



# Pinnacle

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### P-SAT 2025

Pinnacle Scholastic Aptitude Test

For Classes 6<sup>th</sup> to 11<sup>th</sup> (Appearing)

## Pinnacle Scholastic Aptitude Test

# SAMPLE TEST PAPER

## Class 9<sup>th</sup>

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# INSTRUCTIONS

**Duration: 1 Hour**

**Maximum Marks: 240**

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Things NOT ALLOWED in EXAM HALL: Blank Paper, clipboard, log table, slide rule, calculator, camera, mobile and any electronic or electrical gadget. If you are carrying any of these, then keep them at a place specified by invigilator at your own responsibility.

## I. General Instructions

1. This Booklet is your question paper. Don't break the seal of booklet until the invigilator instructs to do so.
2. The answer sheet (ORS) is provided to you separately which is a machine readable optical response sheet. You have to mark your answers in the ORS by darkening bubbles as per your answer choice, by using black or blue ball point pen.
3. This question paper contains three sections as follows:
  - a) **Section - A** contains total 10 questions (Q. No. 1 to 10) of Mental Ability.
  - b) **Section - B** contains total 20 questions (Q. No. 11 to 30) of Mathematics.
  - c) **Section - C** contains total 30 questions (Q. No. 31 to 60) under 3 parts, which are Physics, Chemistry, Biology.
4. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
5. If you are found involved in cheating or disturbing others, then your ORS will be cancelled.

## II. Filling of OMR Sheet

1. Ensure matching of OMR sheet with the Question paper before you start marking your answers on OMR sheet.
2. On OMR sheet, darken the appropriate bubble with black/blue pen for each character of your Enrollment No. and your Name, Test Code and other details at the designated places.
3. Think wisely before darkening bubble as there is negative marking for wrong answer. Answer once marked by pen can't be cancelled.
4. Don't put any stain on ORS and hand it over back properly to the invigilator.

## III. Marking Scheme

1. All the questions of **each Part** have only one correct answer.
2. If darken bubble is **RIGHT** answer: 4 Marks.
3. If darken bubble is **WRONG** answer: -1 Marks (Minus One Mark).
4. If no bubble is darkened in any question: No Marks.

Please follow the instructions





JEE MAIN 2024 **99.98** %ile  
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### NEET RESULT



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# What Makes Pinnacle Unique?

- 1 Best Faculty Team
- 2 Hi-Tech Classrooms
- 3 Customized Study material
- 4 Personal Attention
- 5 Unlimited Doubt Sessions
- 6 Best Testing Methodology



Lecture Recording Lab



Revision Classes & Self Study Zones



Online Testing Lab (CBT)



Smart & AC Classrooms



Objective + Subjective



Student Performance and Analysis Report



Rich Library & Researched Study Modules



Extra Support to weaker students



CCTV Campus



Biometric Attendance

## Classroom Program

### 1 Comprehensive Classroom Lectures

All classes at Pinnacle are conducted by highly qualified and experienced faculty members, mostly IITians. Each chapter is started at the grass root level and is dealt to an extent which is the requirement of competitive examinations, with an aim of enabling the students to develop a comprehensive view of the whole chapter with a thorough understanding.



### Doubt Clearance 2

"If you ask a question, you may appear fool for some time, but if you don't, you'll remain a fool for whole life." System at Pinnacle encourages all students to ask their doubts and questions.

### 3 Regular Tests Online and Offline

As JEE Mains and Advanced have gone completely online and NEET is in the pipeline, we have launched a dedicated online testing platform where students can practise over CBT (Computer Based Tests). The combination of online and offline testing modes based on latest JEE/NEET patterns ensure that students are at par with the recent changes. Students can check their test reports and performance analysis via a unique online login ID. Their results are also communicated to parents via SMS.

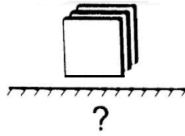


### Addressing the Board Exam 4

Pinnacle has a very distinct methodology for preparing the students for competitive examinations while in full synchronization with Board Exams as well. Board level tests are conducted alongside the regular JEE/NEET tests and the copies are graded at very meticulous level by teachers. Students receive methodological tips so as to perform excellent in the board Exams as well.

## Section – A Mental Ability

1. Complete the series.  
5,6,10,19,35 ?  
(a) 50  
(b) 55  
(c) 60  
(d) 71
2. A letter number series is given with one or more terms missing as shown below. Choose the alternative next in the sequence.  
A4X, D9U, G16R, \_\_\_\_\_  
(a) K25P  
(b) J25P  
(c) J25O  
(d) J25C
3. Direction: In a certain code language '782' means 'Flowers are beautiful' '692' means 'Roses are red' '628' means 'Roses are beautiful'  
Which number denotes 'Flowers' ?  
(a) 8  
(b) 7  
(c) 2  
(d) 6
4. Anmol finds that he is twelfth from the right in a line of boys and fourth from the left, how many boys should be added to the line such that there are 35 boys in the line?  
(a) 19  
(b) 13  
(c) 14  
(d) 20
5. Given that
  1. A is the mother of B
  2. C is the son of A
  3. D is the brother of E
  4. E is the daughter of B
 The grandmother of D is  
(a) A  
(b) B  
(c) C  
(d) E
6. Eight members of a group shake hand with one another once. How many handshakes were done altogether?  
(a) 64  
(b) 16  
(c) 28  
(d) 18
7. P, Q, R, S, T, U, V and W are sitting around a round table in the same order, for group discussion at equal distance. Their positions are clockwise. If V sits in the north, then what will be the position of S?  
(a) East  
(b) South-east  
(c) South  
(d) South-west
8. Observes the figure below:
 

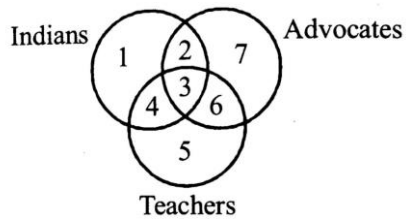


*Space for Rough Work*

First rotate the figure by  $90^\circ$  in clock-wise direction and find out its water reflection from the given alternatives

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

9. Which number space indicated Indian teachers who are also advocates?



- (a) 2
- (b) 3
- (c) 4
- (d) 6

10. Which one of the following diagram represents the correct relationship among Colour, black and white

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

*Space for Rough Work*

## Section - B Mathematics

11.  $3^9 + 3^{12} + 3^{15} + 3^n$  is a perfect cube,  $n \in \mathbb{N}$ , then the value of  $n = \dots\dots\dots$

- (a) 18  
(b) 17  
(c) 14  
(d) 16

12. If  $\sqrt{13 - a\sqrt{10}} = \sqrt{8} + \sqrt{5}$  then value of 'a' will be:

- (a) -6  
(b) -4  
(c) -8  
(d) -5

13. Let  $x = (2008)^{1004} + (2008)^{-1004}$  and  $y = (2008)^{1004} - (2008)^{-1004}$  then the value of  $(x^2 - y^2)$  is equal to:

- (a) 4  
(b) -4  
(c) 0  
(d) None

14. If  $a^x = b$ ,  $b^y = c$ ,  $c^z = a$ , then  $xyz =$

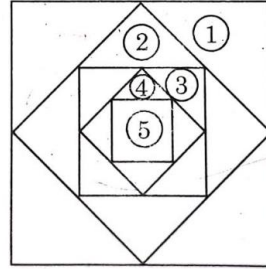
- (a) 0  
(b) 1  
(c)  $\frac{1}{abc}$   
(d)  $abc$

15. The polynomials  $(x^3 - 1)$  and  $(x^2 + 1)$  are divided by  $(x + 1)$  leave the remainder as  $R_1$  and  $R_2$ . The true statement among the following is:

- (a)  $R_1 + R_2 = 0$   
(b)  $R_1 - R_2 = 0$   
(c)  $2R_1 + R_2 = 0$   
(d)  $R_1 - 2R_2 = 0$

16. In the given figure, square 2 is formed by joining the mid-points of square 1, square 3 is formed by joining the mid-points of square 2 and so on. In

this way total five squares are drawn. The side of the square 1 is 'a' cm. what is the sum of perimeters of all the five squares?



(a)  $\frac{(4\sqrt{2} + 1)a}{(\sqrt{2} + 1)}$  cm

(b)  $\frac{5}{6} a$  cm

(c)  $(7 + 3\sqrt{2})a$  cm

(d) None of these

17. If  $a + b + c = 1$ ,  $a^2 + b^2 + c^2 = 9$  and  $a^3 + b^3 + c^3 = 1$ , then the value of  $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$

(a) 4

(b)  $\frac{1}{2}$

(c) 1

(d)  $\frac{1}{4}$

18. A cone, a hemisphere and a cylinder stand on equal bases and have the same height, the height being equal to the radius of the circular base. Their total surfaces area in the ratio:

(a)  $(\sqrt{2} + 1) : 3 : 4$

(b)  $(\sqrt{3} + 1) : 3 : 4$

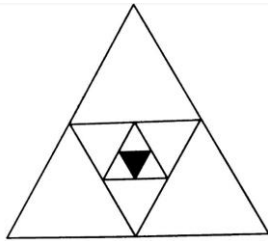
(c)  $\sqrt{2} : 3 : 4$

*Space for Rough Work*

- (d)  $\sqrt{2} : 7 : 8$   
 19. If  $x, y, z$  are positive real numbers and  $a, b, c$  are rational numbers, then the value of

$$\frac{1}{1 + x^{b-a} + x^{c-a}} + \frac{1}{1 + x^{a-b} + x^{c-b}} + \frac{1}{1 + x^{b-c} + x^{a-c}}$$

- is  
 (a)  $-1$   
 (b)  $0$   
 (c)  $1$   
 (d) None of these  
 20. In the figure, each side of the Largest triangle is 1 meter. By joining the midpoints of the sides of each triangle, an inner triangle is drawn.

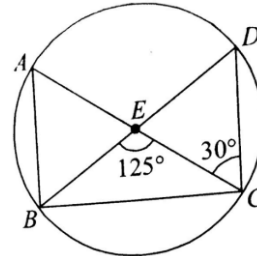


What is the area of the smallest triangle (in sq. m.)?

- (a)  $\frac{\sqrt{3}}{2} \left(\frac{1}{16}\right)^2$   
 (b)  $\frac{\sqrt{3}}{4} \left(\frac{1}{8}\right)^2$   
 (c)  $\frac{\sqrt{3}}{4} \left(\frac{1}{2}\right)^2$   
 (d)  $\frac{\sqrt{3}}{4} \left(\frac{1}{4}\right)^2$   
 21. P is point in the interior of an equilateral triangle with side  $a$  units. If  $p_1, p_2$  and  $p_3$  are the distance of P from the three sides of the triangle, then  $p_1 + p_2 + p_3$  :
- (a) Equals  $\frac{2a}{3}$  units

- (b) Equals  $\frac{a\sqrt{3}}{2}$  units  
 (c) Is more than  $a$  units  
 (d) Cannot be determined unless the location of P is specified

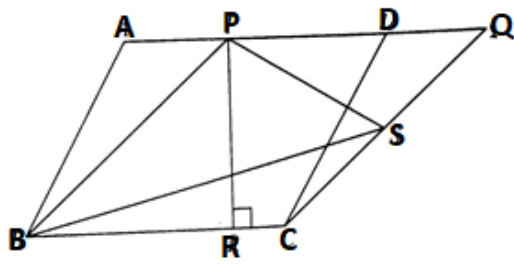
22. In figure, A, B, C and D are four points on a circle. AC and BD intersect at a point E such that  $\angle BEC = 125^\circ$  and  $\angle ECD = 30^\circ$ . Then  $\angle BAC =$



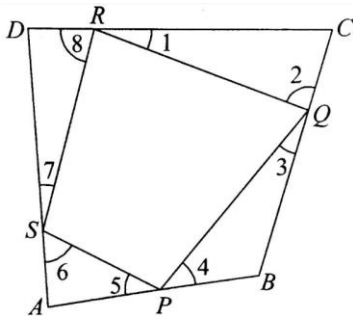
- (a)  $95^\circ$   
 (b)  $110^\circ$   
 (c)  $85^\circ$   
 (d)  $105^\circ$   
 23. If two equal circles of radius  $r$  pass through centre of the other, then the length of their common chord is:  
 (a)  $\frac{r}{\sqrt{3}}$   
 (b)  $r\sqrt{3}$   
 (c)  $r/3$   
 (d)  $r\sqrt{2}$   
 24. In the adjoining figure  $\square ABCD$  and  $\square PBCQ$  are parallelogram  $BC = 12$  cm  $PR = 8$  cm. Find  $ar(\triangle PSB)$ :

Space for Rough Work

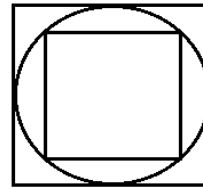




- (a)  $96 \text{ cm}^2$
  - (b)  $72 \text{ cm}^2$
  - (c)  $48 \text{ cm}^2$
  - (d)  $36 \text{ cm}^2$
25. There is a rhombus of one side 17 cm and one diagonal 30 cm. The area of the rhombus will be:
- (a)  $60 \text{ cm}^2$
  - (b)  $240 \text{ cm}^2$
  - (c)  $305 \text{ cm}^2$
  - (d)  $750 \text{ cm}^2$
26. In the given figure, ABCD is a quadrilateral in which P, Q, R and S are the points on sides AB, BC, CD and DA. The value of  $\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5 + \angle 6 + \angle 7 + \angle 8$  is:



- (a)  $360^\circ$
  - (b)  $540^\circ$
  - (c)  $180^\circ$
  - (d) None of these
27. In the given figure, the circle circumscribes the small square and touches all sides of the larger square. The ratio of the areas of the two squares is:



- (a)  $1 : \sqrt{2}$
  - (b)  $1 : 2$
  - (c)  $1 : \pi$
  - (d)  $2 : \pi$
28. Among the numbers  $2^{250}$ ,  $3^{200}$ ,  $4^{150}$  and  $5^{100}$ , the greatest is:
- (a)  $2^{250}$
  - (b)  $3^{200}$
  - (c)  $4^{150}$
  - (d)  $5^{100}$
29. Evaluate:  $\frac{(a-b)^2}{(b-c)(c-a)} + \frac{(b-c)^2}{(a-b)(c-a)} + \frac{(c-a)^2}{(a-b)(b-c)}$
- :
- (a) 0
  - (b) 1
  - (c) 2
  - (d) 3
30. If  $x + \frac{1}{x} = 5$ , then  $\frac{2x}{3x^2 - 5x + 3}$  is equal to:
- (a) 5
  - (b)  $\frac{1}{5}$
  - (c) 3
  - (d)  $\frac{1}{3}$

Space for Rough Work

**Section - C**  
**Science**

31. Position of a particle with respect to time is given as  $x = t^2 + 5t + 7$ .  
If mass of the particle is 2 kg. Find the work done by forces on this mass in 2 seconds.  
(a) 81 J  
(b) 84 J  
(c) 56 J  
(d) 441 J
32. If it is safe to jump from a height of 2 m on the earth, what would be the safe height on a planet where the value of 'g' is  $1.96 \text{ m s}^{-2}$ ?  
(a) 2m  
(b) 4m  
(c) 6m  
(d) 10m
33. A body weighs 72 N on the surface of the earth. What is the gravitational force on it at a height equal to half the radius of the earth from the surface?  
(a) 72 N  
(b) 28 N  
(c) 16 N  
(d) 32 N
34. The relative density of a solid is 0.6. It floats in water with  
(a) whole of its volume inside water  
(b) 60% volume inside water  
(c) 60% volume outside water  
(d) 40% volume inside water
35. An object of mass 1 kg is raised through a height 'h'. Its potential energy is increased by 1 J. Find the height.  
(a) 0.102 m  
(b) 0.105 m  
(c) 0.130 m  
(d) 0.110 m
36. From the top of a building of height 40 m, a boy throws a stone vertically upwards with an initial velocity of  $10 \text{ m s}^{-1}$  such that it eventually falls to the ground. At what time will the stone reach the ground?  
( $g = 10 \text{ ms}^{-2}$ )  
(a) 4 s  
(b) 3 s  
(c) 2 s  
(d) 1 s
37. A hollow metal sphere of mass 180.6 g contains a cavity of volume  $2.5 \text{ cm}^3$ . This metal when placed in water/displaces 24 cc of water. Find the specific gravity of the metal.  
(a)  $21.5 \text{ g cm}^{-3}$   
(b)  $6.3 \text{ g cm}^{-3}$   
(c)  $8.4 \text{ g cm}^{-3}$   
(d)  $24 \text{ g cm}^{-3}$
38. If soldiers had the options to use guns of different weights but the bullets used are of a fixed weight, what would they prefer and why?  
(a) Light guns, because handling them is easy

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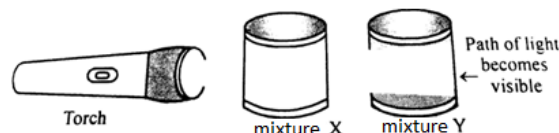
*Space for Rough Work*

- (b) Heavy guns, because they can be held firmly
- (c) Heavy guns because they have less recoil
- (d) Light guns, because they can be carried easily
39. Equal masses of water and a liquid of relative density 2 are mixed together/then what is the density of the mixture (in  $\text{g cm}^{-3}$ )?
- (a)  $\frac{2}{3}$
- (b)  $\frac{4}{3}$
- (c)  $\frac{3}{2}$
- (d) 3
40. Point P, Q and R are in a vertical line such that  $PQ = QR$ . A ball at the top – most point 'p' is allowed to fall freely. What is the ratio of the times of descent through PQ and PR?
- (a)  $\frac{3}{2}$
- (b)  $\frac{3}{\sqrt{2} + 1}$
- (c)  $\frac{1}{\sqrt{2} - 1}$
- (d)  $\frac{5}{2}$
41. The number of electrons in an atom carrying 3 negative charge is X and number of neutrons are Y, its mass number is
- (a)  $X + Y + 3$
- (b)  $2X - 3$
- (c)  $X - Y + 3$
- (d)  $X + Y - 3$

42. If X is solid, Z is sublimable solid, W is liquid and Y a gas or vapour, Match the given processes with correct conversions

Process	Conversion
(i) Fusion	a) $Y \rightarrow X$
(ii) Deposition	b) $X \rightarrow Y$
(iii) Vapourization	c) $X \rightarrow W$
(iv) Sublimation	d) $W \rightarrow Y$

- (a) (i) - a, (ii) - b, (iii) - c, (iv) - d
- (b) (i) - c, (ii) - a, (iii) - d, (iv) - b
- (c) (i) - c, (ii) - b, (iii) - a, (iv) - d
- (d) (i) - c, (ii) - d, (iii) - a, (iv) - b
43. Light is passed through the mixture X and mixture Y. The following figure shows the observation. What could be X and Y?



- (a) X = Milk Y = Mud
- (b) X = Blood Y = Milk
- (c) X = Milk Y = Copper sulphate
- (d) X = Copper sulphate Y = Milk
44. Two elements X and Y have atomic weights of 14 and 16 respectively. They form a series of compounds A, B, C, D and E in which for the same amount of element X, Y is present in the ratio 1 : 2 : 3 : 4 : 5. If the compound A has 28 parts by weight of X and 16 parts by weight of Y, then the compound of E will have 28 parts by weight of X and-
- (a) 32 parts by weight of Y
- (b) 48 parts by weight of Y

*Space for Rough Work*

- (c) 64 parts by weight of Y  
(d) 80 parts by weight of Y
45. Which of the following statements is/are correct?
- Centrifugation method can be used to separate cream from milk
  - Different colored components of blue ink can be separated by evaporation
  - Chromatography can be used to detect drugs in blood
  - Camphor cannot be separated from salt by sublimation
- (a) II only  
(b) I, II and III only  
(c) I and III only  
(d) II and IV only
46. Sulphate of a divalent metal M exists in hydrated form. If 0.10 mol of metal sulphate combines with 9.0 g of water to form the hydrated salt then, the formula of metal sulphate will be
- $MSO_4 \cdot H_2O$
  - $M_2SO_4 \cdot 2H_2O$
  - $M_2SO_4 \cdot 3H_2O$
  - $MSO_4 \cdot 5H_2O$
47. A compound of carbon, hydrogen and nitrogen contains these elements in the ratio 9: 1: 3.5. If its molecular mass is 108, the empirical formula and molecular formula of the compound respectively are?
- $C_2H_2N$  and  $C_2H_2N$
  - $C_3H_4N$  and  $C_9H_{12}N_3$
  - $C_2H_4N_2$  and  $C_6H_8N_2$
  - $C_3H_4N$  and  $C_6H_8N_2$
48. The average atomic mass of boron is 10.8 u. If the isotopic mass of B-10 is 10.013 and that of B-11 is 11.009, then the relative abundance of these isotopes is respectively
- 80.1 % and 19.9 %
  - 11% and 89%
  - 20.98% and 79.02%
  - 10.001% and 89.9%
49. The liquid which has highest rate of evaporation is
- Petrol
  - Water
  - Nail-paint remover
  - Alcohol
50. Which of the given pairs of atoms represent pair of isotones?
- $^{114}_{48}Cd$  and  $^{119}_{50}Sn$
  - $^{59}_{27}Co$  and  $^{59}_{28}Ni$
  - $^{133}_{55}Cs$  and  $^{132}_{54}Xe$
- I only
  - I and III only
  - III only
  - II only
51. The study of resistance to disease –
- Pathology
  - Cytology
  - Immunology
  - None of these
52. A boy with deep cuts is likely to suffer from \_\_\_\_\_ caused by a bacterium which is formed in the soil.
- Syphilis

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- (b) Tetanus  
(c) Typhoid  
(d) Diphtheria
53. A disease that spreads by direct contact from the infected person is \_\_\_\_\_  
(a) Chicken pox  
(b) AIDS  
(c) Malaria  
(d) Dysentery
54. Cells wall of which one of these is not made up of cellulose?  
(a) Bacteria  
(b) Hydrilla  
(c) Mango tree  
(d) Cactus
55. Droplet method of transmission of disease is found in –  
(a) Common cold  
(b) AIDS  
(c) Hepatitis  
(d) Syphilis
56. Impulse is brought to a nerve cell through a  
(a) Dendrite  
(b) Neurofibril  
(c) Axons  
(d) Nisel granules
57. The group of animals having open circulatory system is –  
(a) Arthropoda  
(b) Nematoda  
(c) Annelida  
(d) Coelenterate
58. Which one of the following causes kala – azar?  
(a) Ascaris  
(b) Trypanosoma  
(c) Leishmania  
(d) Bacteria
59. Which of the following species of honey bee is an Italian species?  
(a) Apes dorsata  
(b) Apes florum  
(c) Apes cerana indica  
(d) Apes mellipora
60. Bryophytes are –  
(a) Seedless vascular plants  
(b) Seedless non – vascular plants  
(c) Amphibians of plant kingdom  
(d) Both b and c

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**ANSWER KEY**

1	c	21	b	41	d
2	c	22	a	42	b
3	b	23	b	43	d
4	d	24	c	44	d
5	a	25	b	45	c
6	c	26	a	46	d
7	d	27	b	47	d
8	b	28	b	48	c
9	b	29	d	49	c
10	b	30	b	50	c
11	c	31	c	51	c
12	b	32	d	52	b
13	a	33	d	53	a
14	b	34	b	54	a
15	a	35	a	55	a
16	c	36	a	56	a
17	c	37	c	57	a
18	a	38	c	58	c
19	c	39	b	59	d
20	b	40	c	60	d

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