

PREVIOUS YEAR PAPER

CTET Paper II — 21 January 2024 (Set P) — Mathematics and Science

CTET · 21 January 2024

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

Left out of the original paper: 18 (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 21 January 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-2-21-jan-set-p-maths-science/

Child Development and Pedagogy

1. Jean Piaget believed that knowledge is :

- (a) a visible behavioural change that can be measured with reliability.
- (b) constructed by the child rather than being passed passively from the environment.
- (c) innate and given rather than acquired through interactions.
- (d) co-constructed in interactions with more knowledgeable others.

Answer: (b)

2. Which of the following statements about adolescence is not correct ?

- (a) Children across different cultures usher in and experience adolescence in a similar manner.
- (b) Adolescence is a social construction.
- (c) Adolescence is generally considered to coincide with puberty - the process that leads to sexual maturity and the ability to reproduce.
- (d) Adolescence is developmental transition between childhood and adulthood entailing physical, cognitive and psychosocial changes.

Answer: (a)

3. Which of the following describes a mastery goal orientation ?

- (a) focus on avoiding failure or punishment for fear of humiliation.
- (b) focus on achieving a certain level of performance for competing with others.
- (c) focus on improving ones' skills and understanding of a task.
- (d) focus on achieving a high grade for receiving external rewards.

Answer: (c)

4. Which of the following best describes the role of the teacher in progressive education ?

- (a) The teacher lets the children learn independently and does not interfere in their learning.
- (b) The teacher is the primary source of knowledge and authority in the classroom.
- (c) The teacher provides diverse materials for children to experiment and provides scaffolding as and when required.
- (d) The teacher is responsible for ensuring strict adherence to curriculum standards.

Answer: (c)

5. According to Jean Piaget the ability to use symbols for symbols such as letting the letter X stand for an unknown numeral develops during _____ and enables the children to learn _____.
- (a) formal operational stage; conservation and seriation
 - (b) concrete operational stage; algebra and calculus
 - (c) concrete operational stage; conservation and seriation
 - (d) formal operational stage; algebra and calculus

Answer: (d)

6. Which of the following is an example of a question that requires students to analyze information ?
- (a) Who is the protagonist of "To Kill a Mockingbird"?
 - (b) What is the plot of the novel "To Kill a Mockingbird" ?
 - (c) What is the theme of the novel "To Kill a Mockingbird"?
 - (d) How does the author use symbolism in "To Kill a Mockingbird"?

Answer: (d)

7. Assertion (A) : Students are more likely to do well and stay in school if they have emotional attachment to their school and believe that they matter. Reason (R) : Emotions play a significant role in learning. Choose the correct option :

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

Answer: (b)

8. Asking Critical questions such as "how research are done and what ways are various gender represented in textbooks and media" would encourage :

- (a) Discouraging gender role flexibility
- (b) Questioning gender stereotypes
- (c) Strengthening gender constancy
- (d) Reinforcing gender identity

Answer: (b)

9. In order to address the individual differences among learners, a teacher should :

- (a) implement a rigid and uniform curriculum for all learners
- (b) acknowledge differences as abnormal and kind of deficit
- (c) be indifferent towards individual differences
- (d) consider differences as obvious feature of human diversity

Answer: (d)

10. In a progressive classroom assessment is :

- (a) Normative
- (b) Dynamic
- (c) Objective
- (d) Summative

Answer: (b)

11. Alok shows the following behaviours : Holds head in an awkward position when reading; squinting and rubbing the eye frequently; redness/swelling of eyes; confusing letters. These can be symptoms of potential :

- (a) Communication disorder
- (b) Visual problems
- (c) Language comprehension problems
- (d) Autistic spectrum disorder

Answer: (b)

12. Assertion (A) : There is no objectively definable moment when a child enters middle childhood or adolescence. Reason (R) : Development is continuous in nature. Choose the correct option.

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

Answer: (b)

13. Assertion (A) : Teachers should constantly reflect on their own stereotypes and bias. Reason (R) : Culturally responsive teaching means that teachers are reflective. Choose the correct option :

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

Answer: (b)

14. According to Vygotsky, what is the role of a teacher in facilitating cognitive development ?

- (a) To give only those tasks that the student can currently do independently.
- (b) To provide information and knowledge to the student.
- (c) To guide and support the student's learning through scaffolding.
- (d) To allow the student to learn completely independently.

Answer: (c)

15. A middle school teacher wants to enable meaningful learning by helping students make connections between concepts and real-world applications. Which of the following activities would be an appropriate pedagogical strategy ?

- (a) Let the students research on a current issue in small groups and present their findings to the class.
- (b) Let the students memorize terms and definitions.
- (c) Let the students complete worksheets with multiple choice questions.
- (d) Let the students learn by the method of stimulus-response conditioning.

Answer: (a)

16. According to Lev-Vygotsky children benefit from the experience of interacting with _____ while working _____ their zone of proximal development.

- (a) the physical environment; just outside
- (b) more knowledgeable others; within
- (c) more knowledgeable others; just outside
- (d) the physical environment; within

Answer: (b)

17. Dyslexia is a _____ condition which impacts learner's ability to _____.

- (a) sensory, coordinate body movements
- (b) emotional, draw pictures
- (c) neurological, link sounds with symbols
- (d) physiological, socialize with peers

Answer: (c)

18. Which of the following characterise the process of socialization ? (a) It is a linear process. (b) It is a complex process. (c) It is a multidimensional process. (d) It takes place uniquely in different cultures.

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

Answer: (d)

19. Assertion (A) : In an inclusive classroom adaptations should be made in learning goals, pedagogical strategies as well as assessment. Reason (R) : The philosophy of inclusion advocates elimination of all individual differences through pedagogical approaches and assessment. Choose the correct option :

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

Answer: (d)

20. Which of the following does not exemplify an inclusive classroom ?

- (a) Encouraging competitive ethos
- (b) Incorporation of diverse perspectives
- (c) Following reasonable accommodation
- (d) Offering differentiated instruction

Answer: (a)

21. Assertion (A) : The less able a child is to do a task the more directions the teachers should give and as the child can do more and more the teacher should help less and less. Reason (R) : Intelligence cannot be accurately measured by calculating IQ. Choose the correct option.

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

Answer: (c)

22. A teacher notices that one of her students is highly distractible and has trouble paying attention during class. Which of the following strategies would be an effective strategy in helping the student stay focused ?

- (a) Calling the parents and taking strict disciplinary action against the student.
- (b) Giving the student repeated tasks to do during class.
- (c) Strictly telling the student to increase their attention span.
- (d) Giving a timer to student for self-regulation and time-management.

Answer: (d)

23. Assertion (A) : Learning from real-life problems and concrete experiences gives the children multiple pathways for learning and retrieving information. Reason (R) : Development is relatively orderly and sequential. Choose the correct option :

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

Answer: (c)

24. Work in progress Portfolios are an effective tool for formative assessment because : (a) They involve students in the process of assessment. (b) They offer insights about the progress of individual students. (c) They focus mainly in the presentation of the final product. (d) They offer tangible evidence of student learning.

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

Answer: (a)

25. Which of the following is a core principle of constructivist learning theory ?

- (a) Learning is primarily a passive process that involves receiving and memorizing information.
- (b) Teachers should provide direct instruction and explicit guidance to students.
- (c) Learning occurs when students receive correct answers and feedback from teachers.
- (d) Students construct their own knowledge through active engagement with their environment.

Answer: (d)

26. The central argument of Carol Gilligan's critique of Kohlberg's theory of moral development is around :

- (a) Educational implications of the study for school going children.
- (b) Ethics of care and the feminist perspective.
- (c) Overestimation of children's moral abilities.
- (d) Use of experimental design in studying children.

Answer: (b)

27. Sujata participates eagerly in the dance competition only because she is interested in winning the first prize of cash. Sujata is :

- (a) Failure-avoiding learner
- (b) Intrinsically motivated
- (c) Extrinsically motivated
- (d) Mastery-Oriented learner

Answer: (c)

28. Which of the following process is essential in meaning-making of the information received from environment and store it further in memory ?

- (a) Retrieval
- (b) Attention
- (c) Decay
- (d) Forgetting

Answer: (b)

29. In which stage of Kohlberg's moral development some of children's reasoning revolve around ethics of law ?

- (a) Autonomous morality
- (b) Pre-conventional morality
- (c) Conventional morality
- (d) Heteronomous morality

Answer: (c)

30. An elementary school teacher can strongly influence students' development of academic self-concept by :

- (a) Keeping very low expectations from special students
- (b) Keeping very low expectations from all students
- (c) Punishing autonomy and initiative in students
- (d) Rewarding autonomy and initiative in students

Answer: (d)

| Mathematics and Science

31. The number of vertices (V), edges (E) and faces (F) of a polyhedron are respectively 10, 15 and x. Then, the value of $(3x-12)$ is :

- (a) 18
- (b) 7
- (c) 9
- (d) 14

Answer: (c)

32. One of the factors of $p^3x + p^2(x-y) - p(y+z) - z$ is :

- (a) $p^2x + py - z$
- (b) $p^2x - py + z$
- (c) $p^2x + py + z$
- (d) $p^2x - py - z$

Answer: (d)

35. Concept was labelled as 'Schema' by :

- (a) Van Hiele
- (b) Vygotsky
- (c) Piaget
- (d) Bruner

Answer: (c)

37. A student was given the following problem on percentage to solve, "Find the percentage of decrease if the population of a city decreased from 28,000 to 26,500." She wrote the following solution, Original population = 28,000; New population = 26,500 $\frac{26,500}{28,000} \times 100\% = 94.6\%$ Which of the following is most appropriate with respect to the response of the student ?

- (a) Student has made a careless mistake.
- (b) Student is able to understand the concept of percentage but is not able to understand percentage of which quantity is to be found.
- (c) Student has solved the question correctly but has used wrong symbols in solution.
- (d) Student does not know the concept of percentage.

Answer: (b)

38. The lengths of the parallel sides of a trapezium are 11 cm and 25 cm and the distance between them is 12 cm. Its area is equal to the area of a rectangle whose sides are in the ratio 3 : 2. What is the perimeter (in cm) of the rectangle ?

- (a) 70
- (b) 40
- (c) 50
- (d) 60

Answer: (d)

39. x varies inversely as y . When $x=3.5$, then $y=2.4$. What is the value of y when $x=5.6$?

- (a) 2.8
- (b) 1.4
- (c) 1.5
- (d) 2.1

Answer: (c)

41. National Education Policy (NEP) 2020 recommends that Sports Integrated Pedagogy needs to be used in classroom teaching. Which among the following are correct in the context of using sports integrated pedagogy in mathematics classroom ? (a) Teaching-learning process shall become joyful. (b) It is not possible to use sports for teaching mathematics. (c) It will be time consuming and hence needs to be avoided. (d) Apart from popular sports, there are many indigenous sports which can be used in teaching mathematics. Choose the correct option :

- (a) (b), (c) and (d)
- (b) (a) and (c)
- (c) (b) and (c)
- (d) (a) and (d)

Answer: (d)

43. Which of the following is not a dimension of assessment of mathematics learning ?

- (a) Mathematical reasoning
- (b) Communication
- (c) Patterns and procedures
- (d) Disposition towards mathematics

Answer: (d)

44. If $x=1.011+10.11-12.101+0.1011$, then what should be added to x to get the sum as 1.1 ?

- (a) 1.1311
- (b) 1.9789
- (c) 0.3111
- (d) 0.2211

Answer: (b)

45. A middle school mathematics teacher poses the following question to her class. "Which type of graph would you use to show the following data ? (a) The heights of participants in an athletics meet (b) The number of passengers boarding trains from 9:00 am to 9:00 pm at a station." The intention of the teacher is to -

- (a) Teach the use of histograms for data representation.
- (b) Help learners understand the difference between bar graph and line graph.
- (c) Introduce the concept of pie charts.
- (d) Teach line graph through contextual situations.

Answer: (a)

46. Teacher conducted an oral assessment in class and found that Ram can speak definition of all types of numbers - odd, even, prime and composite accurately, but not able to identify the numbers accurately when given a set of numbers. Which of the following is most appropriate for the above situation ?

- (a) Ram has analytical ability.
- (b) Ram has good memory but lacks practice.
- (c) Ram has good memory but lacks concentration.
- (d) Ram has good memory but lacks conceptual understanding.

Answer: (d)

51. A student listed the following properties of Rational Numbers. Which one/ones is/are correct ?

(a) A rational number includes integers. (b) 0 (zero) is not a rational number. (c) All fractions are rational numbers. Choose the correct option :

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

Answer: (b)

53. Mathematics is a way of thinking since : (a) It provides an opportunity for students to engage in proofs and examining patterns. (b) Students reproduce formulae and symbols during problem solving. (c) Students use appropriate strategies for solving various new problems. Choose the correct option :

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

Answer: (d)

54. Three numbers are in the ratio 2 : 3 : 4 and the sum of their cubes is 33957. What is the sum of the three numbers ?

- (a) 81
- (b) 54
- (c) 63
- (d) 72

Answer: (c)

55. Three consecutive integers are such that when they are taken in increasing order and multiplied by 3, 5 and 2, respectively, they add up to 99. What is the sum of the original first and third integers ?

- (a) 24
- (b) 16
- (c) 18
- (d) 20

Answer: (d)

58. If the median of the data 30, 8, 7, 3, 17, 15, 21, 24, 29, 23 is x and the median of the data obtained by replacing 3 by 33 and 8 by 18 in the above data is y , then what is the difference between y and x ?

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

Answer: (d)

59. A class VI mathematics teacher posed the following problem to her students : "In a morning walk, three persons started together. Their steps measure 70 cm, 85 cm and 95 cm respectively. What is the minimum distance each should walk so that all can cover the same distance in complete steps ?" Which of the following concepts would be required to solve the given problem ?

- (a) Concept of proportion
- (b) Concept of HCF
- (c) Concept of LCM
- (d) Concept of division

Answer: (c)

60. Which among the following Learning-Teaching Resources (LTRs) are most appropriate for visually challenged students in mathematics classroom ? (a) Geogebra (b) Taylor's abacus (c) Computer (d) Spreadsheet Choose the correct option ·

- (a) (b), (c) and (d)
- (b) (a) and (b)
- (c) (c) and (d)
- (d) (b) and (c)

Answer: (d)

61. Which of the following plant disease(s) are caused by bacteria ? (a) Rust of wheat (b) Citrus tanker (c) Yellow vein mosaic of bhindi

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

Answer: (c)

62. Identify the correct statement(s) : (a) : A fact is an observation that has repeatedly been found to be true over the time. (b) : A law is a theory that has repeatedly been found to be true over the time.

- (a) Neither (a) nor (b)
- (b) Only (a)
- (c) (a) and (b)
- (d) Only (b)

Answer: (b)

63. Find the set that correctly matches the plants in column A with the mode of asexual reproduction which they exhibit : Column A Column B (a) Rose (i) Budding (b) Yeast (ii) Spore formation (c) Ferns (iii) Fragmentation (d) Spirogyra (iv) Pollination (v) Vegetative propagation

- (a) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
- (b) (a)-(v), (b)-(i), (c)-(ii), (d)-(iii)
- (c) (a)-(iv), (b)-(i), (c)-(v), (d)-(iii)
- (d) (a)-(v), (b)-(iii), (c)-(ii), (d)-(i)

Answer: (b)

64. Which of the following would be a most suitable strategy to introduce the topic 'deficiency diseases' at upper primary level ?

- (a) Hold a discussion on common human diseases.
- (b) Provide a definition of balanced diet and introduce the concept of deficiency.
- (c) Arrange for a doctor's prescription pertaining to a deficiency disease and hold a discussion around it.
- (d) List the various nutrients and the functions they perform in human body.

Answer: (c)

65. Which of the following is the most suitable strategy for introducing the students to the concept of 'chemical reactions' at upper primary level ?

- (a) Hold a discussion on chemical reactions which students are likely to have observed in their lives
- (b) Explain the concept of valence electrons and electronic configuration
- (c) Write the chemical equations in symbolic form and ask students to observe
- (d) Define a chemical reaction and give an example

Answer: (a)

66. A ball is thrown up in the air. It reaches a maximum height and then returns to the thrower. Which of the following quantities have the same values during the upward and downward motion of the ball ?

- (a) Work done by gravity
- (b) Acceleration
- (c) Force of gravity
- (d) Displacement

Answer: —

67. Which of the following is the most suitable reason behind Newtons theory of gravitation being regarded as an excellent theory ?

- (a) It has been developed over a long period of time
- (b) It explains larger number of observations by making fewer assumptions
- (c) It has been arrived at after thorough experimentation
- (d) It has been formulated using the precise language of mathematics

Answer: (b)

68. Read the following text : When a negatively charged rod is brought near an uncharged electroscope, (a) the electroscope leaves move further apart (b) both the electroscope leaves acquire similar charge (c) the negative charges pass on to the electroscope causing its leaves to move further apart Of the above three statements :

- (a) (a), (b) and (c) are inferences
- (b) (a) is an observation while (b) and (c) are inferences
- (c) (a) and (b) are observations and (c) is an inference
- (d) (a), (b) and (c) are observations

Answer: (b)

69. A box of mass 500 gm is lying on a horizontal table. Which of the following statements is true regarding the force(s) acting on it ? [$g=10 \text{ m/s}^2$]

- (a) An unbalanced force of 5 N acts on it in the upward direction
- (b) No force acts on it
- (c) An unbalanced force of 5 N acts on it in downward direction
- (d) A pair of balanced forces acts on it

Answer: (d)

70. Which of the following is NOT indicative of the hypothesising skill ?

- (a) Identifying variables for an experiment
- (b) Formulating questions which lead to inquiry
- (c) Attempting to explain observations or relationships in terms of some principle
- (d) Using the senses to gather information

Answer: (d)

71. Seed dispersal may be said to help the plant in all of the following except :

- (a) produce new varieties
- (b) over crowding
- (c) avoid competition for sunlight, water and minerals
- (d) invade new habitats

Answer: (b)

72. X is a device which is used to see around corners and is based on the principle of Y . X and Y respectively are :

- (a) Periscope, dispersion
- (b) Telescope, reflection
- (c) Kaleidoscope, refraction
- (d) Periscope, reflection

Answer: (d)

73. Match the substances in column A with their chemical names in column B. (A) (B) (a) Slaked lime (i) Calcium oxide (b) Table salt (ii) Sodium bicarbonate (c) Limestone (iii) Calcium carbonate (d) Caustic soda (iv) Calcium hydroxide (e) Quick lime (v) Sodium hydroxide (f) Baking soda (vi) Sodium chloride

(a) (a)-(iv), (b)-(v), (c)-(iii), (d)-(ii), (e)-(i), (f)-(vi)

(b) (a)-(iv), (b)-(vi), (c)-(iii), (d)-(v), (e)-(i), (f)-(ii)

(c) (a)-(vi), (b)-(ii), (c)-(v), (d)-(i), (e)-(iii), (f)-(iv)

(d) (a)-(i), (b)-(vi), (c)-(iii), (d)-(v), (e)-(ii), (f)-(iv)

Answer: (b)

75. Which of the following gases are responsible for acid rain ? (a) Nitrogen (b) Oxygen (c) Ozone (d) Sulphur dioxide (e) Nitric oxide

(a) (d) and (e)

(b) (a) and (b)

(c) (b) and (c)

(d) (c) and (d)

Answer: (a)

76. Read the following statements carefully and select the correct option. Assertion (A) : The stars in the night sky appear to move from east to west. Reason (R) : The earth rotates from west to east.

(a) (A) and (R) are both incorrect.

(b) (A) and (R) are both correct and (R) is the correct explanation for (A).

(c) (A) and (R) are both correct but (R) is not the correct explanation for (A).

(d) (A) is correct but (R) is incorrect.

Answer: (b)

77. Identify the set of micronutrients (nutrients required by plants in small quantities) :

(a) Zinc, Iron, Manganese

(b) Potassium, Magnesium, Copper

(c) Copper, Phosphorous, Calcium

(d) Sulphur, Aluminium, Chlorine

Answer: (a)

78. Read the following paragraph carefully and select the option which would correctly fill the blanks in the given order. Sound is produced by vibration and different musical instruments have specific vibrating parts. In a X the sound is produced by stretched strings, in a Y it is the stretched membrane that vibrates and in a Z the vibrating part that produces sound is the air column. X, Y and Z can respectively be :

(a) ektara, violin, piano

(b) sitar, harmonium, dholak

(c) dholak, ektara, mouth organ

(d) guitar, tabla, shehnai

Answer: (d)

79. A teacher, while teaching the chapter 'Body Movements' to class VI students shows the following images to her students : A sailing boat, swimming fish and a flying aeroplane. She then asks the students to reflect on the shape of the images and the manner of movement. Which of the following are likely to be employed by students in answering ? (a) Classifying (b) Observing (c) Inductive reasoning (d) Measuring

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

Answer: (c)

80. Identify the correct statements from the following : (a) Generally non-metals do not react with water. (b) Generally non-metals do not react with acids.

- (a) Neither (a) nor (b)
- (b) Only (a)
- (c) Only (b)
- (d) Both (a) and (b)

Answer: (d)

81. X and Y are thick, black liquids which can be used for metalling the roads. X is derived from petroleum and Y is derived from coal. Which of the following can X and Y respectively be ?

- (a) Coal Tar, Bitumen
- (b) Bitumen, Coal Tar
- (c) Coal Tar, Charcoal
- (d) Charcoal, Bitumen

Answer: (b)

82. Consider the test item given below and match the following :
Column - A Column - B
Unit of force Joule
Symbol of iron HCl
Formula of hydrochloric acid Ag
Unit of work Symbol of silver
Calorie Symbol of battery
Fe Newton
Which of the following is not a reason that can be given to justify that the item is poorly constructed ?

- (a) There is inconsistency among entries
- (b) For an entry in column A there are at the most two plausible entries in column B
- (c) There are unequal entries in column A and B
- (d) The matching pairs can be easily guessed

Answer: (c)

83. Read the following statements and select the correct option. Assertion (A) : Dried raisins when left in plain water for some time swell due to osmosis. Reason (R) : Plant cells have a selectively permeable cell membrane.

- (a) (A) is incorrect but (R) is correct.
- (b) (A) and (R) are both correct and (R) is the correct explanation for (A).
- (c) (A) and (R) are both correct but (R) is not the correct explanation for (A).
- (d) (A) is correct but (R) is incorrect.

Answer: (b)

84. A body has a linear momentum of p and a mass of m . The kinetic energy of the body is : p^2

- (a) pm
- (b) p^2m
- (c) $2p^2m$
- (d) $2m$

Answer: (d)

85. Which of the following statement(s) is correct ?

- (a) Fertilisers increase the number of friendly microbes in soil
- (b) Fertilisers are richer in specific nutrients as compared to manure
- (c) Fertilisers enhance the water holding capacity of the soil
- (d) Fertilisers provide a lot of humus to the soil

Answer: (b)

86. Read the following statements carefully and select the correct option. S1 : Rayon is a synthetic fibre. S2 : Rayon is made without using any natural raw material.

- (a) Both S1 and S2 are false
- (b) Both S1 and S2 are true
- (c) S1 is true and S2 is false
- (d) S1 is false and S2 is true

Answer: (c)

87. Which of the following is not desirable with respect to carrying out of a classroom demonstration by a teacher ?

- (a) Follow up the demonstration with discussion
- (b) Rehearse the demonstration before carrying it out in class
- (c) Emphasise beforehand the linkages that students are required to make
- (d) Supplement the demonstration with explanations

Answer: (c)

88. Which of the following best explains the statement 'science promotes scepticism' ?

- (a) Scientists are open-minded and willing to modify their ideas
- (b) Scientists judge the validity of a claim based on objective empirical evidence
- (c) Science is purely inductive in nature
- (d) Scientists do not trust the findings of other scientists

Answer: (b)

89. Which of the following statements regarding rusting of iron are true ? (a) It involves a chemical reaction between iron and oxygen. (b) It is an exothermic reaction. (c) It can take place at room temperature. (d) It is reversible reaction.

- (a) (a), (b) and (c)
- (b) (a), (b), (d)
- (c) (b) and (c)
- (d) (a) and (d)

Answer: (a)

90. Which of the following is a set of animals in which all show external fertilization ?

- (a) Frogs, fish, starfish
- (b) Hens, lizards, butterflies
- (c) Lizards, butterflies, frogs
- (d) Butterflies, frogs, fish

Answer: (a)

I Language I (English)

Passage — for questions 91–99

We were walking across the garden when my daughter spotted a cluster of familiar red flowers. She pulled me to one side and then, looking excitedly at me as though she had a secret to share, she pulled me down to her height and whispered in my ears. I shot up straight almost as soon as she had finished her sentence. With my mouth ajar, I was about to tell her that it was probably not a good idea to do so when I was transported to the time when I was around her age.

It had been a rather long day from school and I was dead tired. I was walking along the pathway that was lined with many ixora plants when my friend grabbed me by the arm. Before I could do anything, he gleefully plucked a single flower from the cluster and showed it to me. Unimpressed, I was not about to be swayed by a puny flower and was about to admonish him when he turned the flower upside down to show me a tiny almost invisible thread-like thing that protruded out from its stalk.

He pulled the faint yellowish thread and right at the end of it, a tiny drop of nectar appeared. At least, that was what I think it was, as it was really quite sweet. That day we raided the ixora plants. We really had a lot of fun. I could still taste the sweetness till today. My daughter's urgent tug brought me back to reality. I turned to my daughter and decided that she needed to know the joy of tasting sweet nectar from beautiful blooms.

91. 'to be transported in time' means _____

- (a) to take future decisions
- (b) travel backwards
- (c) to indulge in time travel
- (d) recollect memories of the past

Answer: (d)

94. From the given anecdote, one can assume that the 2 characters shared the relationship of :

- (a) grandmother and grand-child
- (b) best friends
- (c) mother and daughter
- (d) school-mates

Answer: (c)

95. Read the following sentences : (a) The writer is traumatised by the memories of her childhood. (b) The daughter's secret brings back nostalgic memories of the school days. (c) The writer wants her child to be connected to the sweet pleasures of nature.

- (a) (b) and (c) are correct, (a) is incorrect
- (b) (a) and (c) are correct, (b) is incorrect
- (c) (b) and (c) are incorrect, (a) is correct
- (d) (a) and (b) are correct, (c) is incorrect

Answer: (a)

96. In para 1, according to the mother it was not a good idea to :

- (a) walk along the pathway alone
- (b) taste sweet nectar from flowers
- (c) raid the ixora plants
- (d) walk in the garden the whole day long

Answer: (b)

97. Read the following sentences : Assertion (A) : The child was excited to share a secret with her mother. Reason (R) : The mother was in disbelief and went down memory lane.

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

Answer: (a)

98. Complete the word analogy : cluster : bunch :: many : ?.

- (a) long-stalked
- (b) delicate
- (c) colourful
- (d) prickly

Answer: (b)

99. 'To be dead tired' does not mean -

- (a) to feel refreshed
- (b) to feel too tired to walk
- (c) to be exhausted
- (d) to be completely exhausted

Answer: (a)

Passage — for questions 100–105

My tea is nearly ready and the sun has left the sky; Its time to take the window to see Leerie going by;
For every night at tea time and before you take your seat, With lantern and with ladder he comes
posting up the street. Now Tom would be a driver and Maria may go to the sea; And my papa's a
banker and as rich as he can be; But I, when I'm stronger and choose what I'm to do, O Leerie, I'll go
around at night and light the lamps with you For we are very lucky, with a lamp before the door; And
Leerie stops to light it as he lights so many more; And O ! Before you hurry by with ladder and with
light, O Leerie, see a little child and nod to him tonight !

100. Identify the rhyme scheme in lines 5 - 8.

- (a) aaba
- (b) abba
- (c) aabb
- (d) abab

Answer: (c)

101. The phrase, 'the sun has left the sky' indicates that -

- (a) it is evening time
- (b) it is morning
- (c) it is forenoon
- (d) it is afternoon

Answer: (a)

102. Why does the poet consider himself to be fortunate ?

- (a) He is strong and doesn't have to make a choice in life.
- (b) He has a rich banker father.
- (c) He doesn't have to light other peoples' lamps.
- (d) He has light at night by his door.

Answer: (d)

103. Read the following sentences : (a) The poet occasionally has a light outside his door. (b) The poet wants to be a banker like his father when he grows up. (c) The poet is fascinated by the lamp lighter's profession.

- (a) (a) and (b) are correct, (c) is incorrect
- (b) (a) and (c) are correct, (b) is incorrect
- (c) (b) and (c) are correct, (a) is incorrect
- (d) (a) and (b) are incorrect, (c) is correct

Answer: (d)

104. The poet looks at the lamp-lighter's profession with -

- (a) confusion
- (b) wonder
- (c) jealousy
- (d) curiosity

Answer: (b)

105. With reference to the poem, complete the word analogy : Leerie : lamplighter : : father : ? .

- (a) banker
- (b) rich businessman
- (c) driver
- (d) sailor

Answer: (a)

106. A teacher at the secondary stage gives a text/short story and asks them to read and discuss the meaning and ideas of the text from the point of view of power and justice. What does the teacher attempt to develop in the learners ?

- (a) Higher order language skills
- (b) Critical literacy skills
- (c) Critical pedagogy
- (d) Critical language development

Answer: (b)

107. What is 'interlingual identification' ?

- (a) Learner's understanding that learning of different languages warrants different abilities.
- (b) Learner's judgment that something in the native language and something in the target language are similar.
- (c) Learner's judgment that something in the native language and something in the target language are dissimilar.
- (d) Learner's judgment that the knowledge of the native language interferes in the learning of second language.

Answer: (b)

108. A language teacher tells a story in English and asks learners to work in group to tell the story in the languages known to them and then in the common language of the classroom. What is this pedagogical strategy known as ?

- (a) Language acquisition
- (b) Translanguaging
- (c) Multilingual policy
- (d) Multilanguage teaching

Answer: (b)

109. A teacher of Class VII conducts a pair work activity in which the pairs are given a story of ten sentences. One in the pair reads out the first sentences and the other in the pair writes that sentence. Then other in the pair read out second sentence and the first in the pair writes the second sentence. Likewise the pairs complete the whole story. Later they compare their writing with the original text given to them. What is this activity known as ?

- (a) Mutual Dictation
- (b) Mutual Writing
- (c) Mutual Listening
- (d) Sentence Dictation

Answer: (a)

110. A learner reads through the news item in the newspaper to know specific information. This reading is known as _____.

- (a) Study skill
- (b) Critical reading
- (c) Skimming
- (d) Scanning

Answer: (d)

111. Procedural knowledge in the teaching-learning grammar is _____.

- (a) knowing the language and its culture.
- (b) knowing how to do the grammatical item.
- (c) knowledge about the grammatical item.
- (d) knowing the rules of the grammatical item.

Answer: (b)

112. Shreya is a Class VI learner who moves from the Jalander in Punjab to Madurai in Tamil Nadu as her father has been transferred. She knows Punjabi as her mother tongue and English language she studies as her second language in school. She is able to speak and read Tamil learning from her neighbourhood. Which one of the following statements is true based on the languages she now knows ?

- (a) Her English comes under language acquisition and Punjabi and Tamil come under language learning.
- (b) Her Punjabi and Tamil come under language acquisition and English comes under language learning.
- (c) Her Tamil comes under language acquisition and English and Punjabi come under language learning.
- (d) All the three languages, Punjabi, Tamil and English under language learning.

Answer: (b)

113. Malayalam spoken by a particular community in Kozhikodi is slightly different from the Malayalam spoken by others in the same place. What is the Malayalam spoken by the particular community known as ?

- (a) They are two different languages
- (b) Two varieties of Malayalam
- (c) Regional dialect of Malayalam
- (d) Social dialect of Malayalam

Answer: (d)

114. Which one of the following is true of the three language formula ?

- (a) Mother tongue/home language/English as the first language.
- (b) Mother tongue/home language/regional language as the first language.
- (c) English/Hindi/home language/local language as the first language.
- (d) Mother tongue/home language/Hindi as the first language.

Answer: (b)

115. Following learning task was given to learners in different groups. Find out what is this vocabulary learning activity known as. Find words and phrases which relate to the following words.

- (a) Word Web
- (b) Thematic Vocabulary
- (c) Word clusters
- (d) Cluster Vocabulary

Answer: (b)

116. A method of teaching in which a teacher and four students form a collaborative learning group with different roles. Dialogues occur on the content of the text passage, which creates a zone of proximal development in which reading comprehension improves. This method is referred to as :

- (a) Model Reading
- (b) Grammar Translation Method
- (c) Reciprocal Teaching
- (d) Structural Approach

Answer: (c)

117. The language we use for day-to-day, face-to-face interaction is known as :

- (a) Interpersonal language proficiency
- (b) Cognitive Academic Language Proficiency (CALP)
- (c) Basic Interpersonal Communication Skills (BICS)
- (d) Communicative language skills

Answer: (c)

118. Remedial teaching is for :

- (a) learners and teachers to enhance the score in the examination in language paper.
- (b) learners who need attention on certain aspects of language learning.
- (c) teachers who need to modify their teaching for certain student to learn the language.
- (d) learners and teachers to understand and modify/improve their teaching/learning strategies.

Answer: (d)

119. Which of the following is NOT true of Sign Language ?

- (a) Sign language has a grammar.
- (b) Sign language has many varieties.
- (c) Sign language is a natural language.
- (d) Sign language does not have a grammar.

Answer: (d)

120. Which of the following is NOT the purpose of extensive reading ?

- (a) Reading for pleasure
- (b) Reading for appreciation
- (c) Reading for extrapolation
- (d) Reading for learning grammar

Answer: (d)

Language II (English)

Passage — for questions 121–128

The loss in earnings that farmers see due to extreme weather events or erratic seasonality is, by now, accepted as the most widely felt economic impact of climate change. Farmers were the first people to feel the impacts of climate change, which ultimately affects the country's overall agricultural output and adds to food inflation. High food prices, in turn, could result in people slashing down consumption, which adversely impacts nutritional security.

A significant number of farming households produce food for their own consumption. These households have given birth to an old saying : those who eat their own food are the healthiest. In countries like India, where malnutrition is high and food insecurity is a nagging constant, such households have used the home production system to remain out of this crisis. As studies point out, these households are also protected from market fluctuations, thus ensuring that they can afford healthy food. Obviously, they are not impacted by food inflation either.

But there are serious conversations taking place over how climate change-induced extreme weather events would impact such households. We need to understand the link between nutrition intake and household food production, and whether weather fluctuations would have any impact on this. Researchers have analysed village level data from households with their own food production and consumption, and co-related this with the local weather conditions to infer whether there was a correlation. The paper establishes that people growing their own food consume more, thus adding to nutrition levels and attaining overall food security. There was also reduction in child stunting and underweight conditions as well as women achieving a normal body mass index. These trends are more pronounced in remote villages.

121. Some households have remained out of the crisis food insecurity by adopting -

- (a) home production systems
- (b) high food prices
- (c) climate change conditions
- (d) protection from extreme weather conditions.

Answer: (a)

123. As mentioned in para 1, what is the series of events that are triggered by climate change ? (a) increase in prices of food items (b) detrimental effect on nutritional security (c) extreme weather conditions (d) reduced food consumption

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

Answer: (c)

124. Read the following sentences : (a) A significant number of Indian households afford healthy food. (b) Household food production has limited impact on food inflation. (c) Food insecurity is an occasional phenomenon in India.

- (a) (b) and (c) are incorrect, (a) is correct
- (b) (a), (b) and (c) are all incorrect
- (c) (a) and (c) are incorrect, (b) is correct
- (d) (a) and (b) are incorrect, (c) is correct

Answer: (a)

126. Complete the given word analogy : local : global :: erratic : ? .

- (a) dependable
- (b) believable
- (c) consistent
- (d) disputable

Answer: (c)

127. What is correct about the health status of farmers who take to household food production ?

- (a) women with higher body mass index
- (b) children are malnourished
- (c) better nutritional intake
- (d) stunted growth of children

Answer: (c)

128. Which statement is incorrect with regard to household food production ?

- (a) Increase in number of malnourished children
- (b) Nutritional intake was better
- (c) Food consumption in such households was higher
- (d) Women enjoyed normal body mass index

Answer: (a)

Passage — for questions 129–135

Untouchable, a charming French comedy about two friends who have almost nothing in common, has been a huge international success. But before the story became a cinematic sensation, how exactly did a rich French aristocrat and an Algerian immigrant with a criminal past become good friends ? Philip and Abdul first met in Paris in 1993 when Philip was looking for a nurse. He was from a very wealthy family. At one time he had been a successful business man, living a life of great luxury. Then he had a terrible paragliding accident and lost the use of his arms and legs. Life in a wheelchair was lonely and boring. Philip was struggling to imagine the future, and he needed practical help with his day-to-day life.

Philip interviewed more than 80 people for the job of a nurse. But none of them seemed right. Then he met Abdul, who had quit a life of crime in Algeria and moved to France to look for work. He was lively, intelligent and quick-thinking, with a crazy sense of humour. Philip got on with Abdul immediately, and he offered him the job. The two men didn't have much in common. Abdul loved pop music, but Philip preferred classical music. Philip loved modern art, but Abdul hated it. Philip's family was sure that he had made a bad choice. They believed that Philip needed someone much more sensible. Meanwhile, Abdul wasn't planning on staying in the job for long.

However, their working relationship quickly developed into a close friendship. Abdul gave Philip the support he needed. More importantly, his energy and sense of humour brought fun and excitement back into Philip's life. Abdul helped Philip make trips to other countries. Both of them now live in different countries, each with a wife and family. They keep in touch regularly. All that really matters to their friendship, though, is their shared love of laughter and adventure.

129. Complete the given word analogy : Luxury : opulence :: sensation : ? .

- (a) suspicion
- (b) disaster
- (c) callousness
- (d) feeling

Answer: (d)

130. What bound the two very different men together for years ?

- (a) their immigration status
- (b) their love for adventure sports
- (c) warm friendship
- (d) love for music

Answer: (c)

131. Why did Philip need a nurse ?

- (a) To resolve Abdul's immigration status.
- (b) To wipe out Abdul's criminal past.
- (c) To help him with day-to-day practical things of life.
- (d) To listen to classical music together.

Answer: (c)

133. Read the sentences given below : (a) 'Untouchable' is a French comedy movie. (b) The theme revolves around 2 friends, Philip and Abdul, who have similar tastes. (c) The movie was a huge success in France and Algeria.

- (a) (a) and (b) are correct, (c) is incorrect
- (b) (a), (b) and (c) are all incorrect
- (c) (a) and (c) are correct, (b) is incorrect
- (d) (b) and (c) are incorrect, (a) is correct

Answer: (d)

134. Which aspect of Abdul's personality is not true ?

- (a) He preferred listening to classical music.
- (b) He had a criminal past record.
- (c) He was quick-witted and supportive.
- (d) He shared a close rapport with his employer.

Answer: (a)

135. Abdul migrated to France to -

- (a) search for employment
- (b) work in the movie industry
- (c) run away from the Algerian police
- (d) listen to pop music

Answer: (a)

136. Which of the following processes involved for learning to write well in a language ?

- (a) Braining storming – jotting down points – making an outline – writing the draft – editing – finalising.
- (b) Braining storming – making an outline – drafting – jotting down points – editing – finalizing.
- (c) Braining storming – jotting down points – writing the draft – making an outline – editing – finalising.
- (d) Braining storming – jotting down points – writing the draft – editing – making an outline – finalizing.

Answer: (a)

137. Which one of the following is true of the three language formula ?

- (a) All children begin their schooling in their mother tongue/home language and move on to add at least two more languages by the time they complete their high school.
- (b) All children begin their schooling in the medium of English/home language and move on to add at least two more languages by the time they complete their high school.
- (c) All children begin their schooling in their state language and move on to add at least two more languages by the time they complete their high school.
- (d) All children begin their schooling in the official language, Hindi and move on to add at least two more languages by the time they complete their high school.

Answer: (a)

138. Declarative knowledge is _____

- (a) knowing how to do the grammatical item.
- (b) knowing to pronounce word in a language.
- (c) knowledge about the grammatical item.
- (d) knowing how to identify an error in a grammatical item.

Answer: (c)

139. Learners in a class of Social Science try to capture the main ideas of the classroom lecture and make point of the lecture. What is this skill known as ?

- (a) Cognitive skill
- (b) Study skill
- (c) Listening skill
- (d) Writing skill

Answer: (b)

140. Learning Outcomes attempt to enable learner to :

- (a) attain language components in measurable terms.
- (b) attain the grammatical knowledge in measurable terms.
- (c) attain the competencies in measurable terms.
- (d) attain minimum levels of learning of all skills.

Answer: (c)

141. A teacher in class VIII read out a text of five sentences in English twice and asked her learners to listen to the text carefully. Then she asked them to work in group of four to recreate text nearer to the one read out, not exactly the same. What is this activity known as ?

- (a) Listening task
- (b) Writing task
- (c) Paragraph Dictation
- (d) Collective Dictation

Answer: —

142. Elam is a student of class VII is able to speak four languages, Kannada, Marathi, Hindi and English. He uses all the four languages freely when he speaks to his parents at home and in school he uses Hindi, Kannada and English as these are the language known to his friends and teachers. What is this practice known as ?

- (a) Interlanguage
- (b) Translingual ability
- (c) Code-meshing
- (d) Code-moving

Answer: (b)

143. Which of the following methods advocates oral drilling and 'mastery of the formal properties of language' as essential for language learning ?

- (a) Total Physical Response
- (b) Audiolingualism
- (c) Communicative language teaching
- (d) Grammar translation method

Answer: (b)

144. A teacher of class VI brought items like spoon, plate, utensils, boxes and pan to her classroom to teach vocabulary from there writing a description of objects in kitchen. What are these objects known as in language teaching ?

- (a) Real life tasks
- (b) Teaching materials
- (c) Realia
- (d) Cooking items

Answer: (c)

145. Which of the following is NOT true of National Education Policy 2020 on language education ?

- (a) Study of English as language under three language formula.
- (b) Study of a classical language under three language formula.
- (c) Study of mother tongue/home language under three language formula.
- (d) Study of Indian languages under three language formula.

Answer: (b)

146. Here is a question. Read and find out which typology of question it belongs to. Having read the story of the little girl, you feel moved by her suffering and courage to face the trouble. You would write a letter to the little girl appreciating her. Write the letter in about 120 words.

- (a) Discursive question
- (b) Expressive questions
- (c) Long answer question
- (d) Extrapolative question

Answer: (d)

147. Here is a situation where students were exposed to the opposite perspective of the subject under consideration to allow them to further understand it. What does this process attempt to promote among learners ?

- (a) Literacy development
- (b) Critical analysis
- (c) Process based pedagogy
- (d) Critical Literacy

Answer: (d)

148. What is 'Translanguaging' ?

- (a) It is language-in-education policy on how many languages are to be taught in a school.
- (b) It refers to moving from one language to another language while teaching-learning languages.
- (c) It refers to understanding how languages change over the period of time.
- (d) It is a pedagogical process of using more than one language as resources in a classroom.

Answer: (d)

149. Which one of the following statements is true of language learning ?

- (a) First language learning and second language are completely distinct.
- (b) Knowledge of the native/first language interferes in the learning of second language.
- (c) Knowledge of the native/first language has nothing to do in the learning of second language.
- (d) Knowledge of the native/first language supports in the learning of second language.

Answer: (d)

150. This refers to the proficiency in academic language or language needed for various content areas.

- (a) Cognitive Academic Language Proficiency (CALP)
- (b) Inter-language proficiency
- (c) Basic Interpersonal Communication Skills (BICS)
- (d) Communicative language proficiency

Answer: (a)

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

Mathematics and Science

31	(c)	32	(d)	35	(c)	37	(b)	38	(d)	39	(c)	41	(d)	43	(d)
44	(b)	45	(a)	46	(d)	51	(b)	53	(d)	54	(c)	55	(d)	58	(d)
59	(c)	60	(d)	61	(c)	62	(b)	63	(b)	64	(c)	65	(a)	66	—
67	(b)	68	(b)	69	(d)	70	(d)	71	(b)	72	(d)	73	(b)	75	(a)
76	(b)	77	(a)	78	(d)	79	(c)	80	(d)	81	(b)	82	(c)	83	(b)
84	(d)	85	(b)	86	(c)	87	(c)	88	(b)	89	(a)	90	(a)		

Language I (English)

91	(d)	94	(c)	95	(a)	96	(b)	97	(a)	98	(b)	99	(a)	100	(c)
101	(a)	102	(d)	103	(d)	104	(b)	105	(a)	106	(b)	107	(b)	108	(b)
109	(a)	110	(d)	111	(b)	112	(b)	113	(d)	114	(b)	115	(b)	116	(c)
117	(c)	118	(d)	119	(d)	120	(d)								

Language II (English)

121	(a)	123	(c)	124	(a)	126	(c)	127	(c)	128	(a)	129	(d)	130	(c)
131	(c)	133	(d)	134	(a)	135	(a)	136	(a)	137	(a)	138	(c)	139	(b)
140	(c)	141	—	142	(b)	143	(b)	144	(c)	145	(b)	146	(d)	147	(d)
148	(d)	149	(d)	150	(a)										