

PREVIOUS YEAR PAPER

CTET Paper II — 15 December 2024 (Set L) — Mathematics and Science

CTET · 15 December 2024

135 of the paper's 150 questions · +1 for a correct answer, -0 for a wrong one · 150 minutes

Left out of the original paper: 15 (any question that needs a figure, a symbol or formatting we cannot show, or whose text did not read back cleanly from the booklet).

Questions from the Central Board of Secondary Education's paper of 15 December 2024. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/ctet/previous-year-papers/ctet-2024-paper-2-15-dec-set-l-maths-science/

Child Development and Pedagogy

1. Academic performance and intellectual abilities gradually improve in children who leave deprived settings and enter enriched settings. The above argument points primarily towards which of the following debates of development?

- (a) Continuity versus Discontinuity
- (b) Entity versus Incremental
- (c) Heredity versus Environment
- (d) Differentiation versus Integration

Answer: (b)

2. Read the following statements : Assertion (A) : When we look at childhood as a single category, we lose out on the social and cultural differences between children with regards to gender, ethnicity, social class. Reason (R) : Childhood is a social construction. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) Both (A) and (R) are false.

Answer: (a)

3. Which of the following factor is not proposed by Jean Piaget as affecting change in cognition?

- (a) Activity
- (b) Biological maturation
- (c) Cultural tools
- (d) Equilibration

Answer: (c)

4. Read the following statements : Assertion (A) : Jean Piaget assumed that the process of learning is dependent solely on heredity. Reason (R) : Development is a result of interaction between heredity and environment. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) Both (A) and (R) are false.

Answer: —

5. According to Jean Piaget, when children cannot handle new experience within their existing cognitive structures, they experience ____ and resort to ____.

- (a) disequilibrium; adaptation
- (b) disequilibrium; internalization
- (c) dissonance; adaptation
- (d) dissonance; internalization

Answer: (a)

6. While Piaget views children as ____, Vygotsky views children as ____.

- (a) active in manipulating ideas; passive in social contexts
- (b) active in manipulating ideas; active in social contexts
- (c) passive in manipulating ideas; active in social contexts
- (d) passive in manipulating ideas; passive in social contexts

Answer: (b)

7. What is/are the basis/bases for determining the stage of moral development in Lawrence Kohlberg's theory? (A) Age of the individual (B) Power given by the individual—for/against stealing (C) Reasoning underlying the individual's response Choose the correct option.

- (a) Only (B)
- (b) (A) and (C)
- (c) (A) and (B)
- (d) (B) and (C)

Answer: (d)

8. According to Lev Vygotsky, the essence of cognitive development is—

- (a) mastering the use of psychological tools.
- (b) learning to adapt to the environment.
- (c) identifying how to respond to cognitive conflict.
- (d) organizing schemes into coherent wholes.

Answer: (a)

9. According to Lev Vygotsky, ____ play(s) an essential role in helping learners' progress through the zone of proximal development.
- (a) physical environment
 - (b) more knowledgeable others
 - (c) maturation
 - (d) positive reinforcement

Answer: (b)

10. Howard Gardner proposed that intelligence
- (a) can be differentiated into multiple kinds.
 - (b) is influenced only by genetics and not by environmental factors.
 - (c) is dominantly about recall and memorization.
 - (d) is primarily about emotional learning.

Answer: (a)

11. What is progressive education?
- (a) An approach to education that emphasizes discipline and rote memorization.
 - (b) An approach to education that emphasizes individualized learning and student-centered classrooms.
 - (c) A method of teaching that emphasizes strict adherence to standard curriculum.
 - (d) A method of teaching that emphasizes maximum use of technology and multimedia in the classroom.

Answer: (b)

12. Read the following statements : Assertion (A) : ____ in middle school might often be silent and non-participative in classroom discussions. Reason (R) : Given their genetic makeup girls are not competent to comprehend and cope up with the challenging curriculum in middle schools. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) Both (A) and (R) are false.

Answer: (d)

13. The nature of assessment should be ____ and assessment tasks should be ____.
- (a) dynamic; authentic
 - (b) objective; standardized
 - (c) dynamic; standardized
 - (d) objective; authentic

Answer: (a)

14. Read the following statements : Assertion (A) : It is advisable not to rely on standardized tests while conducting assessment for learning. Reason (R) : In criteria-referenced testing, scores are compared to a set performance standard. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) Both (A) and (R) are false.

Answer: (b)

15. Which of the following is an example of a question that promotes analytical skills in students?

- (a) What is the definition of a mammal?
- (b) Explain the key characteristics of mammals.
- (c) How have mammals adapted to their environments?
- (d) Tell a few examples and a few non-examples of mammals given in the textbook.

Answer: (c)

16. Read the following statements : Assertion (A) : An inclusive classroom does not offer differentiated instruction. Reason (R) : Inclusion is a policy that stresses equal opportunities by providing same learning goals, strategies and assessment methods. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) Both (A) and (R) are false.

Answer: (d)

17. Use of people-first language such as using _____ description 'students with a learning disability' instead of 'learning-disabled students'—

- (a) takes away the emphasis from disabilities and is not in the true spirit of inclusion.
- (b) is in consonance with the human rights approach to inclusion.
- (c) illustrates the emphasis on medical model of disability.
- (d) is a hindrance in correct identification and labelling of people with disabilities.

Answer: (b)

18. Examples of assistive technological devices to cater to needs of children with visual difficulties include— (A) alternative computer input devices. (B) braille embosser and displays. (C) speech recognition software (speech to text). (D) use of sign language. Choose the correct option.

- (a) Only (A), (B) and (C)
- (b) Only (B), (C) and (D)
- (c) Only (B) and (C)
- (d) (A), (B), (C) and (D)

Answer: (a)

19. To support inclusion of students with autism, it is advisable to—

- (a) avoid giving visual support and visual cues.
- (b) create a classroom setting that is overstimulating.
- (c) form an unstructured setup with random routines.
- (d) use concrete, literal and consistent language.

Answer: (d)

20. In order to address the needs of talented and creative children in the classroom, it is important to —

- (a) keep them engaged and interested in the learning process.
- (b) provide them with detailed and explicit instructions.
- (c) ensure that they receive higher grades than their peers.
- (d) give primacy to their cognitive requirements over emotional needs.

Answer: (a)

21. Teachers should deal with failure of students in the classrooms—

- (a) by critically examining their own pedagogical strategies.
- (b) by correcting and overcorrecting the students who have failed.
- (c) by administering standardized IQ tests to failed students to assess intelligence.
- (d) by identifying the caste of the students and telling parents to provide additional support at home.

Answer: (a)

22. What is the role of prior knowledge in constructivist learning?

- (a) Prior knowledge can hinder the learning process since children come to school with a lot of misconceptions.
- (b) Prior knowledge is important for building connections and facilitating new learning.
- (c) Prior knowledge is only important for advanced learners who are already familiar with the topic.
- (d) Prior knowledge is only important for learners who have high levels of intrinsic motivation.

Answer: (b)

23. How can teachers support students in becoming self-directed learners in a constructivist classroom?

- (a) By providing frequent feedback and grades to motivate students to outperform each other
- (b) By setting explicit goals and objectives for all learning tasks
- (c) By encouraging students to take responsibility for their own learning and develop self-regulation skills
- (d) By providing detailed and prescriptive instructions for all learning tasks

Answer: (c)

24. Read the following statements : Assertion (A) : A middle school teacher keeps in regular touch with the parents of students of her class to understand them better. Reason (R) : Communities should direct how and what the children should learn. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true but (R) is false.
- (d) Both (A) and (R) are false.

Answer: (c)

25. In order to advance problem-solving skills of learners, teachers should encourage ____ and should promote ____ thinking among learners.

- (a) belief perseverance; reciprocal
- (b) functional fixedness; divergent
- (c) means-end analysis; convergent
- (d) verbalization; analogical

Answer: (d)

26. In discovery learning, students—

- (a) derive information for themselves through exploration and manipulation of ideas.
- (b) consistently make new discoveries in the world through exploration and manipulation of ideas.
- (c) derive information for themselves through rehearsal and extended practice.
- (d) make new discoveries in the world through rehearsal and extended practice.

Answer: (a)

27. Realizing that he is not paying attention in his science class and hence he is unable to understand the concepts, Ramesh decides to sit at the front so that he can focus attention better. Which learning strategy is Ramesh using?

- (a) Rehearsal
- (b) Metacognition
- (c) Scaffolding
- (d) Mnemonics

Answer: (b)

28. Which of the following statements about emotions is correct in context of cognition?

- (a) Emotions facilitate encoding but have no impact on attention.
- (b) Emotions help in efficient retrieval of information but do not influence motivation to learn.
- (c) Emotions modulate various aspects of cognition, however, degree and direction of effect depend on a range of factors.
- (d) Impact of emotions on learning is always univalent and has a positive effect only irrespective of the nature of emotion.

Answer: (c)

29. How can teachers increase intrinsic motivation in the students?

- (a) By giving 'removal punishment'
- (b) By giving 'negative reinforcement'
- (c) By offering 'rewards and prizes'
- (d) By inculcating 'joy of learning'

Answer: (d)

30. Which of the following statements correctly describes the relationship between intrinsic and extrinsic motivation?

- (a) Intrinsic motivation and extrinsic motivation are mutually exclusive; individuals cannot be motivated by both at the same time.
- (b) Intrinsic motivation can impact extrinsic motivation, but extrinsic motivation cannot impact intrinsic motivation in any possible manner.
- (c) Intrinsic and extrinsic motivations can both impact an individual's behaviour, but they operate independently of each other.
- (d) Intrinsic and extrinsic motivations can interact with each other in complex ways, with one type of motivation affecting the other.

Answer: (d)

Mathematics and Science

31. The value of is equal to 0×017

- (a) 153
- (b) 1530
- (c) 15300
- (d) 153000 0×125

Answer: (d)

32. If LCM of two numbers is 392, then which of the following cannot be the HCF of these numbers?

- (a) 28
- (b) 42
- (c) 56
- (d) 196

Answer: (b)

33. What is the smallest positive integer which is not a factor of the product 264

- (a) 12
- (b) 13
- (c) 14
- (d) 15

Answer: (b)

34. If A and B represent digits and $\overline{AB} \times 5 = \overline{44B0}$ then which of the following is true?

- (a) $A = 4, B = 2$
- (b) $A = 9, B = 8$
- (c) $A = 2, B = 4$
- (d) $A = 8, B = 9$

Answer: (d)

35. If x is the smallest number which is to be subtracted from 7751 to make it a perfect square, then the value of $(3x - 5)$ is

- (a) 7
- (b) 10
- (c) 13
- (d) 16

Answer: (d)

36. In the expression $(5x - 3y)(6x + 5y) - (3x + 7y)(4x - 5y)$, what is the coefficient of xy ?

- (a) -6
- (b) 9
- (c) -11
- (d) 13

Answer: (a)

37. One of the factors of $81x^2 - 126xy + 49y^2 - (5x - y)^2$ is

- (a) $7x + 2y$
- (b) $2x + 5y$
- (c) $7x - 2y$
- (d) $5x - 7y$

Answer: (c)

39. A person sold two articles A and B for ₹ 348 each. He earned a profit of 20% on A and suffered a loss of 13% on B. His profit (in ₹) in the entire transaction is

- (a) 6
- (b) 7
- (c) 9
- (d) 12

Answer: (a)

42. Which of the following figures do not have equal number of lines of symmetry?

- (a) Isosceles triangle and kite
- (b) Kite and parallelogram
- (c) Rectangle and rhombus
- (d) Kite and isosceles trapezium

Answer: (b)

44. Which of the following can be the length of the third side of a triangle whose two sides are of lengths 19 cm and 15 cm?

- (a) 3 cm
- (b) 4 cm
- (c) 33 cm
- (d) 34 cm

Answer: (c)

45. In a quadrilateral ABCD, angles A, B, C and D are respectively $(3x - 10^\circ)$, $(x + 30^\circ)$, $(2x + 30^\circ)$ and $(2x - 10^\circ)$. Then, this quadrilateral is a

- (a) trapezium
- (b) parallelogram
- (c) kite
- (d) rectangle

Answer: —

46. The area of a triangle of sides 24 cm, 45 cm and 51 cm is equal to the area of a rectangle of length 45 cm. Then, the perimeter of the rectangle is

- (a) 55 cm
- (b) 57 cm
- (c) 110 cm
- (d) 114 cm

Answer: (d)

49. The mean of observations (arranged in ascending order) 42, 48, $x + 15$, $x + 17$, $x + 20$, 58 and 60 is 53. The median of the data is

- (a) 53
- (b) 54
- (c) 55
- (d) 56

Answer: (b)

50. The time spent by a student during a day in different activities is represented by sectors of central angles in a pie chart as given below : School— 90° Homework— 60° Play— 60° Sleep— 120° Others— 30° What is the difference between the time spent by the student in the activities 'sleep' and 'school'?

- (a) 1 12 hours
- (b) 2 hours
- (c) 3 hours
- (d) 4 hours

Answer: (b)

51. A student was asked to find the value of x in $x - 4 = 3$. He completed the task by subtracting 4 from 3. Which of the following most appropriately describes the above situation?

- (a) The student has solved the problem correctly
- (b) The student has made an algorithm-based error
- (c) The student should memorize all the rules of transposition
- (d) Giving such problems to solve should be avoided

Answer: (b)

52. Which of the following mathematical statements is not true?

- (a) The number of factors of a given number is finite
- (b) Every factor of a given number is less than or equal to the given number
- (c) Every factor of a given number is always greater than the given number
- (d) Every multiple of a given number is greater than or equal to that number

Answer: (c)

53. Which of the following is the most appropriate way to introduce experimental probability to 8th graders?

- (a) Tossing a fair coin several times and noting down the outcomes
- (b) Solving statistics-based problems
- (c) Giving examples of many outcome-based events like tossing a coin, drawing cards, etc.
- (d) Defining experimental probability on board and giving examples

Answer: (a)

54. Which of the following represent the most appropriate reasons of assessment at upper primary stage? (A) To identify individual and specific need of the learner (B) To find out to what extent the aims and objectives of mathematics curriculum have been achieved (C) To find out whether students have learned a standard procedure to solve a problem (D) To select students for competitive exams in mathematics Choose the correct option.

- (a) Only (A) and (C)
- (b) (A), (C) and (D)
- (c) (A) and (B)
- (d) (B) and (D)

Answer: (c)

56. Which of the following is considered as a characteristic of an effective mathematics classroom?

- (a) Provide opportunities to the students to solve similar problems as that solved by the teacher
- (b) Sensitize the students that mathematics is an abstract subject with the help of different examples
- (c) Encourage individual problem-solving task rather than group work
- (d) Provide opportunities to the students to solve problems in multiple ways

Answer: (d)

57. Which of the following should be followed while using 'questioning' as a tool of assessment in a classroom?

- (a) Asking questions only from the low achievers
- (b) Asking questions for assessing errors and misconceptions
- (c) Asking too many questions without pause
- (d) Asking a question and answering it yourself

Answer: (b)

58. If $(x + 5) + 7y$ is written as $5 + (x + 7y)$, then which of the following property/properties of addition is/are being used?

- (a) Commutative
- (b) Distributive
- (c) Associative and distributive both
- (d) Commutative and associative both

Answer: (d)

59. The National Curriculum Framework (NCF), 2005 promotes a spiral approach for mathematics curriculum at middle school level. The best example of this approach is

- (a) including different concepts at each grade
- (b) including concepts that are repeated at each grade
- (c) including simpler as well as difficult concepts at every grade
- (d) including concepts in the increasing order of difficulty by briefly revisiting concepts taught previously

Answer: (d)

60. In which of the following statements, the number 6 is used in cardinal sense?

- (a) 6 is the predecessor of 7
- (b) She was sitting in the 6th row of the auditorium
- (c) There are 6 elements in a set
- (d) 6 is the successor of 5

Answer: (c)

61. A girl makes a hole near the bottom of a plastic bottle. She puts her thumb over the hole to cover it, fills the bottle with water up to half of its capacity. She then closes the cap of the bottle tightly. What will happen when she removes her thumb from the hole?

- (a) The water will spurt out of the hole because the pressure inside the bottle is less than the outside pressure.
- (b) The water will not spurt out of the hole because the pressure inside the bottle is more than the outside pressure.
- (c) The water will spurt out of the hole because the pressure inside the bottle is more than the outside pressure.
- (d) The water will not spurt out of the hole because the pressure inside the bottle is less than the outside pressure.

Answer: (d)

62. Fill in the blanks : Bakelite is a A and it is used for making B . On the other hand, PVC is a C which is used for making D .

- (a) A—thermosetting plastic; B—electrical switches; C—thermoplastic; D—containers
- (b) A—thermosetting plastic; B—containers; C—thermoplastic; D—utensils
- (c) A—thermoplastic; B—utensil handles; C—thermosetting plastic; D—electrical switches
- (d) A—thermoplastic; B—electrical switches; C—thermosetting plastic; D—containers

Answer: (a)

63. An oxide of a substance X reacts with water to produce another substance Y . Y reacts with oxygen to form Z . It is observed that Y turns blue litmus red. Which of the following can be concluded about X, Y and Z ?

- (a) X is a metal, Y is acidic and Z is basic in nature.
- (b) X is a metal, Y is basic and Z is acidic in nature.
- (c) X is a non-metal, Y is acidic and Z is basic in nature.
- (d) X is a non-metal, Y is acidic and Z is acidic in nature.

Answer: (d)

64. Which of the following is likely to happen when chlorine gas is added to the solution of sodium bromide?

- (a) Sodium chloride is formed through displacement reaction
- (b) Pure sodium is obtained through sublimation
- (c) Sodium chloride is formed through decomposition
- (d) No reaction will take place

Answer: (a)

65. Which of the following statements about the structure of a candle flame is not true?

- (a) The non-luminous part of the flame is the zone of complete combustion.
- (b) The temperature of middle zone and the non-luminous part of the flame is same.
- (c) The yellow part of the flame is the region of partial combustion.
- (d) The innermost zone does not support burning and comprises unburnt wax vapours.

Answer: (b)

66. Which of the following 'medium' is present between the inner and outer layers of a thermos flask and why?

- (a) Air, because it prevents loss of heat due to conduction
- (b) Steel, because it prevents loss of heat due to radiation and convection
- (c) Vacuum, because it prevents loss of heat due to conduction and convection
- (d) Air, because it prevents loss of heat due to radiation and conduction

Answer: (c)

67. Bujho wants to set up a circuit for the purification of copper. Which of the following electrodes and solutions should he opt for?

- (a) Anode—Impure copper; Cathode—Pure copper; Solution—Water
- (b) Anode—Carbon; Cathode—Pure copper; Solution—Copper sulphate
- (c) Anode—Impure copper; Cathode—Pure copper; Solution—Copper sulphate
- (d) Anode—Pure copper; Cathode—Impure copper; Solution—Copper sulphate

Answer: (c)

68. A ray of light enters two media X and Y having different optical densities. Refer to the table given below and identify A, B, C and D : Medium Change in speed of Change in frequency Change in wavelength light of light X Increases A B Y C D Decreases

- (a) A—Increases; B—Decreases; C—Increases; D—Decreases
- (b) A—No change; B—Decreases; C—Decreases; D—No change
- (c) A—No change; B—Increases; C—Decreases; D—No change
- (d) A—Decreases; B—No change; C—No change; D—Increases

Answer: (c)

69. Fill in the blanks : The process by which dead vegetation is converted to fossil fuel A at B pressure and C temperature is called as D .

- (a) A—coal; B—high; C—low; D—oxidation
- (b) A—petroleum; B—low; C—high; D—carbonization
- (c) A—natural gas; B—high; C—high; D—oxidation
- (d) A—coal; B—high; C—high; D—carbonization

Answer: (d)

70. A sample of soil mixed with water turns the _____ paper yellowish orange. Which of the following would now change the colour of the pH paper to bluish?

- (a) Milk of magnesia
- (b) Lemon juice
- (c) Vinegar
- (d) Common salt

Answer: (a)

71. Which of the following would you choose for making a fuse wire? Resistance Thickness Melting point

- (a) High Thick Low
- (b) High Thin Low
- (c) Low Thin High
- (d) Low Thick High

Answer: (b)

74. Which of the following statements about the sequence of events in sexual reproduction in a flower is correct?

- (a) Seedlings are formed after pollination and before development of embryo.
- (b) Embryo is formed before pollination and after fertilization.
- (c) Seedlings are formed after pollination and development of embryo.
- (d) Embryo is formed after pollination and formation of seedlings.

Answer: (c)

75. Which of the following statements is not true about endocrine glands?

- (a) Pancreas and adrenals are endocrine glands.
- (b) Endocrine glands secrete hormones through ducts.
- (c) Pituitary gland is attached to the brain.
- (d) Endocrine glands secrete hormones.

Answer: (b)

76. Read the following statements : Assertion (A) : Deforestation can lead to floods. Reasoning (R) : The infiltration rate of water is reduced due to deforestation. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct reasoning for (A).
- (b) Both (A) and (R) are true but (R) is not the correct reasoning for (A).
- (c) (A) is true but (R) is false.
- (d) (A) is false but (R) is true.

Answer: (a)

77. A teacher gives the following materials to two groups of students : Group A : Three rectangular glass strips, a circular plane glass plate, several bangles and cardboard tube and disk
Group B : Two plane mirrors and a hard cardboard box Which of the following gadgets can be prepared by the groups A and B using the above sets of materials? Group A Group B

- (a) Periscope Kaleidoscope
- (b) Kaleidoscope Newton's disk
- (c) Kaleidoscope Periscope
- (d) Periscope Pinhole camera

Answer: (c)

78. Microorganisms can be both useful as well as harmful to us. Which of the following beneficial processes is not carried out by microorganisms?

- (a) Breaking down of organic wastes
- (b) Increasing soil fertility
- (c) Preservation of food items in homes
- (d) Preparation of medicines

Answer: (c)

79. Which of the following is not likely to increase the fertility of soil?

- (a) Substitute fertilizers by organic manure
- (b) Leave the field uncultivated between two crops
- (c) Grow different crops alternately every season
- (d) Maintain minimum distance between the crops while sowing

Answer: (d)

80. Which hormone is responsible for the process of metamorphosis in frogs?

- (a) Adrenaline
- (b) Growth hormone
- (c) Thyroxine
- (d) Insulin

Answer: (c)

81. A teacher, while teaching a topic in chemistry, identifies the following conceptions of learners. Which of the following is not an alternative conception?

- (a) Carbon atom is black in colour.
- (b) A chemical bond is a line between two atoms.
- (c) Adding oxygen in a reaction is oxidation.
- (d) Allotropes of carbon have same atomic number.

Answer: (d)

82. Which of the following represents a correct scientific analogy?

- (a) Pure gold is as soft as butter.
- (b) Mitochondria is the powerhouse of cell.
- (c) Fuel burns like a fire.
- (d) Battery is to flashlight as headlight is to car.

Answer: (b)

83. A teacher organizes a debate on nuclear energy in class. What could be her objectives? (A) To make understand connection between science, technology and society (B) To familiarize learners with issues of global concern (C) To promote students' conceptual understanding about nuclear reactor (D) To make understand about responsible use of science for benefit of society Choose the correct option.

- (a) (B), (C) and (D)
- (b) (A), (C) and (D)
- (c) (A), (B) and (D)
- (d) (A), (B) and (C)

Answer: (c)

84. Which of the following is not consistent with the contemporary understanding of science?

- (a) Following one scientific method is surely and the only way to scientific discovery.
- (b) The scientific method does not help to make any aesthetic or value judgement about a phenomenon.
- (c) Investigations in science may involve repeated action on any one or all steps of scientific method in any order.
- (d) Scientific method offers a logical approach to problem solving.

Answer: (a)

85. Consider the following excerpt : "Bohr's theory of atom marked a revolution in science. It led to proposition of stationary energy states for electron, in which the electron does not radiate energy while revolving round the nucleus." What does the above excerpt illustrate about nature of science?

- (a) Science is subjective.
- (b) Science is value-neutral.
- (c) Science is tentative.
- (d) Science is socially and culturally embedded.

Answer: (c)

86. Read the following statements : Assertion (A) : Science undergoes paradigm shifts. Reasoning (R) : Existing scientific theories and laws may be discarded in light of new evidence. Choose the correct option.

- (a) Both (A) and (R) are true and (R) is the correct reasoning for (A).
- (b) Both (A) and (R) are true but (R) is not the correct reasoning for (A).
- (c) (A) is true but (R) is false.
- (d) (A) is false but (R) is true.

Answer: (a)

87. Which of the following should be emphasized by the teacher for nurturing creativity? (A) Engaging students in inquiry and discovery oriented tasks (B) Highlighting right or wrong responses while evaluating students' tasks (C) Encouraging students to do tasks without any fear of evaluation (D) Encouraging learners to find right answers to all textbook questions Choose the correct option.

- (a) (A) and (B)
- (b) (B) and (C)
- (c) (A) and (C)
- (d) (A) and (D)

Answer: (c)

88. During a science class, a teacher shared with her learners that the credit for the invention of electric bulb is usually given to Thomas Alva Edison. Several others before him worked on it but failed. What does the above remark by the teacher indicate about science? (A) Science is an interdisciplinary area of learning. (B) Science is dynamic. (C) Science is a collective enterprise. (D) Science promotes scepticism. Choose the correct option.

- (a) (B) and (C)
- (b) (C) and (D)
- (c) (A) and (C)
- (d) (B) and (D)

Answer: (a)

89. Why do scientists use scientific modelling to analyze the behaviour of systems?

- (a) Modelling does not need instruments.
- (b) Modelling does not require any computer calculation.
- (c) Models are simpler to analyze than real system.
- (d) Models cannot test hypothesis.

Answer: (c)

I Language I (English)

Passage — for questions 91–97

Do children really need such long summer breaks, was a question posed by some experts recently. Apparently, such a long break disrupts their development and comes in the way of their learning process. "Let's get them back to their books", is perhaps the expert view. One would have thought the children are doing too much during their vacations but not too little, given the plethora of classes, camps and workshops involving swimming, personality development, music, computers and the like. Even the trips taken in the name of holiday are laden with exotic destinations and customised experience packed into a short period of time. We can go Europe in 10 days and Australia in a week and come back armed with digital memories and overflowing suitcases. Holidays are, in some ways, no longer a break but an intensified search for experience not normally encountered in everyday life.

It is a far cry from summer holidays as we know them. For us, holidays every year meant one thing and one thing alone—you went back to your native place, logging in with the emotional headquarters of your extended family and spent two months with a gaggle of uncles, aunts and first and second cousins. The happiest memories of the childhood of a whole generation seemed to be centred around this annual ritual of homecoming.

Summer was not really a break, but a joint. It was the bridge used to reaffirm one's connectedness with one's larger community. One did not travel, one returned. It was not an attempt to experience the new and the extraordinary but one that emphatically underlined the power of the old and the ordinary. With the change of time, what we seek from our summer breaks too has changed in a fundamental way.

Today, we are attached much more to our work and summer helps us temporarily detach from this new source of identity. We refuel our individual selves now; and do so with much more material than we did in the past. But for those who grew up in different times, summer was the best time of their lives.

91. How do students spend their summer breaks?

- (a) By killing their time and playing for endless hours
- (b) By attending camps and workshops like art, music, etc.
- (c) By revising the areas in which they are weak
- (d) By reading books

Answer: (b)

92. How are travel and tour not a break from daily stress?

- (a) They are laden with customised experience, packed into a short period of time.
- (b) They are a break from an intensified search for experience.
- (c) They require a lot of investment and exhaust our savings.
- (d) They are armed with memories of one's native places. DET-24-II (L) 61 [P.T.O.

Answer: (a)

93. How are present-day summer breaks different from those of the former days?

- (a) We refuel our individual selves.
- (b) We are attached much more to our work.
- (c) A bridge to reaffirm our connectedness with one's larger community.
- (d) Both (1) and (2)

Answer: (b)

94. "Summer was not really a break, but a joint." What does the author imply?

- (a) Summer break intended to help a child connect to their kith and kin and build a strong bond with them.
- (b) Children spend their summer break killing their time by playing for endless hours.
- (c) Long break disrupts the development of children and comes in the way of their learning process.
- (d) Summer break is necessary to rejuvenate oneself and going for trips to exotic destinations.

Answer: (a)

95. What used to be the happiest memories of childhood for the author?

- (a) Going on a trip to Europe
- (b) Visiting one's native place
- (c) Attending summer camps
- (d) Reading lots of books

Answer: (b)

96. Which one of the following words is similar in meaning to the phrase 'made to suit one's needs', as used in the passage?

- (a) Attached
- (b) Plethora
- (c) Customised
- (d) Gaggle

Answer: (c)

97. Which one of the following words is opposite in meaning to the word 'emphatically' as used in the passage?

- (a) Carefully
- (b) Irregularly
- (c) Foolishly
- (d) Casually

Answer: (d)

Passage — for questions 100–105

Into the sunshine, Full of the light, Leaping and flashing From morn till night! Into the moonlight, Whiter than snow. Waving so flower-like When the winds blow! Into the starlight, Rushing in spray, Happy at midnight, Happy by day! Glorious fountain! Let my heart be Fresh, cheerful, constant, Upward, like thee!

100. The movement of the water of the fountain reflects

- (a) joy
- (b) sadness
- (c) earnestness
- (d) weariness

Answer: (a)

101. The poet wants his heart to remain fresh. It means that he wants

- (a) to take a bath regularly
- (b) always to be dressed elegantly
- (c) to have new ideas all the time
- (d) to keep on moving all the time

Answer: (d)

102. The poet admires the fountain and he feels thrilled to see it. Which word in the last stanza expresses the poet's admiration?

- (a) Glorious
- (b) Cheerful
- (c) Fresh
- (d) Upward

Answer: (a)

103. Identify and name the poetic device used in 'waving so flower-like'.

- (a) Metaphor
- (b) Alliteration
- (c) Personification
- (d) Hyperbole

Answer: (c)

104. Which literary device has been used in stanza 2 to enhance the beauty of the lines?

- (a) Alliteration
- (b) Oxymoron
- (c) Anaphora
- (d) Transferred epithet

Answer: (a)

105. The poet has used the words like whiter, blithesome, cheerful, etc. Which part of the speech do these words belong to?

- (a) Adjective
- (b) Noun
- (c) Adverb
- (d) Interjection

Answer: (a)

106. Which one of the following is true for language learning?

- (a) Language learning happens through reading of language textbooks only
- (b) Language learning accelerates in print rich environment
- (c) Language learning is not required for learning of science and mathematics
- (d) Language learning happens unconsciously

Answer: (b)

107. Crying, cooing and babbling are all the examples of _____ stage of language development.

- (a) linguistic
- (b) pre-linguistic
- (c) expressive
- (d) referential

Answer: (b)

108. Garvit was speaking in Hindi to his peers in his classroom. When his teacher called on him, he immediately replied to her in English. This is an example of

- (a) code-mixing
- (b) dialects
- (c) socio-linguistics
- (d) code-switching

Answer: (d)

109. Which of the following terms is not related to Vygotsky's socio-cultural theory?

- (a) Social interaction
- (b) Scaffolding
- (c) Zone of proximal development
- (d) Language acquisition device

Answer: (d)

110. Every syllabus talks about learning outcomes which means

- (a) taking into account the content of the textbook
- (b) change in the behaviour of the learners
- (c) completion of all lessons
- (d) change in teaching method of the teacher

Answer: (b)

111. Looking for a number in the contact list of your phone is an example of

- (a) scanning
- (b) survey
- (c) review
- (d) skimming

Answer: (a)

112. Defining new words within context instead of making the children learn meanings of new words

- (a) often confuses the children
- (b) helps in better understanding of the word
- (c) promotes rote memorization
- (d) leads to wastage of time

Answer: (b)

113. The type of writing in which the author mostly places himself as a character, (sometimes he may not) and narrates the story, is known as

- (a) expository
- (b) persuasive
- (c) descriptive
- (d) narrative DET-24-II (L) 64

Answer: (d)

114. You want to ensure maximum participation of the students of your class. Which of the following methods would you adopt for this purpose?

- (a) Discussion
- (b) Demonstration
- (c) Model reading
- (d) Recitation

Answer: (a)

115. A listener while listening listens to the specific details recognises cognates and word order patterns. What is this listening process known as?

- (a) Bottom-up process
- (b) Top-down process
- (c) Inferential process
- (d) Linear process

Answer: (a)

116. Which one of the following could be the 'while-reading activity' when doing a short story?

- (a) Learners discuss to predict the events in the story.
- (b) Learners do pair work and read mutually to one another.
- (c) Learners discuss biographical details of the poet.
- (d) Teacher asks meaning of new words and encourages them to frame sentences on them.

Answer: (b)

117. In one class you don't ask any questions, instead you give them some short texts and ask your learners to frame questions. The objective behind your task is to ____.

- (a) develop your learners as good paper setters
- (b) take their help in your own task of setting questions
- (c) make your learners realize how difficult it is to frame questions
- (d) enhance your learners' analytical and critical thinking

Answer: (d)

118. Language assessment aims at measuring ____.

- (a) how each learner achieved in comparison to his peers
- (b) their overall or summative achievement
- (c) the language achievement of learners
- (d) the language proficiency of learners

Answer: (d)

119. The use of teaching aids aims at

- (a) engaging learners in learning tasks
- (b) optimizing learning outcomes of the learners
- (c) minimizing cases of indiscipline in the classroom
- (d) drawing learners' attention in the classroom

Answer: (b)

120. One of your students takes a favourite book and retells the story often by using pictures as cues. This strongly suggests

- (a) emergent reading stage
- (b) phonological awareness
- (c) syntactic awareness
- (d) narrative awareness

Answer: (a)

| Language II (English)

Passage — for questions 121–128

There was a king, Shibi Rana, who enjoyed immense power. Even gods in heaven were jealous of him. They feared that Shibi might one day take away their kingdoms. They devised a plan to test his sense of justice. So they decided to reach Shibi's kingdom in disguise. One day, Shibi Rana was sitting on his throne. His courtroom was surrounded by majestic gardens. There came a scared dove flying to him and it was followed by a fierce looking eagle. The king gave shelter to the dove and saved her. The eagle argued that the king has taken away his food—the dove. It would starve. The king assured the eagle that he would give equal quantity of any other food. The eagle asked for king Shibi's flesh. The magnanimous king agreed with a smile. A balance was brought in the court. It was soon found that with each addition of the king's flesh the dove grew heavier. The equal balance was not arrived at. But the king remained calm and unperturbed. The gods in the guise of the dove and the eagle were assured of Shibi's righteousness. The forms of the eagle and the dove soon disappeared. In their place stood Indra, the king of the gods and Agni, the god of fire smiling and blessing the king for his benevolence and greatness.

121. The gods in heaven were afraid of king Shibi because
- (a) they thought he might have disguised himself as god.
 - (b) they thought that Shibi might take away their kingdoms.
 - (c) Shibi had a great sense of justice.
 - (d) Shibi's courtroom was surrounded by majestic gardens.

Answer: (b)

122. The king saved ____ from the fierce ____.

- (a) the eagle, dove
- (b) the dove, eagle
- (c) Indra, Agni
- (d) Agni, Indra

Answer: (b)

123. The king was blessed for his (a) benevolence (b) greatness (c) calmness

- (a) Only (a)
- (b) Only (b)
- (c) Only (c)
- (d) Both (a) and (b) DET-24-II (L) 70

Answer: (d)

124. Which one of the following words is similar in meaning to the word 'magnanimous' as used in the passage?

- (a) Selfish
- (b) Generous
- (c) Petty
- (d) Suspicious

Answer: (b)

125. Which one of the following words is opposite in meaning to the word 'fierce' as used in the passage?

- (a) Wild
- (b) Savage
- (c) Ferocious
- (d) Tame

Answer: (d)

128. Which part of the following sentence contains an error? The gods in the guise of dove and eagle are certain of Shibi's virtue. (a) (b) (c) (d)

- (a) (a)
- (b) (d)
- (c) (c)
- (d) (b)

Answer: (c)

Passage — for questions 129–135

Fitness is zero percent investment with infinite returns. There is a surge in diabetes and hypertension cases and other lifestyle diseases. Fitness is the only thing that can help. But with technology, physical activity has reduced. It has become fashionable to talk about fitness rather than act on it.

Several factors are cited to explain why fitness levels in school children are constantly declining. Children now walk far less than they used to. Instead of walking to or back from their school, they use a school bus, or get dropped and picked in a car. Once back home, they sit glued to the idiot box for several hours or keep playing computer games.

Excessive screen time can negatively impact a child's physical and mental health from increasing the risk of obesity to disturbing sleep patterns. There is neither place nor inclination to play outdoor games. Children's diet consists mainly of fast food, fried foods, chocolates, crispies, sweets and fizzy drinks. These foods may be delicious and, therefore, tempting, but they are highly deficient in vital nutrients. Parents are often aware of this, but out of misplaced love for children, they hardly ever discipline their eating habits. Girls, usually keen to remain slim, keep dieting unnecessarily and deprive their bodies of vital nourishment.

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It is important that children spend plenty of time playing in fresh air and exercise even more than the grown-ups in order that their muscles develop and their bones grow properly. If they can go for a regular swim and walk down to the swimming pool, it would combine the benefits of both walking and swimming. In addition, they should be encouraged to take healthy and wholesome food rich in nutrients to avoid what may be described as convenience foods.

129. The activity/activities that take(s) up most of the evening time of children is/are (a) playing video games (b) watching TV (c) walking and swimming

- (a) Only (a)
- (b) Only (b)
- (c) Both (a) and (c)
- (d) Both (a) and (b)

Answer: (d)

130. How does girls' keenness to remain slim affect their health?

- (a) They have more inclination towards fast food.
- (b) They fail to take essential nourishment because of dieting.
- (c) Their muscles are not developed.
- (d) They do not go for walking and swimming.

Answer: (b)

131. What fault does the author find in convenience foods?

- (a) They are readily available
- (b) They are delicious and tempting
- (c) They lack vital nutrients
- (d) They help in muscle development

Answer: (c)

132. Which one of the following words is similar in meaning to the phrase 'going down' as used in the passage?

- (a) Averaging
- (b) Dropping
- (c) Declining
- (d) Rising

Answer: (c)

133. Which one of the following words is opposite to the meaning of the word 'lacking' as used in the passage?

- (a) Deficient
- (b) Deprived
- (c) Unnecessary
- (d) Vital

Answer: (d)

135. Explain the phrase 'out of misplaced love' as used in the passage.

- (a) Love that does not exist
- (b) Love that is harmful
- (c) Love that is blind
- (d) Love that lacks discipline

Answer: (b)

136. Learning to writing by undergoing different stages of writing is known as

- (a) process approach to writing
- (b) product approach to writing
- (c) analytical writing
- (d) creative writing

Answer: (a)

137. Which of the following is the most suitable assessment activity for assessing learners' communication skills?

- (a) Describing a scene from a picture book.
- (b) Playing a role in a role play.
- (c) Listening to an audio text and responding to it orally.
- (d) Writing a speech in a given situation.

Answer: (b)

138. According to Chomsky, human beings have a _____ to develop language.

- (a) learning set
- (b) biological disposition
- (c) perceptual set
- (d) telegraphic readiness

Answer: (b)

139. A multilingual approach to schooling from the very beginning is chiefly helpful in countering the ill consequences of

- (a) school dropouts
- (b) learning disabilities
- (c) losing one's own language
- (d) weak communication skill

Answer: (c)

140. You engage your learners in a fun energizer activity before beginning a new lesson. You do this to

- (a) motivate and prepare learners for the class
- (b) reduce your workload as a teacher
- (c) maintain discipline in the class before the lesson
- (d) divert the attention of the learners

Answer: (a)

141. Constructivism as a learning theory believes

- (a) learning is individual characteristic
- (b) all learners cannot learn languages
- (c) learning is completely psychological phenomena
- (d) learning is socially constructed

Answer: (d)

142. Sometimes people combine elements of different languages in the same sentence. This is an example of

- (a) code-switching
- (b) code-mixing
- (c) socio-linguistics
- (d) dialects

Answer: (b)

143. Students often lack confidence when speaking due to the unique pronunciation rules of the language. One way to overcome this problem is

- (a) encouraging children to read in class
- (b) conducting special speech therapy with a counselor
- (c) using game-like activities which require oral interaction in classroom
- (d) correcting whatever errors the students make

Answer: (c)

144. Reading a novel is an example of

- (a) extensive reading
- (b) intensive reading
- (c) scanning
- (d) skimming

Answer: (a)

145. What is the basic objective of using a quotation in an essay?

- (a) To set the tone of the essay
- (b) To explain a complicated issue
- (c) To present another's point of view
- (d) To analyze specific data

Answer: —

146. A teacher provides learners of class VIII an article which she considers slightly above their language level. Learners have to work with the text and do many tasks. What is this known as?

- (a) Learning hypothesis
- (b) Incomprehensible input
- (c) Reading comprehension
- (d) Comprehensible input

Answer: (d)

147. Teaching of grammar is chiefly useful for improving

- (a) fluency
- (b) accuracy
- (c) literacy
- (d) numeracy

Answer: (b)

148. The objective of grammar teaching is to enable students to communicate. Which among the following is not in tune with this objective?

- (a) Students should have command over every aspect of each grammar point
- (b) Students need overt instruction that connects grammar points with larger communication contexts
- (c) Students should master only those aspects that are relevant to the immediate communication task
- (d) Error correction is not always the teacher's first responsibility

Answer: (a)

149. 'Semantic cues' in reading are prompts

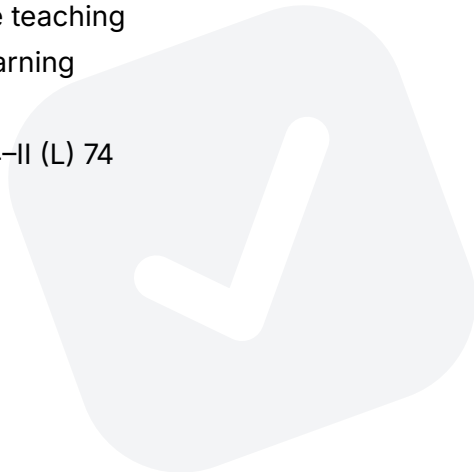
- (a) that help in decoding the word
- (b) for the correct pronunciation of the word
- (c) that support the meaning-making process
- (d) for identifying the grammatical form

Answer: (c)

150. Which approach to language teaching-learning believes 'language is a habit'?

- (a) Communicative language teaching
 - (b) Cooperative language learning
 - (c) Natural approach
 - (d) Audio-lingualism
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Answer: (d)



Answer key

Answer key from the Central Board of Secondary Education's official answer key for this sitting. "—" means the key gave none.

Child Development and Pedagogy

1	(b)	2	(a)	3	(c)	4	—	5	(a)	6	(b)	7	(d)	8	(a)
9	(b)	10	(a)	11	(b)	12	(d)	13	(a)	14	(b)	15	(c)	16	(d)
17	(b)	18	(a)	19	(d)	20	(a)	21	(a)	22	(b)	23	(c)	24	(c)
25	(d)	26	(a)	27	(b)	28	(c)	29	(d)	30	(d)				

Mathematics and Science

31	(d)	32	(b)	33	(b)	34	(d)	35	(d)	36	(a)	37	(c)	39	(a)
42	(b)	44	(c)	45	—	46	(d)	49	(b)	50	(b)	51	(b)	52	(c)
53	(a)	54	(c)	56	(d)	57	(b)	58	(d)	59	(d)	60	(c)	61	(d)
62	(a)	63	(d)	64	(a)	65	(b)	66	(c)	67	(c)	68	(c)	69	(d)
70	(a)	71	(b)	74	(c)	75	(b)	76	(a)	77	(c)	78	(c)	79	(d)
80	(c)	81	(d)	82	(b)	83	(c)	84	(a)	85	(c)	86	(a)	87	(c)
88	(a)	89	(c)												

Language I (English)

91	(b)	92	(a)	93	(b)	94	(a)	95	(b)	96	(c)	97	(d)	100	(a)
101	(d)	102	(a)	103	(c)	104	(a)	105	(a)	106	(b)	107	(b)	108	(d)
109	(d)	110	(b)	111	(a)	112	(b)	113	(d)	114	(a)	115	(a)	116	(b)
117	(d)	118	(d)	119	(b)	120									

Language II (English)

121	(b)	122	(b)	123	(d)	124	(b)	125	(d)	128	(c)	129	(d)	130	(b)
131	(c)	132	(c)	133	(d)	135	(b)	136	(a)	137	(b)	138	(b)	139	(c)
140	(a)	141	(d)	142	(b)	143	(c)	144	(a)	145	—	146	(d)	147	(b)
148	(a)	149	(c)	150	(d)										