + y + z = 15$

SHORT ANSWER TYPE QUESTION TYPE-II (MOTS)

34. Check whether $(7 + 3x)$ is a factor of $(3x^3 + 7x)$.

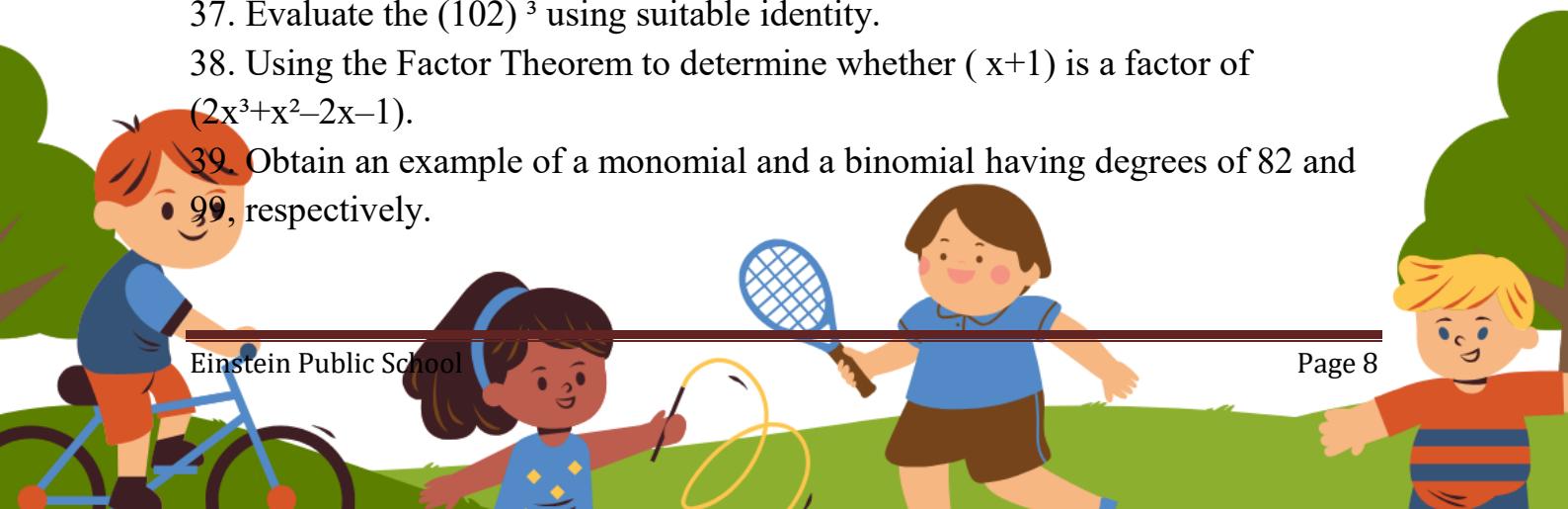
35. Find the values of a and b so that $(2x^3 + ax^2 + x + b)$ has $(x + 2)$ and $(2x - 1)$ as factors.

36. If $a + b + c = 15$ and $a^2 + b^2 + c^2 = 83$, find the value of $a^3 + b^3 + c^3 - 3abc$.

37. Evaluate the $(102)^3$ using suitable identity.

38. Using the Factor Theorem to determine whether $(x+1)$ is a factor of $(2x^3+x^2-2x-1)$.

39. Obtain an example of a monomial and a binomial having degrees of 82 and 99, respectively.



40. Identify constant, linear, quadratic, cubic and quartic polynomials from the following.

- (i) $-7 + x$ (ii) $6y$ (iii) $-y^3$ (iv) $1 - y - y^3$ (v) $x - x^3 + x^4$
 (vi) $1 + x + x^2$ (vii) $-6x^2$ (viii) -13 (ix) $-p$

41. Expanding each of the following, using all the suitable identities:

- (i) $(x+2y+4z)^2$
 (ii) $(2x-y+z)^2$
 (iii) $(-2x+3y+2z)^2$

Compute the perimeter of a rectangle whose area is $25x^2 - 35x + 12$.

Verify that:

- (i) $x^3 + y^3 = (x+y)(x^2 - xy + y^2)$
 (ii) $x^3 - y^3 = (x-y)(x^2 + xy + y^2)$

42. Factorise : $x^2 - 6x + 9$

43. If $a + b + c = 0$, show that $a^3 + b^3 + c^3 = 3abc$

LONG ANSWER TYPE QUESTIONS (HOTS)

44. Factorise $\frac{x^2 + 1}{x^2 + 2} - \frac{2x - 2}{x}$

45. If $(x - 1/x) = 4$, then evaluate $(x^2 + 1/x^2)$ and $(x^4 + 1/x^4)$.

46. Find the value of $x^3 + y^3 + z^3 - 3xyz$ if $x^2 + y^2 + z^2 = 83$ and $x + y + z = 15$.

47. Without any actual division, prove that the following $2x^4 - 5x^3 + 2x^2 - x + 2$ is divisible by $x^2 - 3x + 2$.

48. If the two $x - 2$ and $x - \frac{1}{2}$ are the given factors of $px^2 + 5x + r$, show that $p = r$.

49. Represent $\sqrt{9.3}$ on the number line.

50. What is the value of $(256)^{0.16} \times (256)^{0.09}$?

51. If $x^2 + \frac{1}{x^2} = 18$ then find the value of $x - \frac{1}{x}$?

52. Factorise: $(a - b)^3 + (b - c)^3 + (c - a)^3$?

53. If $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ then find the value of $x^2 + y^2 + xy$?

54. Factorize the expression: $(8x^3 + 27y^3 + 36x^2y + 54xy^2)$.

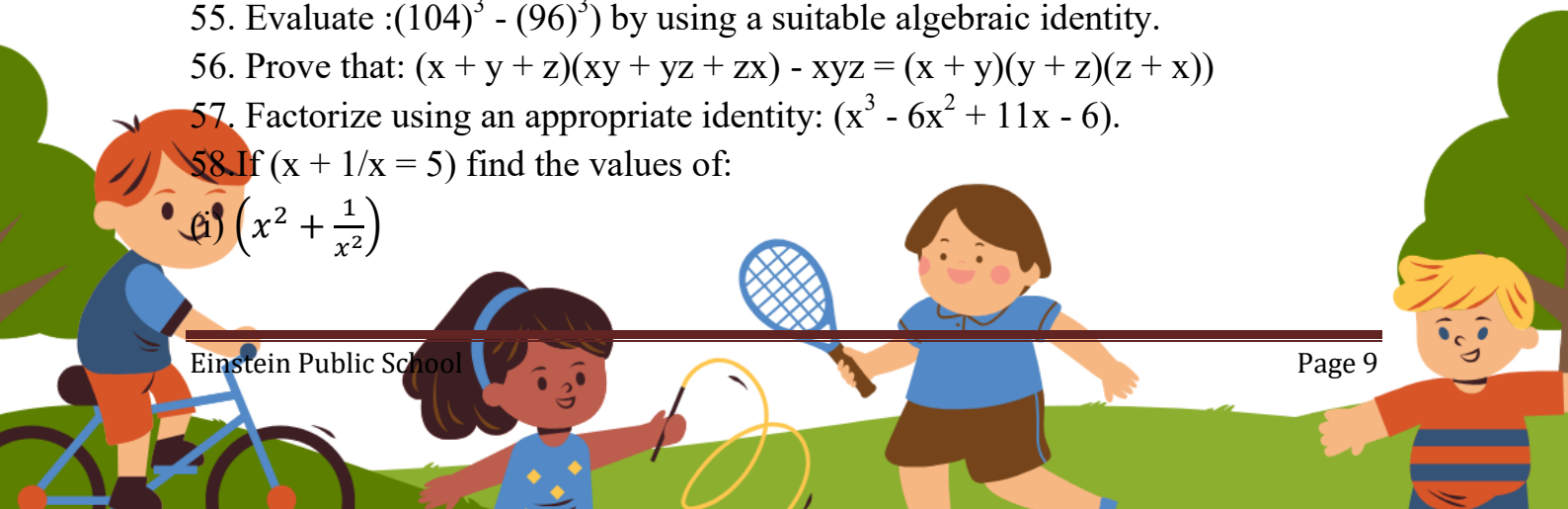
55. Evaluate : $(104)^3 - (96)^3$ by using a suitable algebraic identity.

56. Prove that: $(x + y + z)(xy + yz + zx) - xyz = (x + y)(y + z)(z + x)$

57. Factorize using an appropriate identity: $(x^3 - 6x^2 + 11x - 6)$.

58. If $(x + 1/x = 5)$ find the values of:

(i) $(x^2 + \frac{1}{x^2})$



(ii) $\left(x^4 + \frac{1}{x^4}\right)$

59. Factorize completely: $(a^3 - 8b^3 - 64c^3 - 24abc)$.

60. Prove the following identity:

$$1/1 + x^{b-a} + x^{c-a} + 1/1 + x^{a-b} + x^{c-b} + 1/1 + x^{a-c} + x^{b-c} = 1$$

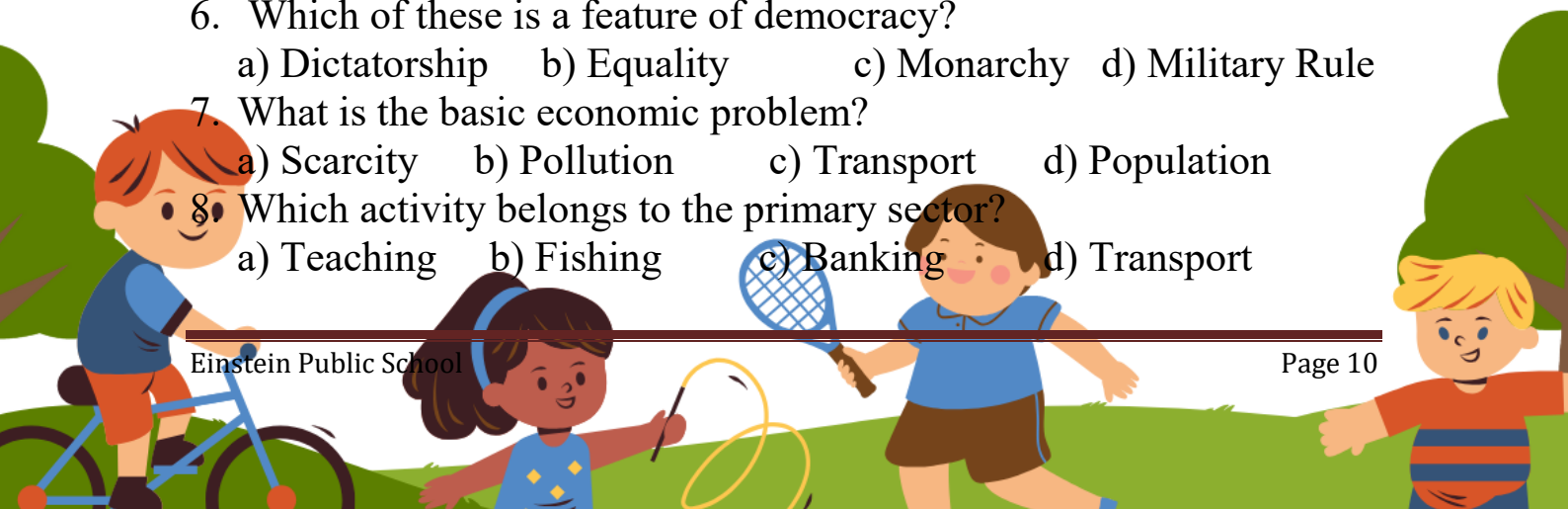
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Chapters Covered:

1. Climate and Atmosphere
2. What is Democracy?
3. Building Blocks in Economics

Section A: MCQs (15)

1. Which layer of the atmosphere contains weather changes?
 - a) Troposphere
 - b) Stratosphere
 - c) Mesosphere
 - d) Thermosphere
2. Which gas is most abundant in the atmosphere?
 - a) Oxygen
 - b) Nitrogen
 - c) Carbon Dioxide
 - d) Helium
3. Which factor mainly affects climate?
 - a) Latitude
 - b) Books
 - c) Language
 - d) Religion
4. Who said democracy is government of the people, by the people and for the people?
 - a) Mahatma Gandhi
 - b) Abraham Lincoln
 - c) Nehru
 - d) Aristotle
5. Which institution conducts elections in India?
 - a) Supreme Court
 - b) Election Commission
 - c) Lok Sabha
 - d) Rajya Sabha
6. Which of these is a feature of democracy?
 - a) Dictatorship
 - b) Equality
 - c) Monarchy
 - d) Military Rule
7. What is the basic economic problem?
 - a) Scarcity
 - b) Pollution
 - c) Transport
 - d) Population
8. Which activity belongs to the primary sector?
 - a) Teaching
 - b) Fishing
 - c) Banking
 - d) Transport



9. What is meant by scarcity?
 - a) Unlimited resources
 - b) Lack of resources
 - c) Extra production
 - d) Surplus goods
10. Which resource is man-made?
 - a) River
 - b) Forest
 - c) Road
 - d) Mountain
11. Which wind brings rainfall to India?
 - a) Trade Winds
 - b) Monsoon Winds
 - c) Westerlies
 - d) Polar Winds
12. Which type of government allows citizens to vote?
 - a) Monarchy
 - b) Democracy
 - c) Dictatorship
 - d) Colonial Rule
13. What is GDP?
 - a) Gross Domestic Product Policy
 - b) General Development Plan
 - c) Growth Data Program
 - d) Global Development Policy
14. Which latitude passes through India?
 - a) Equator
 - b) Tropic of Cancer
 - c) Arctic Circle
 - d) Prime Meridian
15. Which of the following is a renewable resource?
 - a) Coal
 - b) Petroleum
 - c) Solar Energy
 - d) Natural Gas

Section B: Assertion and Reason (5)

16. Assertion (A): Democracy promotes equality.
Reason (R): Every citizen gets equal voting rights.
17. Assertion (A): The atmosphere protects life on Earth.
Reason (R): It blocks harmful solar radiation.
18. Assertion (A): Resources are unlimited.
Reason (R): Human wants are unlimited.
19. Assertion (A): India is a democratic country.
Reason(R): Leaders are elected by citizens.
20. Assertion (A): Climate changes from place to place.
Reason (R): Latitude affects temperature.

Section C: Short Answer Questions (10)

21. Define climate.
22. What is atmosphere?



23. Name any two greenhouse gases.
24. What is democracy?
25. Mention two features of democracy.
26. What are natural resources?
27. Differentiate between weather and climate.
28. What is the role of citizens in democracy?
29. What is scarcity in economics?
30. Explain the importance of forests.

Section D: Long Answer Questions (5)

31. Explain the composition and importance of the atmosphere.
32. Describe the major features of democracy.
33. Explain different factors affecting climate.
34. Discuss the importance of resources in economics.
35. How does democracy improve the quality of decision making?

Section E: Map Based Questions (5)

36. Mark the Equator, Tropic of Cancer and Tropic of Capricorn on the world map.
37. Locate the Indian Ocean, Pacific Ocean and Atlantic Ocean on the world map.
38. Mark important climatic regions of India.
39. Locate any five democratic countries on the world map.
40. Mark major agricultural regions of India.



Science

Chemistry

MCQ-:

1. Which of the following are chemical changes?

- (i) Decaying of wood
- (ii) Burning of wood
- (iii) Sawing of wood
- (iv) Hammering of a nail into a piece of wood

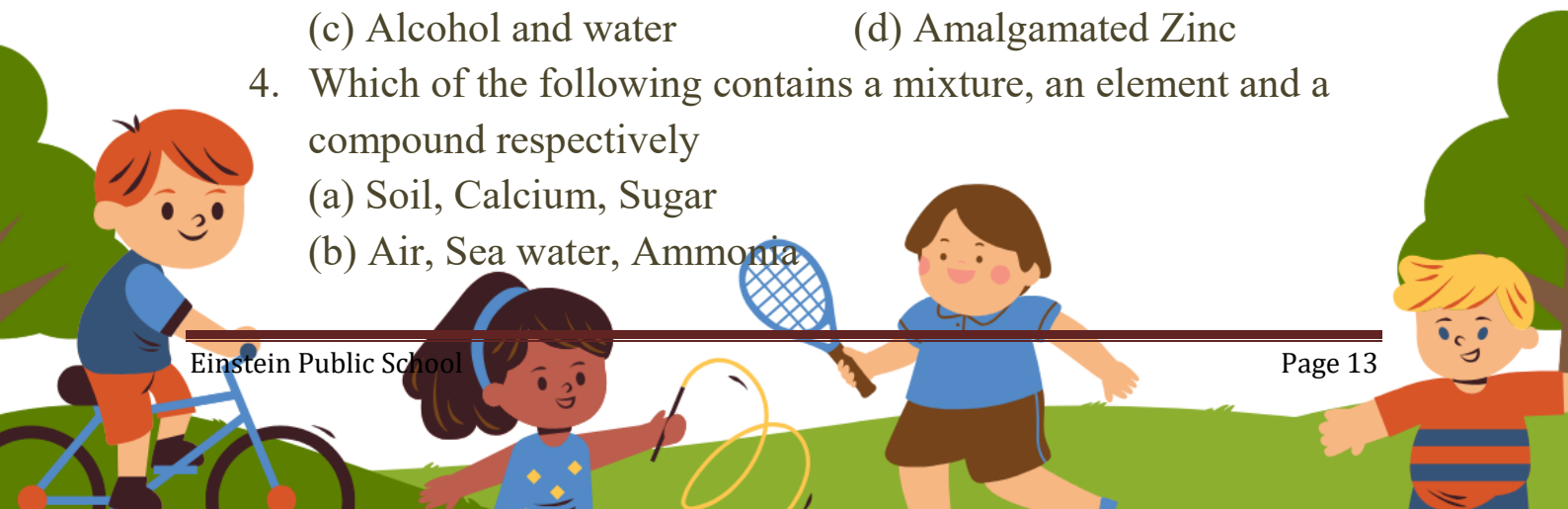
Option

- (a.) (i) (i) and (ii)
 - (b.) (ii) (ii) and (iii)
 - (c.) (iii)(iii) and (iv)
 - (d.) (iv)(i) and (iv)
2. Two chemical species X and Y combine together to form a product P which contains both X and Y



X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following concerning the species X, Y and P are correct?

- (i) P is a compound
 - (ii) X and Y are compounds
 - (iii) X and Y are elements
 - (iv) P has a fixed composition
- (a.) (i)(i), (ii) and (iii)
 - (b.) (ii) (i), (ii) and (iv)
 - (c.) (iii)(ii), (iii) and (iv)
 - (d.) (iv)(i), (iii) and (iv)
3. Which of the following is an example of gas is liquid mixture?
- (a) air
 - (b) Aerated water (Soda water)
 - (c) Alcohol and water
 - (d) Amalgamated Zinc
4. Which of the following contains a mixture, an element and a compound respectively
- (a) Soil, Calcium, Sugar
 - (b) Air, Sea water, Ammonia



- (c) Sulphur, Water, Sodium Chloride
(d) Magnesium, Carbon dioxide, Aluminium
5. Which of the following statement is false?
(a) When compounds are formed, heat is often given off.
(b) Unlike elements, compounds and mixtures are both impure substances
(c) Unlike compounds, mixtures can be separated by physical methods.
(d) Compounds and mixtures both can be made of elements.
6. A pure substance/element contains
(a) two or more types of particles
(b) one type of particles
(c) many types of particles
(d) two or more forms of matter.
7. Which of the following is true about FeS ?
(a) It is attracted by magnet
(b) It is soluble in carbon disulphide
(c) It gives H₂S gas on reaction with dil. H₂SO₄
(d) It is yellow in colour
8. Which of the following is true?
(a) Compounds have fixed composition
(b) The properties of compounds are similar to its components
(c) Compound can be prepared by physical method
(d) No heat is evolved or absorbed in the formation of compound.
9. Which of the following can be classified as a mixture?
(a) a clear white salt solution
(b) A rusted iron nail
(c) A piece of paper cut into different shapes
(d) A bowl of water with floating ice-cubes
10. Which one is Colloid?
(a) Sugar solution
(b) Milk
(c) Wheat flour in water
(d) All of these

Assertion/Reason -:

In the following Question, the Assertion (A) and Reason (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

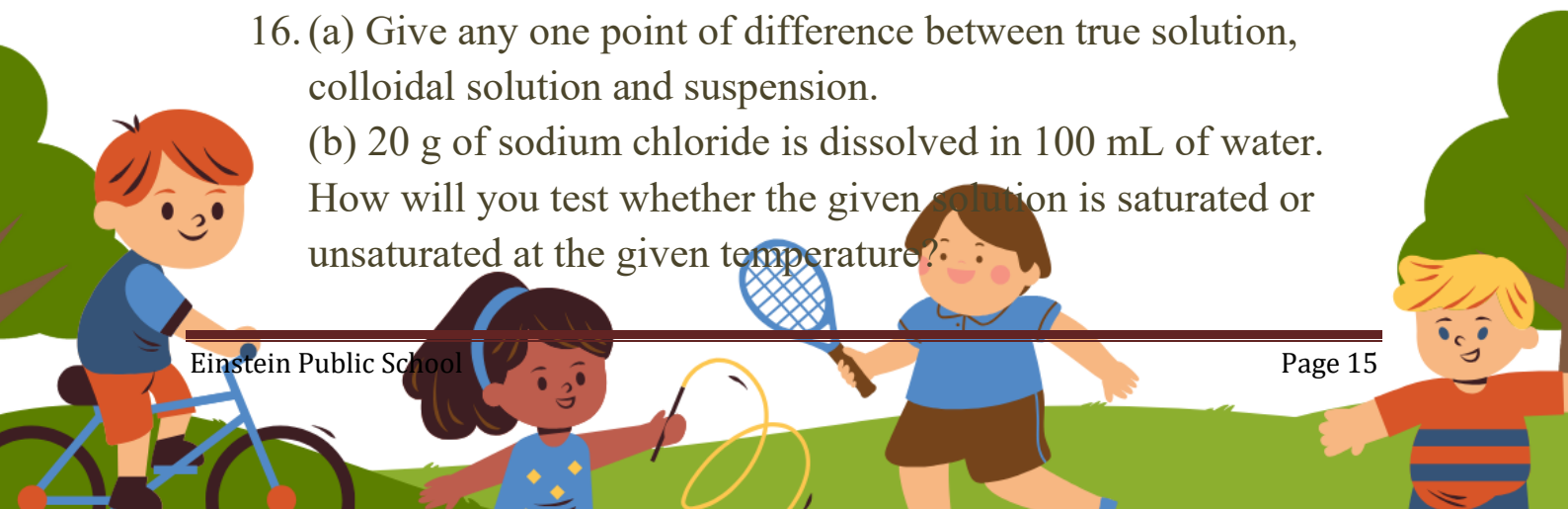
- (a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
 - (b) The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
 - (c) Assertion is true but the Reason is false.
 - (d) The statement of the Assertion is false but the Reason is true.
11. **Assertion:** Medicine are easily absorbed by our body in colloidal form.
Reason: It is because they have large surface area and therefore, absorbed easily.
12. **Assertion:** Sugar is more soluble in hot water than cold water.
Reason: Solubility of sugar increases with increase in temperature.

Short Answer Type Questions I

13. Give one example of two miscible liquids where distillation can be used for separating them.
14. Explain how the separation of cream from milk takes place.

Short Answer Type Questions II

15. (a) Write one difference between concentration and solubility?
(b) What is the effect of temperature on the rate of solubility?
16. (a) Give any one point of difference between true solution, colloidal solution and suspension.
(b) 20 g of sodium chloride is dissolved in 100 mL of water. How will you test whether the given solution is saturated or unsaturated at the given temperature?



(c) Suggest any one method by which we can increase the solubility of saturated solutions.

Case based questions -;

17. Read the given passage and answer the questions that follow based on the passage and related studied concepts.

A pure substance consist of single type of particles. Mixture consist of more than one kind of pure form of matter. Mixtures can be separated by physical methods but pure substances especially compounds cannot be separated into chemical constituents by physical methods. Pure substance has same composition throughout. Soil and soft drinks are mixtures. Mixtures can be separated by various methods depending upon nature of substance present in it. Solution is a homogeneous mixture.

(a) What are alloys-compounds or mixtures?

(b) What is size of particles in solution?

(c) What is solute and solvent in cold drinks?

Or

(d) Why should we not take cold drinks regularly?

Explain.

18. Long Answer Type Questions -:

What is chromatography? How will you separate the components of black ink using chromatography ? Write any two applications of chromatography.



Physics

Section A: Multiple Choice Questions:-

Q1. When two forces act in opposite directions on an object, the net force acting on it is the:

- A) Sum of the two forces
- B) Difference between the two forces
- C) Product of the two forces
- D) Zero

Q2. A sharp knife cuts easily through vegetables because:

- A) It applies less force
- B) It has a larger surface area, decreasing pressure
- C) It has a smaller surface area, increasing pressure
- D) It increases the friction

Q3. Which of the following statements is true about friction?

- A) It always aids the motion of an object.
- B) It acts in the direction of the applied motion.
- C) It acts opposite to the direction of relative motion.
- D) It only occurs between rough solid surfaces.

Q4. To reduce friction in the rotating parts of heavy machinery, which of the following is commonly used?

- A) Fine sand grains
- B) Ball bearings
- C) Metal spikes
- D) Water jets

Q5. Sound can travel through which of the following material media?

- A) Solids only
- B) Liquids only
- C) Gases only
- D) Solids, liquids, and gases

Q6. The volume of a sound is primarily determined by its:

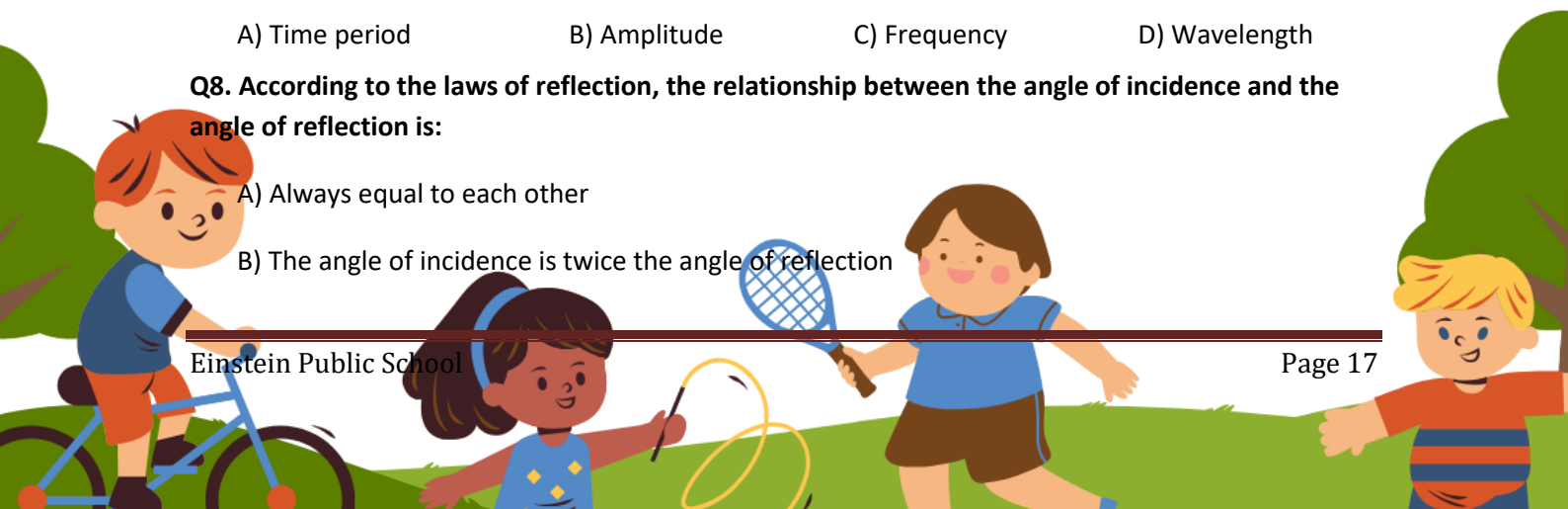
- A) Amplitude
- B) Frequency
- C) Speed
- D) None of the above

Q7. The total number of complete oscillations per second is called:

- A) Time period
- B) Amplitude
- C) Frequency
- D) Wavelength

Q8. According to the laws of reflection, the relationship between the angle of incidence and the angle of reflection is:

- A) Always equal to each other
- B) The angle of incidence is twice the angle of reflection



C) The angle of incidence is always less than the angle of reflection

D) The angle of incidence is half the angle of reflection

Q9. The splitting of a beam of white light into its seven constituent colors upon passing through a medium is known as:

A) Reflection

B) Refraction

C) Dispersion

D) Deviation

Q10. The specific part of the human eye that regulates and controls the amount of light entering it is the:

A) Retina

B) Iris

C) Cornea

D) Crystalline Lens

Section B: Assertion-Reason Questions:-

Directions: Choose (A) if both A and R are true and R is the correct explanation;

Choose (B) if both A and R are true but R is not the correct explanation;

Choose (C) if A is true but R is false; Choose (D) if A is false but R is true.

Q11. Assertion (A): A person can hear the sound of an approaching train earlier by putting their ear to the railway track than through the air.

Reason (R): Sound travels faster in solids than in gases.

Q12. Assertion (A): It is much easier to push a heavy box across the floor once it is already in motion than to start moving it from rest.

Reason (R): Sliding friction is slightly less than static friction.

Section C: Subjective Questions:-

Very Short Answer Type Questions:-

Q13. Draw a labelled and colourful diagram of a prism showing dispersion of white light. Which colours are dispersed the most and least?

Q14. What type of lens is a convex lens? Also write 3 applications of convex mirrors.

Short Answer Type Questions:-

Q15. Define reflection. What is the law of reflection? Draw a basic line diagram supporting it.

Q16. State two distinct methods by which friction can be decreased in practical life.

Long Answer Type Question:-

Q17. Draw a labeled diagram of human eye and write the significance of each part of eye.

Section D: Case-Based Study Question:-

Q18. Read the passage carefully and answer the questions that follow:



Rohan noticed that school buses and heavy trucks always have wide double tires at the rear wheels. Similarly, his school bag has wide shoulder straps instead of thin strings. During a rainy day, he also observes his teacher instructing everyone to walk carefully on wet marble floors because the layer of water reduces the micro-irregularities between their shoes and the ground, making them slip.

- a) Why are heavy vehicles like trucks and buses equipped with broader double tires at the back?
- b) How do wide shoulder straps make it comfortable for a student to carry a heavy school bag?
- c) What scientific property explains why a wet marble floor becomes slippery compared to a dry one?

Biology

Topic: Cell Biology

Section A – Multiple Choice Questions

1. Who discovered the cell?

a) Robert Hooke	b) Darwin	c) Mendel	d) Aristotle
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2. The basic unit of life is:

a) Tissue	b) Organ	c) Cell	d) Organ system
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3. Which organelle is known as the “powerhouse of the cell”?

a) Nucleus	b) Mitochondria	c) Ribosome	d) Golgi body
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4. Cell membrane is:

a) Living and selectively permeable	b) Non-living
c) Fully permeable	d) Rigid
5. The jelly-like substance inside the cell is called:

a) Cytoplasm	b) Cell wall	c) Nucleoplasm	d) Vacuole
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6. Plant cells have:

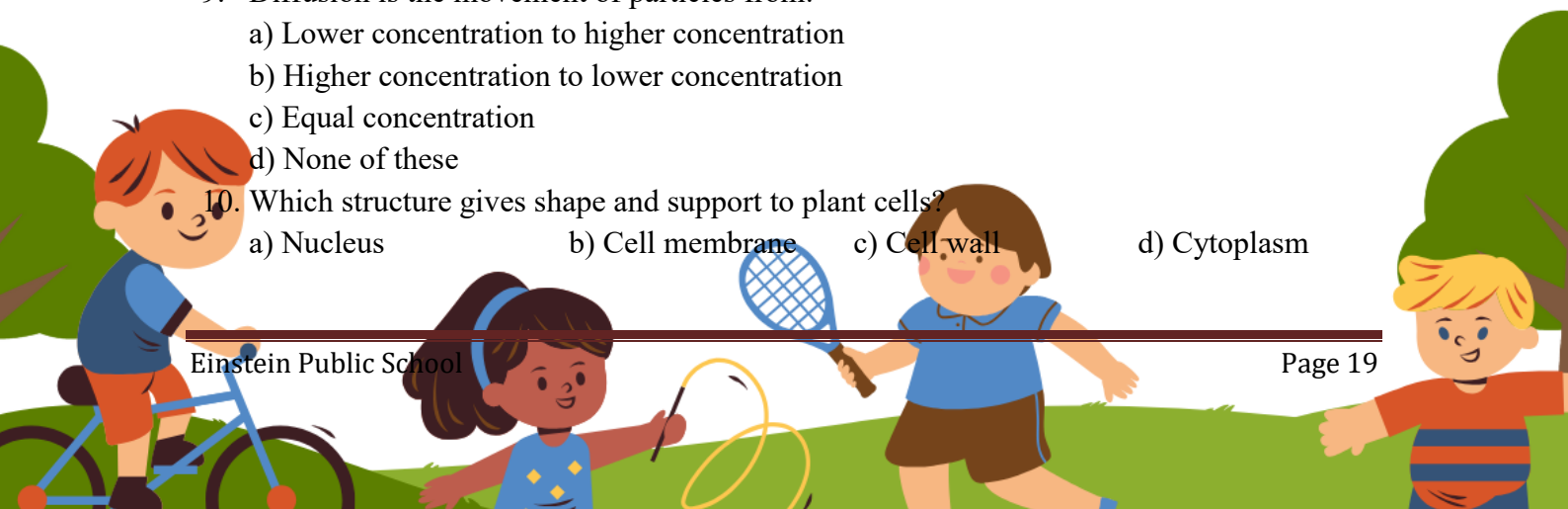
a) Centrosome	b) Cell wall	c) Lysosomes only	d) Small vacuoles
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7. The control center of the cell is:

a) Cytoplasm	b) Mitochondria	c) Nucleus	d) Vacuole
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8. Ribosomes help in:

a) Digestion	b) Respiration	c) Protein synthesis	d) Storage
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9. Diffusion is the movement of particles from:

a) Lower concentration to higher concentration	b) Higher concentration to lower concentration	c) Equal concentration	d) None of these
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10. Which structure gives shape and support to plant cells?

a) Nucleus	b) Cell membrane	c) Cell wall	d) Cytoplasm
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Section B – Very Short Answer Questions.

11. Define osmosis.
12. Name any two organelles present in a plant cell and write their functions.

Section C – Short Answer Questions

13. Differentiate between plant cell and animal cell.
14. Explain the structure and function of the nucleus.

Section D – Long Answer Questions

15. Describe the structure of a cell with the help of a neat labelled diagram
16. Explain the functions of the following cell organelles: Mitochondria Endoplasmic Reticulum Golgi Apparatus Ribosomes Vacuoles
17. What is plasma membrane? Explain its structure and functions in detail.

Section E – Case Based Question

18. Riya observed onion peel cells under a microscope in the laboratory. She noticed a thick outer covering, a large vacuole, and a distinct nucleus. Her friend Ravi observed cheek cells and found that they lacked a cell wall and had small vacuoles.

Answer the following questions:

1. Which type of cell did Riya observe?
2. Name the thick outer covering present in onion peel cells.
3. Why are vacuoles larger in plant cells?
4. Which cell organelle controls all activities of the cell?
5. Write one difference between onion peel cells and cheek cells.

Artificial Intelligence

Activity 1: Write a letter/ an email to future self.

1. Imagine your future in the 2050 year (related to AI).
2. Type a letter or an email to your future self about what you want to see in the future or what you want to remind to your future.
3. The following points can be included in letter/email:
 - a) Start with your interests, hobbies, and skills.
 - b) Relate how AI can help you
 - c) Write about your career you want to pursue and how AI will make an impact on that.
4. Save the letter/ email in PDF format and print / write , submit hard copy

Activity 2: Write Pros and Cons of Artificial Intelligence

Activity 3: MCQs 3M 1. Artificial Intelligence is about _____.

- a) Playing a game on Computer
 - b) Making a machine Intelligent
 - c) Programming on Machine with your Own Intelligence
 - d) Putting your intelligence in Machine
2. Who is known as the -Father of AI"?
- a) Fisher Ada
 - c) Alan Turing
 - b) John McCarthy
 - d) Allen Newell
3. Select the most appropriate situation for that a blind search can be used.
- a) Real-life situation
 - b) Small Search Space
 - c) Complex game
 - d) All of the above



4. If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the__ a) Mobile
- b) Non-Servo
- c) Open Loop
- d) Intelligent
5. Which of the given language is not commonly used for AI?
- a) LISP
- b) PROLOG
- c) Python
- d) Perl
6. A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the__
- a) Boolean Algebra
- b) Turing Test
- c) Logarithm
- d) Algorithm