



**IIT**

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**KALRASHUKLA**

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*A Class Apart*

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**CLASS – 9<sup>th</sup>**

Time : 90 minutes

Maximum Marks : 180

**-: Important Instructions :-**

- (i) Use only Black Ball Point pen.
- (ii) This test booklet contains 3 Sections of question paper consisting of
  - SECTION - I → SCIENCE (15 Questions)
  - SECTION - II → MATHEMATICS (15 Questions)
  - SECTION - III → MENTAL ABILITY & REASONING (15 Questions)
- (iii) Each question is allotted **4 marks for correct response**.
- (iv) **1 mark will be deducted** for marking incorrect or multiple responses.
- (v) No deduction will be made from total marks for unattempted questions.
- (vi) For each question, there is **only 1 correct** response.

Name of Student (in Capital Letter) : \_\_\_\_\_

Candidate Signature : \_\_\_\_\_

Invigilator Signature : \_\_\_\_\_

**SECTION - I****SCIENCE**

1. A particle revolves along a circle with a uniform speed. The motion of the particle is \_\_\_\_\_.  
(A) one dimensional (B) two dimensional (C) translatory (D) oscillatory
2. The force acting on a body when its momentum changes by  $10 \text{ kg m s}^{-1}$ , in 5 seconds is \_\_\_\_\_ N.  
(A) 15 (B) 2 (C) 5 (D) 10
3. In a mercury barometer, if a tube containing mercury is tilted, then  
(A) vertical height of the mercury column remains same.  
(B) the length of mercury column in the tube increases.  
(C) the vertical height of the mercury column decreases.  
(D) Both (A) and (B)
4. If 'v' is the velocity of sound in a gas then 'v' is directly proportional to (where M, d and T represents molecular weight of gas, density of gas and its temperature respectively.)  
(A)  $\sqrt{M}$  (B)  $\frac{1}{\sqrt{d}}$  (C)  $\sqrt{T}$  (D) Both (B) and (C)
5. Spring balance measures \_\_\_\_\_ in air.  
(A) actual weight of a body (B) apparent weight of a body at a given location  
(C) mass of a body (D) both mass and weight of a body
6. Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends, she got confused. Help her to identify the correct set of conditions.  
(A) Low temperature, low pressure (B) High temperature, low pressure  
(C) Low temperature, high pressure (D) High temperature, high pressure.

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*Space for Rough Work*

7. Which of the following are homogeneous mixtures in nature?  
(i) ice                      (ii) wood                      (iii) soil                      (iv) air  
(A) (i) and (iii)              (B) (ii) and (iv)              (C) (i) and (iv)              (D) (iii) and (iv)
8. Mass of one atom of oxygen is :  
(A)  $\frac{16}{6.023 \times 10^{23}}$  g      (B)  $\frac{32}{6.023 \times 10^{23}}$  g      (C)  $\frac{1}{6.023 \times 10^{23}}$  g      (D) 8g.
9. A strip of magnesium metal is burnt in the flame. It is observed that :  
(A) A yellow light appears                      (B) A white dazzling light appears  
(C) Magnesium starts melting                      (D) Lot of black smoke is produced.
10. While determining the boiling point of water, pumice stone pieces are added to :  
(A) spread the heat uniformly                      (B) prevent the loss of heat energy  
(C) stop bubbling of water                      (D) avoid cracking of glass container.
11. Pneumatic bones are found in-  
(A) Insects                      (B) Birds                      (C) Snakes                      (D) Whales
12. Unicellular eukaryotic organisms are included in-  
(A) Monera                      (B) Protista                      (C) Fungi                      (D) Plantae
13. Cartilage is not found in-  
(A) Nose                      (B) Ear                      (C) Kidney                      (D) Larynx
14. Contractile proteins are found in-  
(A) Bones                      (B) Blood                      (C) Muscles                      (D) Cartilage
15. Units of nervous system are:  
(A) Axons                      (B) Neurons                      (C) Dendrites                      (D) Cytons

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**SECTION - II****MATHEMATICS**

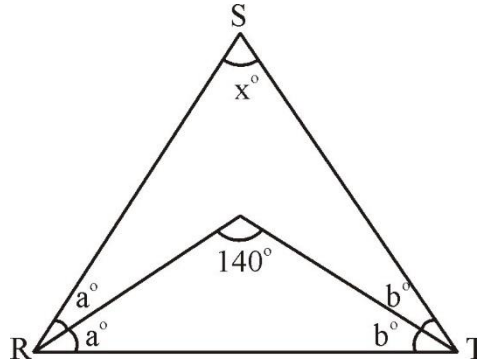
16. Simplify  $\left[ (p^{-1} + q^{-1})(p^{-1} - q^{-1}) \div \left( \frac{1}{p^{-1}} - \frac{1}{q^{-1}} \right) \left( \frac{1}{p^{-1}} + \frac{1}{q^{-1}} \right) \right] (pq)^2$   
(A)  $(pq)^2$  (B)  $-1$  (C)  $-(pq)^{-2}$  (D)  $1$
17. The number of dimensions, a point has  
(A)  $0$  (B)  $1$  (C)  $2$  (D)  $3$
18. Number of zeros of the zero degree polynomial is  
(A)  $0$  (B)  $1$  (C) can't be calculate (D) infinite
19. Which of the following statements is INCORRECT?  
(A) There can be a real number which is both rational and irrational.  
(B) The sum of any two irrational numbers is not always irrational.  
(C) For any positive integers  $x$  and  $y$ ,  $x < y \Rightarrow x^2 < y^2$   
(D) Every integer is a rational number.
20. Find the value of  $\frac{9^{3/2} - 3 \times 5^0 - \left[ \frac{1}{81} \right]^{-1/2}}{\left( \frac{64}{125} \right)^{-2/3} + \frac{1}{\left( \frac{256}{625} \right)^{1/4}} + \left( \frac{\sqrt{25}}{\sqrt[3]{64}} \right)}$   
(A)  $\frac{15}{13}$  (B)  $0$  (C)  $\frac{16}{5}$  (D)  $\frac{48}{13}$
21. How many 3 metre cubes can be cut from a cuboid measuring  $18 \text{ m} \times 12 \text{ m} \times 9 \text{ m}$ ?  
(A)  $72$  (B)  $81$  (C)  $27$  (D)  $29$

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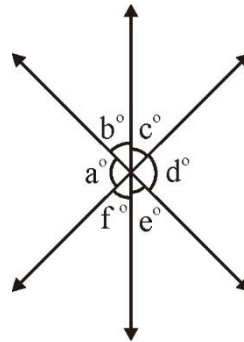
22. The base radii of two right circular cones of the same height are in the ratio 3 : 5. Find the ratio of their volumes.  
 (A) 3 : 5                      (B) 9 : 25                      (C) 27 : 125                      (D) 81 : 625

23. Give figure in  $\Delta RST$  what is the value of  $x$  ?



- (A)  $40^\circ$                       (B)  $90^\circ$                       (C)  $80^\circ$                       (D)  $100^\circ$

24. Given figure, which of the following statements must be true?



- (i)  $a + b = d + c$                       (ii)  $a + c + e = 180^\circ$                       (iii)  $b + f = c + e$   
 (A) (i) only                      (B) (ii) only                      (C) (iii) only                      (D) (ii) and (iii) only

25. In a square PQRS, X and Y are mid-point of sides PS and QR respectively. XY and QS intersect at O. Find the area of  $\Delta XOS$ , if  $PQ = 8$  cm.  
 (A)  $6 \text{ cm}^2$                       (B)  $12 \text{ cm}^2$                       (C)  $4 \text{ cm}^2$                       (D)  $8 \text{ cm}^2$

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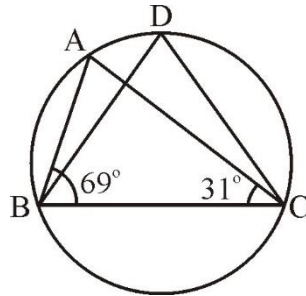
26. An equilateral  $\triangle ABC$  is inscribed in a circle with centre O. The measure of  $\angle BOC$  is  
(A)  $30^\circ$  (B)  $60^\circ$  (C)  $90^\circ$  (D)  $120^\circ$

27. The area of the curved surface of a cone of radius  $2r$  and slant height  $\frac{l}{2}$  is  
(A)  $\pi r l$  (B)  $2\pi r l$  (C)  $\frac{1}{2} \pi r l$  (D)  $\pi(r + l) r$

28. Find the product:  $\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)\left(x^4 + \frac{1}{x^4}\right)$   
(A)  $x^8 - \frac{1}{x^8}$  (B)  $x^8 + \frac{1}{x^8}$  (C)  $-x^8 + \frac{1}{x^8}$  (D)  $-x^8 - \frac{1}{x^8}$

29.  $x^2 + \frac{1}{x^2} = 79$ , find the value of  $x + \frac{1}{x}$   
(A)  $\pm 9$  (B)  $\pm 81$  (C)  $\pm 3$  (D)  $\pm 27$

30. In the given figure,  $\angle ABC = 69^\circ$ ,  $\angle ACB = 31^\circ$ , find  $\angle BDC$ .



- (A)  $69^\circ$  (B)  $70^\circ$  (C)  $75^\circ$  (D)  $80^\circ$

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*Space for Rough Work*

**SECTION - III****MENTAL ABILITY & REASONING**

31. Find out to sign to be interchanged for making the question correct

$$10 + 10 \div 10 - 10 \times 10 = 10$$

- (A) + and –                      (B) + and  $\times$                       (C)  $\div$  and  $\times$                       (D) + and  $\div$

**Direction:** (32 to 33) *The six faces of a cube are coloured black, brown, green red, white and blue, such that*

- (i) Red is opposite black                      (ii) Green is between red and black  
(iii) Blue is adjacent to white                      (iv) Brown is adjacent to blue  
(v) Red is at the bottom

Answer the following questions based on this information

32. Which colour is opposite brown?

- (A) White                      (B) Red                      (C) Green                      (D) Blue

33. The three adjacent colour brown ?

- (A) Black, Blue, Red                      (B) Blue, Brown, White  
(C) Black, Red, White                      (D) All of these

**Direction:** (34 to 35) *Complete the series.*

34. 5, 7, 11, 13, 17, 19, 23, .... .

- (A) 26                      (B) 27                      (C) 29                      (D) 31

35. 8, 9, 11, 14, 18, 23, ... .

- (A) 28                      (B) 30                      (C) 32                      (D) 29

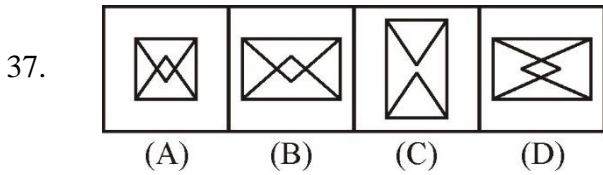
36. Sunita's school bus is facing North when it reaches her school. After starting from Sunita's house, it turns right twice and then left before reaching the school. What direction was the bus facing when it left the bus stop in front of Sunita's house?

- (A) North                      (B) South                      (C) East                      (D) West

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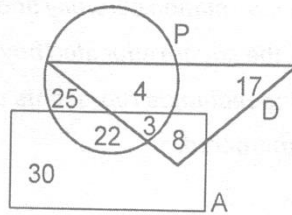
**Direction:** Out of the four figures (a), (b), (c) and (d) given in each problem, three are similar in a certain way. However, one figure is not like the other three.



38. Aaskah said to Mohit, “That boy in blue shirt is younger of the two brothers of the daughter of my father’s wife”. How is the boy in blue shirt related to Aakash”.
- (A) Father                      (B) Uncle                      (C) Brother                      (D) Nephew

**Directions :** (39 to 42) Study the following figure carefully and answer the questions :

The triangle represents doctors. The circle represents players and the rectangle represents artists.



39. How many doctors are both players and artists ?  
 (A) 6                      (B) 8                      (C) 4                      (D) 3
40. How many artists are players ?  
 (A) 30                      (B) 29                      (C) 25                      (D) 17
41. How many artists are neither players nor doctors ?  
 (A) 29                      (B) 30                      (C) 22                      (D) 8
42. How many doctors are neither players nor artists ?  
 (A) 17                      (B) 30                      (C) 8                      (D) 19
43. Which name will come in the last of the Telephone Dictionary?  
 (A) Mahender                      (B) Mahendra                      (C) Mahinder                      (D) Mahindre
44. Arrange the following words according to dictionary arrangement:  
 1. Epitaxy                      2. Episode                      3. Epigene                      4. Epilogue  
 (A) 1, 2, 3, 4                      (B) 3, 2, 4, 1                      (C) 3, 4, 2, 1                      (D) 4, 2, 1, 3
45. One morning after sunrise Vikram and Shailesh were standing in a lawn with their back towards each other. Vikram’s shadow fell exactly towards left-hand side. Which direction Shailesh was facing?  
 (A) East                      (B) West                      (C) North                      (D) South

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**9<sup>TH</sup> CLASS (SET) TEST I.D.: 89017**

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**ANSWERS**

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1. (B)	2. (B)	3. (D)	4. (D)	5. (B)
6. (C)	7. (C)	8. (A)	9. (B)	10. (C)
11. (B)	12. (B)	13. (C)	14. (C)	15. (B)
16. (B)	17. (A)	18. (D)	19. (A)	20. (D)
21. (A)	22. (B)	23. (D)	24. (D)	25. (D)
26. (D)	27. (A)	28. (A)	29. (A)	30. (D)
31. (B)	32. (A)	33. (A)	34. (C)	35. (D)
36. (D)	37. (C)	38. (C)	39. (D)	40. (C)
41. (B)	42. (A)	43. (D)	44. (C)	45. (D)