



Class – IX

School Integrated Program

ENTRANCE TEST CUM SCHOLARSHIP TEST

[Time: 2 Hours]

[Max Marks: 400]

A. General:

1. This booklet is a Question Paper containing 100 questions.
2. Blank Papers, Clipboards, Log Tables, slide rules, calculators, cellular phones, pagers and electronic gadgets in any form are not allowed to be carried inside the examination hall.
3. The answer sheet, a machine-readable optical mark recognition sheet (OMR Sheet), is provided separately.
4. DO NOT TAMPER WITH THE OMR OR THE BOOKLET.
5. Please fill your roll number correctly in the OMR sheet (answer sheet).
6. Both Question Paper and OMR Answer Sheet will be submitted after completion of this examination.

B. Question Paper Format and marking scheme:

1. The Question Paper consists of five parts (Part I: MAT, Part II: Physics, Part III: Chemistry, Part IV: Biology, Part V: Mathematics).
2. Each Question carries +4 marks for correct answer and -1 mark for incorrect answer.

MAT

Direction (Q.1-3): What will come in place of question mark in the following series?

1. 63,58,51,40,27, ?
(a) 8 (b) 12 (c) 10 (d) 14
2. 3,4,8,17,33,58, ?
(a) 76 (b) 94 (c) 84 (d) 98
3. 8,48,16,96,32, ?
(a) 192 (b) 150 (c) 58 (d) 288

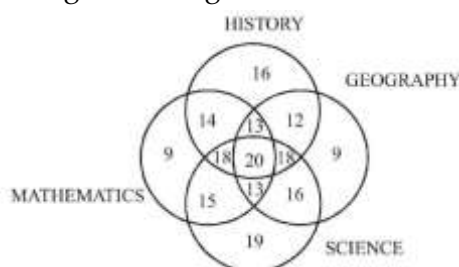
Direction (Q.4-5): In each of the following questions, four terms/words have been given, out of which three are alike in some manner and one is different. Choose the odd one out.

4. (a) Broad: Wide (b) Light: Heavy
(c) Tiny : Small (d) Big : Large
5. (a) BDYW (b) CEXZ (c) DFYW (d) EGXV
6. If in a certain code, HAT is 782, RABBIT is 681192 . Then how will HABIT be coded as ?
(a) 78139 (b) 78192 (c) 68192 (d) 78129
7. If REASON is coded as 5 , BELIEVED as 7 , what is the code number of GOVERNMENT?
(a) 6 (b) 8 (c) 9 (d) 10

Direction (Q.8-9): Read the following information carefully to answer the questions.

- (i) 'A\$B' means 'A' is mother of 'B'
 - (ii) 'A # B' means 'A' is father of 'B'
 - (iii) 'A @ B' Means 'A' is husband of 'B'
 - (iv) 'A%B' means 'A' is daughter of 'B'
8. P@Q\$M# T indicates what relationship of P with T
(a) Paternal grandmother (b) Maternal grandmother
(c) Paternal grandfather (d) Maternal grandfather
 9. Which of the following expressions indicates 'R is the sister of H' ?
(a) H \$ D @ F # R (b) R%D@ F\$H
(c) R\$D@F#H (d) H%D@F\$R
 10. Deepak said to Nitin, " That boy playing football is the younger of the two brothers of the daughter of my father's wife "How is the boy playing football related to Deepak ?
(a) Son (b) Brother (c) Cousin (d) Niece
 11. If $\times$ means $-$, $+$ means $\div$, $-$ means $\times$ and $\div$ means $+$ then $15 - 2 \div 900 + 90 \times 100 = ?$
(a) 190 (b) 180 (c) 90 (d) -60
 12. One morning after sunrise, Gopal was facing a pole. The shadow of the pole fell exactly to his right. Which direction was he facing?
(a) South (b) East
(c) West (d) Data inadequate

Direction (Q.13-14): Refer to the following Venn diagram

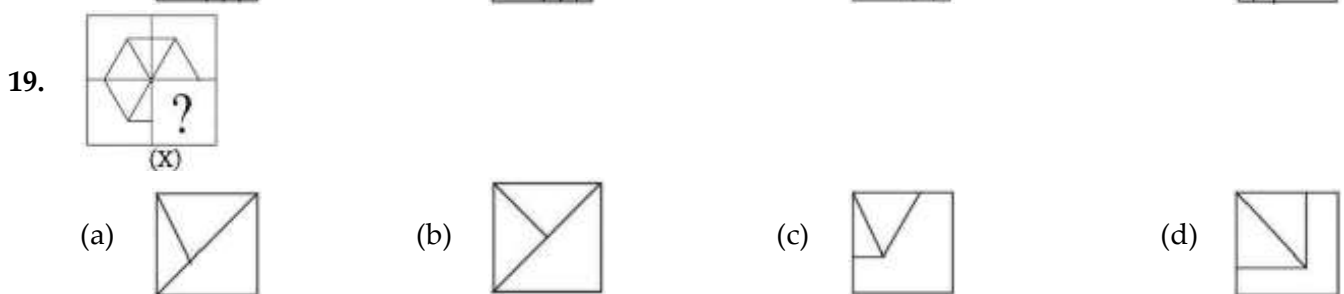
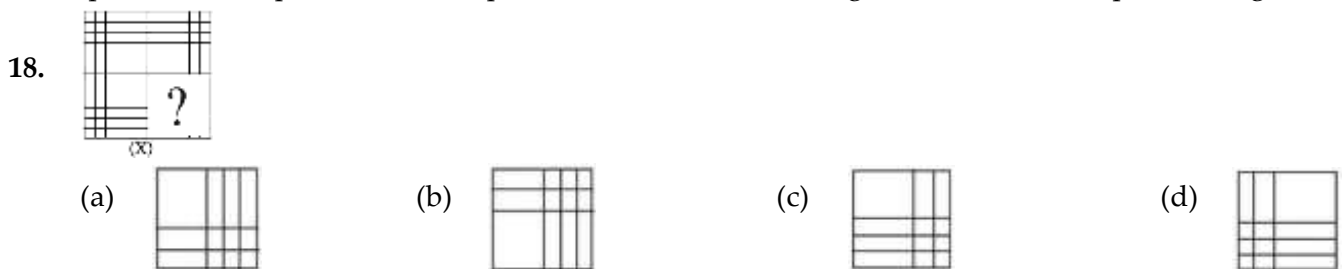


13. The number of students who took any three of the above subjects was
 (a) 62 (b) 63 (c) 64 (d) 66
14. Which subject was taken by the largest number of students?
 (a) Mathematics (b) Science (c) Geography (d) History
15. Choose the correct alternative that represents the relationship among illiterates, poor people and unemployed.

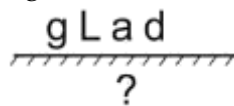


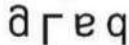
16. Monday falls on 4th April, 1998. What was the day on 3rd November, 1987 ?
 (a) Monday (b) Sunday
 (c) Tuesday (d) Wednesday
17. When the time is 4.20 , the angle between the hands of the clock is –
 (a) 20° (b) 15° (c) $12\frac{1}{2}^\circ$ (d) 10°

Direction (Q.18-19): In each of the following questions, select a figure from the four alternatives, which when placed in the space where the question mark is shown in figure (X) would complete the figure.

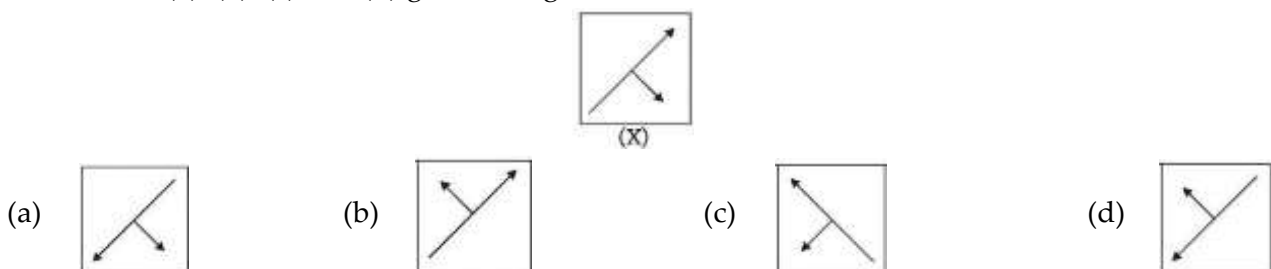


20. Find the correct option for the water image for the following question.

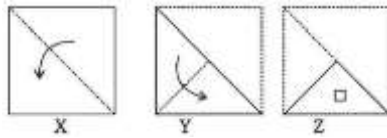


- (a)  (b)  (c)  (d) 

21. In the following question, choose the correct mirror-image of the Fig. (X) from amongst the four alternatives (a), (b), (c) and (d) given along with it.



22. Consider the three figures, marked X, Y, and Z showing one fold in X , another in Y and the cut in Z. From amongst the four alternative figures (a), (b), (c) and (d) select the one showing the unfolded position of Z.



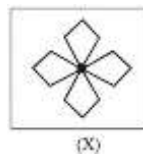
- (a) (b) (c) (d)

23. Consider the three figures, marked X, Y, and Z showing one fold in X , another in Y and the cut in Z. From amongst the four alternative figures (a), (b), (c) and (d), select the one showing the unfolded position of Z.



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

24. Find amongst the four alternatives (a), (b), (c) and (d), the figure which most nearly contains the figure (X) (Rotation is allowed).



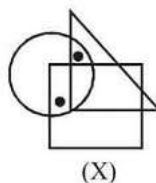
- (a) (b) (c) (d)

25. Find amongst the four alternatives (a), (b), (c) and (d), the figure which most nearly contains the figure (X).



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

26. In the following question, there is a diagram marked (X), with one or more dots placed in it. The diagram is followed by four other figures, marked (a), (b), (c) and (d) only one of which is such as to make possible the placement of the alternative in each these.



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

27. In the following question, two statements are given followed by four conclusions numbered I, II, III & IV. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts & then decide which of the following conclusions logically follows from the given statements disregarding commonly known facts.

Statements: Some bottles are drinks. All drinks are cups.

Conclusions:

- | | |
|-----------------------------|--------------------------|
| I. Some bottles are cups | II. Some cups are drinks |
| III. All drinks are bottles | IV. All cups are drinks. |
| (a) Only I & II follow | (b) Only II & III follow |
| (c) Only II & IV follow | (d) Only III & IV follow |

Direction (Q.28-30): A number arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of arrangement:

Input, 27, 213, 309, 43, 89, 159, 275

Step I, 27, 213, 309, 159, 43, 89, 275

Step II, 27, 213, 89, 159, 309, 43, 275

Step III, 27, 309, 89, 159, 213, 43, 275

Step IV, 27, 43, 89, 159, 213, 309, 275

Step V, 27, 43, 89, 159, 213, 275, 309

This is the final arrangement and Step V is the last step for this input.

28. How many steps will be required to get the final output from the following input?

Input: 39, 149, 407, 79, 315, 217, 195

- (a) 5 (b) 6 (c) 7 (d) 8

29. What will be the fourth step for the following input?

Input: 312, 49, 215, 413, 187, 297, 132

- | | |
|--------------------------------|--------------------------------|
| (a) 312,49,187,215,297,413,132 | (b) 312,132,187,215,297,49,413 |
| (c) 312,49,187,215,413,297,132 | (d) 49,132,187,215,297,312,413 |

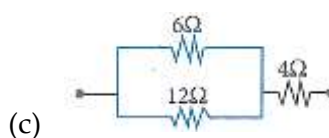
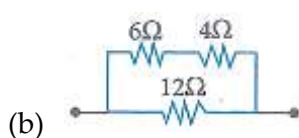
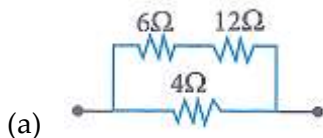
30. If following is the second step for an input, what will be the fifth step?

Step II: 439, 167, 297, 317, 517, 487, 132

- | | |
|---------------------------------|---------------------------------|
| (a) 167,517,297,317,439,487,132 | (b) 517,167,297,317,439,487,132 |
| (c) 132,167,297,317,439,487,517 | (d) Can't be determined |

PHYSICS

31. You are provided three resistances 4Ω , 6Ω , and 12Ω . How will you connect them so as to obtain the equivalent resistance of 8Ω ?

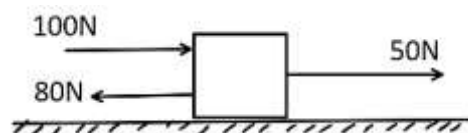


(d) None of these

32. Three forces which are generally acting on an inflated balloon moving in upward direction in earth atmosphere

- | | |
|--|-------------------------------------|
| (a) Gravity, Electrostatic force, Magnetic force | (b) Gravity, Air friction, Buoyancy |
| (c) Gravity, Buoyancy, Magnetic force | (d) None of these |

33. The material of heating element in an electric press has
- High melting point and high specific resistance
 - High melting point and low specific resistance
 - Low melting point and high specific resistance
 - Low melting point and high specific resistance
34. A neutral body gets charged when it is brought into contact with a charged body. This method of charging a body is called
- Charging by conduction
 - Charging by friction
 - Charging by induction
 - None of the above
35. A 3 N horizontal force and 4 N horizontal force is acting on an object, but their directions are not given. What is the possible range for the magnitude F of the net force acting on the object?
- $3\text{ N} \leq F \leq 2\text{ N}$
 - $0.5\text{ N} \leq F \leq 4\text{ N}$
 - $4\text{ N} \leq F \leq 2\text{ N}$
 - $1\text{ N} \leq F \leq 7\text{ N}$
36. In an electrical circuit, a fuse wire should be placed in the path of ____ wire.
- Neutral
 - Phase (live)
 - Earth (ground)
 - None of these
37. Which electric lighting device offer both: longevity and the lowest electricity consumption?
- Incandescent bulb
 - CFL
 - LED
 - Tube light
38. If the following forces are acting on the particle in a same plane as shown in figure. find out the net force acting on the particle.



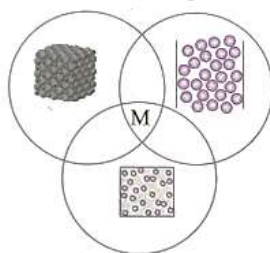
- 50 N towards right
 - 70 N towards right
 - 130 N towards left
 - 70 N towards left
39. Which of the statement is wrong?
- like charges repel each other
 - unlike charges attract each other
 - Charged body can attract on uncharged body
 - Charged body can repel on uncharged body
40. Which of these circuits provides the most brightness from the bulb(s)?
- A simple circuit with one bulb and one cell
 - A simple circuit with one bulb and two cell
 - A simple circuit with two bulb and two cell
 - A simple circuit with two bulb and two cell
41. Rahul has studied the following physical quantities in his VIIIth class. His teacher asked him to separate the vector quantities out the following quantities given below. Choose the correct answer. Momentum, Velocity, distance, displacement, speed, temperature, acceleration.
- Momentum, Velocity, distance, acceleration
 - Momentum, Velocity, displacement, acceleration
 - Velocity, displacement, temperature, acceleration
 - Displacement, speed, temperature, acceleration

42. *A* and *B* are two objects with mass 60 kg and 90 kg respectively. Then
- (a) *A* has more inertia than *B* (b) *B* has more inertia than *A*
(c) *A* and *B* both have same inertia (d) None of these
43. What materials are used to make an electromagnet? A coil of ___ copper wire is wrapped around a core of ___ .
- (a) Insulated, soft iron (b) Aluminium, insulated
(c) Soft iron, uncovered (d) Magnet, uncovered
44. If a car is moving with the speed of 20 m/s covered 144 km and then with 10 m/s covered 72 km. find out the average speed of the car.
- (a) 72 km/hr (b) 81 km/hr (c) 54 km/hr (d) none of these
45. The force exerted by our muscles is called _____ and it is also called _____ force.
- (a) Muscular, noncontact (b) Muscular, contact
(c) Gravitational, contact (d) None of these

CHEMISTRY

46. On heating strongly, the iron and sulphur mixture does not attract a magnet. What conclusion can be drawn?
- (a) Iron lost its magnetic property due to a physical change.
(b) A new substance with different properties has formed.
(c) Sulphur became magnetic.
(d) The test was performed incorrectly.
47. The solubility of gases in liquids generally
- (a) Increases with rise in temperature (b) Decreases with rise in temperature
(c) Remains constant with rise in temperature (d) None of these
48. A scientist finds a mineral that conducts electricity and has lustre. What can be inferred?
- (a) It must be a non-metal.
(b) It is likely an element such as gold or copper.
(c) It is definitely a compound.
(d) It must be an alloy.
49. A sample contains iodine and sodium chloride. Which method will give the most accurate separation?
- (a) Magnetic separation (b) Sublimation
(c) Fractional distillation (d) Solvent extraction
50. Consider the mixture "smoke in air". This is best classified as
- (a) Homogeneous mixture (b) Heterogeneous mixture
(c) Pure substance (d) Compound
51. Which of the following statements is incorrect regarding homogeneous mixtures?
- (a) Their composition is uniform throughout.
(b) The different parts cannot be separately identified by the naked eye.
(c) They always settle into phases over time
(d) They may require more advance separation methods than simple filtration.
52. Which of the following is not a pure substance?
- (a) Distilled water (H_2O) (b) Oxygen gas (O_2)
(c) Sodium chloride (NaCl) (d) Bronze

53. The random motion of microscopic particles suspended in a fluid is known as
- Diffusion
 - Brownian motion
 - Osmosis
 - Evaporation.
54. Why does sugar seem to "disappear" when dissolved in water, even though the water tastes sweet?
- Water removes the taste of sugar molecules.
 - Sugar turns into water when stirred.
 - Sugar breaks down into tiny particles that spread evenly and occupy the spaces between water particles.
 - Sugar floats to the top and becomes invisible.
55. Identify the incorrect pair from the following.
- Carbon dioxide - CO_2
 - Sodium chloride - NaCl
 - Oxygen - O_2
 - Hydrogen - H
56. Look at the Venn diagram given below:



Which of the following can be placed in 'M'?

- Jelly
 - Dry ice
 - Sugar
 - Water
57. The relative density of aluminium is 2.7. It means aluminium is
- 2.7 times heavier than iron
 - 2.7 times denser than water
 - 2.7 g/m^3
 - 2.7 g aluminium dissolves in 100 g water.
58. What happens to the density of a substance when it is heated?
- Increases
 - Decreases
 - Remains the same
 - First increases, then decreases
59. If a solid has a mass of 200 g and a volume of 50 cm^3 , what is its density?
- 2 g/cm^3
 - 4 g/cm^3
 - 6 g/cm^3
 - 8 g/cm^3
60. Soda water is a solution of
- Carbon dioxide in water
 - Water in carbon dioxide
 - Sugar in water
 - Air in water.

BIOLOGY

61. A student views a cell under a microscope and notices a large central vacuole, a distinct cell wall, but no chloroplasts. Which of the following could this cell belong to?
- An animal skin cell
 - A plant root cell
 - A photosynthetic leaf cell
 - A bacterial cell
62. Which of the following structures is present in plant cells but completely absent in animal cells?
- Cell membrane
 - Cytoplasm
 - Cell wall
 - Nucleus
63. Which organelle contains digestive enzymes capable of breaking down worn-out cellular components, often referred to as the 'suicide bags' of the cell?
- Golgi apparatus
 - Lysosome
 - Ribosome
 - Endoplasmic reticulum

64. Which bacteria are primarily responsible for turning milk into curd?
- (a) Rhizobium
 - (b) Lactobacillus
 - (c) Vibrio cholerae
 - (d) Salmonella
65. Why is yeast extensively used in the baking industry to make bread and cakes rise?
- (a) It consumes oxygen and produces moisture.
 - (b) It undergoes fermentation, releasing carbon dioxide gas.
 - (c) It produces heat that bakes the dough from the inside.
 - (d) It creates a protective layer that traps air outside.
66. Penicillin, the world's first effective antibiotic, was discovered from which group of microorganisms?
- (a) Protozoa
 - (b) Fungi
 - (c) Algae
 - (d) Bacteria
67. Diseases that can easily spread from an infected person to a healthy person through air, water, food, or physical contact are known as:
- (a) Deficiency diseases
 - (b) Communicable diseases
 - (c) Genetic disorders
 - (d) Chronic diseases
68. Vaccination helps the human body develop immunity against a specific disease. How does a vaccine primarily protect us?
- (a) It kills harmful bacteria instantly upon injection.
 - (b) It introduces weak or dead pathogens to trigger antibody production.
 - (c) It supplies the body with heavy doses of artificial vitamins.
 - (d) It forms a physical barrier around healthy cells.
69. Anaemia is a condition where the blood lacks enough healthy red blood cells to carry sufficient oxygen to the body's tissues. Which dietary mineral deficiency directly causes this?
- (a) Calcium
 - (b) Iodine
 - (c) Iron
 - (d) Phosphorus
70. What is the ultimate primary source of energy for almost all ecosystems on Earth?
- (a) Fossil fuels
 - (b) The Sun
 - (c) Geothermal heat
 - (d) Wind
71. Organisms like fungi and bacteria that break down dead plant and animal matter are called:
- (a) Producers
 - (b) Herbivores
 - (c) Decomposers
 - (d) Predators
72. If all the top predators (like lions and wolves) are completely removed from a forest ecosystem, what is the most likely long-term consequence?
- (a) The forest plants will grow rapidly and thrive.
 - (b) Herbivore populations will explode, overgraze, and ruin the vegetation.
 - (c) Decomposers will stop working due to a lack of organic waste.
 - (d) Other animals will automatically change their diets to become predators.
73. Which gas is the most abundant in Earth's atmosphere, making up about 78% of it?
- (a) Oxygen
 - (b) Carbon dioxide
 - (c) Nitrogen
 - (d) Hydrogen
74. The global zone of the Earth where land, water, and air interact to support life is called the:
- (a) Lithosphere
 - (b) Hydrosphere
 - (c) Atmosphere
 - (d) Biosphere

75. Which protective gaseous layer in the stratosphere shields life on Earth from harmful ultraviolet (UV) radiation?
- (a) Ozone layer (b) Ionosphere
(c) Methane blanket (d) Exosphere

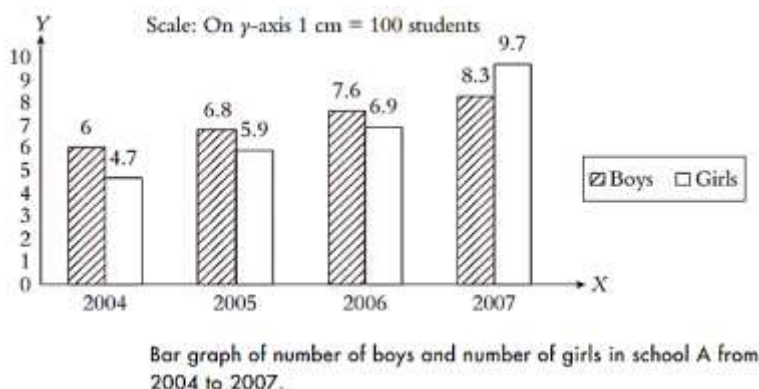
MATHEMATICS

76. What is the digit in the tens place in the product of the first 35 even natural numbers?
- (a) 6 (b) 2 (c) 0 (d) 5
77. In a proportion $a : b :: c : d$, which of the following mathematical relations is true?
- (a) $a + d = b + c$ (b) $a \times b = c \times d$ (c) $a \times d = b \times c$ (d) $a - d = b - c$
78. If the three angles of a triangle are in the ratio 2:3:4, the measure of the largest angle is:
- (a) 40° (b) 60° (c) 80° (d) 100°
79. $\sqrt[3]{\frac{-a^6 \times b^3 \times c^{21}}{c^9 \times a^{12}}} =$
- (a) $\frac{-bc^3}{a^2}$ (b) $\frac{bc^4}{a^2}$ (c) $\frac{-ab^4}{c^2}$ (d) $\frac{-bc^4}{a^2}$
80. $[(8^\circ - 7^\circ)(8^\circ + 7^\circ)]^{0^{78}} =$
- (a) 1 (b) 0 (c) Not defined (d) 2
81. If $a^2 + \frac{1}{a^2} = 27$, then the value of $a - \frac{1}{a}$ is
- (a) ± 5 (b) ± 6 (c) ± 7 (d) ± 8
82. The value of

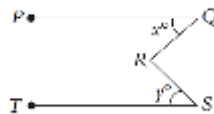
$$\sqrt{1\frac{1}{2} - \left[1\frac{1}{2} - 1\frac{1}{2} + \left(1\frac{1}{2} - \left(1\frac{1}{2} - 1\frac{1}{2}\right)\right)\right]}$$

- (a) 0 (b) $\frac{1}{4}$ (c) $\frac{1}{16}$ (d) $1\frac{1}{5}$
83. In the five-digit number $1b6a3$, a is the greatest single digit perfect cube and twice of it exceeds b by 7. Then the sum of the number and its cube root is ____.
- (a) 25320 (b) 18700 (c) 19710 (d) None of these
84. Solve : $\frac{x^{a(b-c)}}{x^{b(a-c)}} \div \left(\frac{x^b}{x^a}\right)^c = ?$
- (a) 0 (b) 1 (c) x (d) x^{ab}
85. The range of x , 14, 17, 23, 26, and 46 is 33. Which of the following can be the value of ?
- (a) 13 (b) 47 (c) 48 (d) 26

Direction (Q. 86-90): These questions are based on the following data. Read the following bar graph and answer the questions.



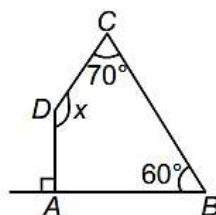
86. In which year the difference between the number of boys and the number of girls is more?
 (a) 2004 (b) 2005 (c) 2006 (d) 2007
87. Total number of students in the year 2005 is.
 (a) 1160 (b) 1270 (c) 1380 (d) 1490
88. Find the minimum difference between the number of boys and girls in any year in the given period.
 (a) 90 (b) 70 (c) 50 (d) 30
89. In which year the number of girls is more than the number of boys?
 (a) 2004 (b) 2005 (c) 2006 (d) 2007
90. Find the ratio between the number of students in the year 2006 and in 2007.
 (a) 107:145 (b) 127:145 (c) 29:36 (d) 107:127
91. In the figure below (not to scale), $\overline{PQ} \parallel \overline{TS}$, reflex $\angle QRS = 300^\circ$, and $x - y = 30^\circ$. The measure of y will be_____.



- (a) 25° (b) 15° (c) 20° (d) 30°
92. In a triangle ABC , if $\angle A > \angle B > \angle C$ and the measures of $\angle A, \angle B$ and $\angle C$ in degrees are integers, then the least possible value of $\angle A$ is_____.
- (a) 70° (b) 65° (c) 60° (d) 61°
93. If $3^{-n+1} = \sqrt[4]{81^{-3}}$, then $2n - 1 =$ ____
- (a) 4 (b) $\frac{1}{4}$ (c) $-\frac{1}{4}$ (d) 7
94. Solve : $\frac{\sqrt{10+3x}+\sqrt{10-3x}}{\sqrt{10+3x}-\sqrt{10-3x}} = 3:1$
- (a) 2 (b) 3 (c) 1 (d) 4
95. Three isosceles triangles are put together to create a larger isosceles triangle, as shown. What is the value of x° ?

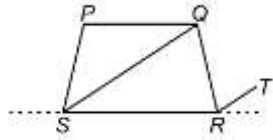


- (a) 70 (b) 40 (c) 25 (d) 85
96. Solve for :
- $$\frac{(3x+1)}{16} + \frac{(2x-3)}{7} = \frac{(x+3)}{8} + \frac{(3x-1)}{14}$$
- (a) 5 (b) 10 (c) -14 (d) 12
97. In the given figure, the value of x is_____.



- (a) 120° (b) 140° (c) 160° (d) 130°

98. In the given figure, line RT is drawn parallel to SQ . If $\angle QPS = 100^\circ$, $\angle PQS = 40^\circ$, $\angle PSR = 85^\circ$ and $\angle QRS = 70^\circ$, then $\angle QRT =$



- (a) 45° (b) 65° (c) 85° (d) 90°
99. The square root of $\frac{36}{5}$ correct upto two decimal places is _____
- (a) 2.68 (b) 2.69 (c) 2.67 (d) 2.66
100. If $2x = 3y$ and $4y = 5z$, then $x : z =$
- (a) $4 : 3$ (b) $8 : 15$ (c) $3 : 4$ (d) $15 : 8$