



Santosh Academia Talent Examination

(2025-26)

CLASS-XI (PCM) STUDYING

PAPER-1

SET CODE: [A]

Test ID: 722

Time: 1 Hour

Max. Marks: 120

IMPORTANT INSTRUCTIONS:

GENERAL

1. This booklet is your Question Paper.
2. The Test ID is printed on the left-hand top corner of this sheet. If not, contact the invigilator for change of question paper.
3. Use the Optical Mark Recognition (OMR) sheet provided separately for answering the questions. DO NOT FILL till you are told to do so.
4. The TEST PAPER NUMBER is printed on the left-hand top corner of the question paper and SET CODE is printed on the Right-hand top corner of the question paper. Ensure that you fill this in OMR as that on the question paper booklet.
5. Blank spaces are provided within this booklet for rough work. No additional rough sheet will be provided.
6. You are ALLOWED to take away the Question Paper at the end of the examination.

QUESTION PAPER FORMAT

7. This Paper contains **30** questions in total.

Section-I: Question Number 1 to 6 belongs to **Physics**.

Section-II: Question Number 7 to 13 belongs to **Chemistry**.

Section-III: Question Number 14 to 20 belongs to **Mathematics**.

Section-IV: Question Number 21 to 30 belongs to **Mental Ability**.

MARKING SCHEME:

8. Each question carries 4 marks. For each correct response, the candidate will get 4 marks.
9. There is a negative marking of -1 mark for incorrect response for section I, II and III. No marks will be deducted for unmarked questions.
10. There is no negative marking for incorrect response or unmarked questions for Section IV.



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Ghaziabad Branch : J-10, Aniket Arcade, RDC Ghaziabad ☎ +91 93114 41940, +91 93114 42359





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SAMPLE PAPER



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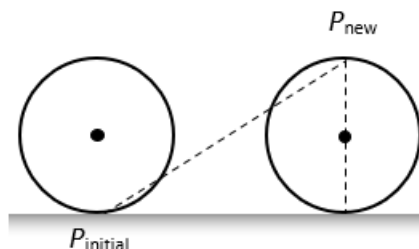
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SECTION-I PHYSICS

- The unit of absolute permittivity is
(a) Farad - meter (b) Farad / meter (c) Farad/meter² (d) Farad
- The displacement of the point of the wheel initially in contact with the ground, when the wheel rolls forward half a revolution will be (radius of the wheel is R)



- (a) $\frac{R}{\sqrt{\pi^2 + 4}}$ (b) $R\sqrt{\pi^2 + 4}$ (c) $2\pi R$ (d) πR
- The equation of motion of a projectile is $y = 12x - \frac{3}{4}x^2$. Given that $g = 10 \text{ ms}^{-2}$, what is the range of the projectile
(a) 12.4 m (b) 16 m (c) 30.6 m (d) 36.0 m
- A body of mass 1 kg initially at rest, explodes and breaks into three fragments of masses in the ratio 1 : 1 : 3. The two pieces of equal mass fly off perpendicular to each other, with a speed of 30 m/s each. What is the velocity of the heavier fragment
(a) 10 m/s (b) 20 m/s (c) $10\sqrt{2}$ m/s (d) $30\sqrt{2}$ m/s
- The displacement x of a particle of mass m kg moving in one dimension, under the action of a force, is related to the time t by the equation $t = \sqrt{x} + 3$ where x is in metres and t is in seconds. The work done by the force in the first six second in joules is
(a) 0 (b) $3m$ (c) $6m$ (d) $9m$
- Moment of inertia of a uniform circular disc about a diameter is I . Its moment of inertia about an axis perpendicular to its plane and passing through a point on its rim will be
(a) $5I$ (b) $6I$ (c) $3I$ (d) $4I$

SECTION-II CHEMISTRY

- Which of the following contains the least number of molecules?
(a) 4.4 g CO₂ (b) 3.4 g NH₃ (c) 1.6 g CH₄ (d) 3.2 g SO₂

8. If 3.01×10^{20} molecules are removed from 98 mg of H_2SO_4 , then the number of moles of H_2SO_4 left are
- (a) 0.1×10^{-3} (b) 0.5×10^{-3} (c) 1.66×10^{-3} (d) 9.95×10^{-2}
9. In an atom ${}_{13}\text{Al}^{27}$, number of protons is (a), electron is (b) and neutron is (c). Hence, ratio will be [in order c : b : a]
- (a) 13 : 14 : 13 (b) 13 : 13 : 14 (c) 14 : 13 : 13 (d) 14 : 13 : 14
10. Elements which occupied position in the lotharmeyer curve, on the peaks, were
- (a) Alkali metals (b) Highly electro positive elements
(c) Elements having large atomic volume (d) All of these
11. Which of the following pair has electron deficient compounds?
- (a) B_2H_6 , AlCl_3 (b) C_2H_6 , Al_2Cl_6 (c) SF_2 , Cl_2O (d) NaBH_4 , ICl
12. The triple bond in $\text{C} \equiv \text{O}$ is made up of
- (a) Three sigma bonds (b) Three π -bonds
(c) One sigma and two π -bonds (d) Two sigma and one π -bond
13. Which of the property is a state function?
- (a) Heat supplied at constant pressure (b) Heat supplied at constant volume
(c) Enthalpy (d) All of the above

SECTION-III MATHEMATICS

14. An organization awarded 48 medals in event A, 25 in event 'B' and 18 in event C. If these medals went to total 60 men and only five men got medals in all the three events, then, how many received medals in exactly two of three events
- (a) 10 (b) 9 (c) 21 (d) 15
15. The set $S = \{1, 2, 3, \dots, 12\}$ is to be partitioned into three sets A, B, C of equal size. Thus $A \cup B \cup C = S$, $A \cap B = B \cap C = A \cap C = \phi$. The number of ways to partition S is
- (a) $\frac{12!}{(4!)^3}$ (b) $\frac{12!}{(4!)^4}$ (c) $\frac{12!}{3!(4!)^3}$ (d) $\frac{12!}{3!(4!)^4}$
16. The value of $\left(\frac{-1+i\sqrt{3}}{1-i}\right)^{30}$ is
- (a) -2^{15} (b) $2^{15}i$ (c) $-2^{15}i$ (d) 6^5



17. If α, β are the roots of the equation

$$x^2 - \left(5 + 3\sqrt{\log_3 5} - 5\sqrt{\log_5 3}\right)x + 3\left(3^{(\log_3 5)^{1/3}} - 5^{(\log_5 3)^{2/3}} - 1\right) = 0$$

Then the equation whose roots are $\alpha + \frac{1}{\beta}$ and $\beta + \frac{1}{\alpha}$ is

- (a) $3x^2 - 20x - 12 = 0$ (b) $3x^2 - 10x - 4 = 0$
(c) $3x^2 - 10x + 2 = 0$ (d) $3x^2 - 20x + 16 = 0$
18. 60 words can be made using all the letters of the word BHBJO with or without meaning. If these words are written as in a dictionary then the 50th word is
(a) OBBJH (b) HBBJO (c) OBBHJ (d) JBBOH
19. The number of common terms in the progressions 4, 9, 14, 19, , up to 25th term and 3, 6, 9, 12, ... up to 37th term is
(a) 8 (b) 7 (c) 5 (d) 9
20. The value of $36(4\cos^2 9^\circ - 1)(4\cos^2 27^\circ - 1)(4\cos^2 81^\circ - 1)(4\cos^2 243^\circ - 1)$ is
(a) 18 (b) 54 (c) 27 (d) 36

SECTION-IV MENTAL ABILITY

21. **Direction :** Study the following information carefully and answer the given question.

Seven persons P, Q, R, S, T, U and V live on seven different floors of a seven storey building where the lowermost floor is numbered one, the one above that is numbered two and so on till the topmost floor is numbered seven. Only one person lives on each floor. P lives on an even numbered floor. Three persons live between P and Q. T lives immediately above Q. As many persons live below T as above S. Only one person lives between S and V. R lives below U, who does not live on the odd numbered floor.

In which of the following floor does P live?

- (a) 4th floor (b) 6th floor
(c) 3rd floor (d) 2nd floor
22. **Direction :** Study the following information carefully and answer the given question.

Shubha is standing at point A facing towards south, then he walks for 9km in that direction to reach point B. Then he turns towards the east and walks for 12km to reach point C. Now, he turns towards the north and walks for 15 km to reach point D. From point D, he turns towards the west and walks for 13km to reach point E. Finally, he turns towards the south and walks for 6 km to reach point F.

Point F is at what distance and in which direction with respect to point A?

- (a) 3km, East (b) 1km, West
(c) 2km, South (d) 1km, East





23. Study the following statements and then decide which of the given conclusions logically follows from the given statements disregarding the commonly known facts.

Statements: Only a few Tuba is Oboe.

Some Lyre is Oboe.

All Lute is Lyre.

Conclusions: I. All Tuba is Lute

II. Some Tuba is not Oboe

- (a) Only conclusion II follows
(b) Either conclusion I or II follows
(c) Both conclusions I and II follow
(d) Neither conclusion I nor II follows
24. **Direction:** Study the following information carefully and answer the given question.

“Current events newspaper data” is coded as “yx we ip gd”

“Events organisation information occasion” is coded as “we yu vj lm”

“Current incident organisation episode” is coded as “yx vb lm qw”

“Data information note ward” is coded as “ub gd vj mx”

(Note: All the given codes are two letter codes only)

What is the word for the code “we” in the given code language?

- (a) Data (b) Organisation
(c) Events (d) Occasion
25. Find the missing number ?
8, ?, 29, 57, 113, 225
(a) 24 (b) 15 (c) 30 (d) 24
26. Rahul invests Rs. 2500 in simple interest scheme at the rate of 8% per annum for x years. Find the value of x, he received the simple interest after x years is Rs.800.
(a) 2 years (b) 3 years (c) 6 years (d) 4 years
27. Rahul invests Rs.2500 in simple interest scheme at the rate of 8% per annum for x years. Find the value of x, he received the simple interest after x years is Rs.800.
(a) 2 years (b) 3 years (c) 6 years (d) 4 years



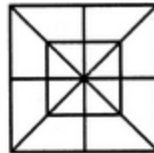


28. Which one will replace the question mark ?

4	5	6
2	3	7
1	8	3
21	98	?

- (a) 94 (b) 76 (c) 16 (d) 73

29. Count the number of triangles and squares in the given figure.



- (a) 28 triangles, 10 squares (b) 28 triangles, 8 squares
(c) 32 triangles, 10 squares (d) 32 triangles, 8 squares

30. In the following question find out the alternative which will replace the question mark.

Eye : Myopia :: Teeth : ?

- (a) Pyorrhoea (b) Cataract (c) Trachoma (d) Eczema



ROUGH WORK

SAMPLE PAPER