Santosh Academia Talent Examination

(2025-26)

CLASS-XI (PCB) STUDYING

PAPER-1 **SET CODE: [A]**

Test ID: 732	**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 5 belongs to* ***Physics.***

Section-II: *Question Number 6 to 10 belongs to* ***Chemistry.***

Section-III: *Question Number 11 to 15 belongs to* ***Botany.***

Section-IV: *Question Number 16 to 20 belongs to* ***Zoology.***

Section-V: *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 III and IV. No marks will be deducted for unmarked questions.

10. There is no negative marking for incorrect response or unmarked questions for Section V.

SECTION-I PHYSICS

1. Number of particles is given by $n = -D\frac{n_2 - n_1}{x_2 - x_1}$ crossing a unit area perpendicular to X- axis in unit time, where n_1 and n_2 are number of particles per unit volume for the value of x meant to x_2 and x_1. Find dimensions of D called as diffusion constant

(a) M^0LT^2 (b) $M^0L^2T^{-4}$ (c) M^0LT^{-3} (d) $M^0L^2T^{-1}$

2. A particle moves along a circular arc of radius R making an angle of θ at centre. The magnitude of displacement is

(a) $2R\sin(\theta/2)$ (b) $2R\sin\theta$ (c) $R\sin(\theta/2)$ (d) $R\sin\theta$

3. The horizontal range of a projectile is $4\sqrt{3}$ times its maximum height. Its angle of projectile will be:

(a) 45º (b) 60º (c) 90º (d) 30º

4. A body of mass m is displaced from point A(3, 1, 2) to point B(4, 3, 3) under the effect of a force $\vec{F} = \left(3\hat{i} + 2\hat{j} + 4\hat{k}\right)N$, calculate W.D. by the force.

(a) 57 J (b) 11 J (c) 0 (d) 22 J

5. The angular velocity of the body changes from ω_1 to ω_2 without applying torque but by changing moment of inertia. The ratio of initial radius of gyration to the final radius of gyration is

(a) $\omega_2 : \omega_1$ (b) $\omega_2^2 : \omega_1^2$ (c) $\sqrt{\omega_2} : \sqrt{\omega_1}$ (d) $\frac{1}{\omega_2} : \frac{1}{\omega_1}$

SECTION-II CHEMISTRY

6. Which one of the following has maximum number of atoms?

(a) 1 g of Mg (s) [Atomic mass of Mg = 24] (b) 1g of O_2 (g) [Atomic mass of O = 16]

(c) 1 g of Li (s) [Atomic mass of Li = 7] (d) 1 g of Ag (s) [Atomic mass of Ag = 108]

7. What is the maximum number of electrons that can be associated with the following set of quantum numbers? (n = 3, l = 1 and m = –1)

(a) 10 (b) 6 (c) 4 (d) 2

8. In which of the following options, the order of arrangement does not agree with the variation of property indicated against it?

(a) B < C < N < O (increasing first ionization enthalpy)
(b) I < Br < F < Cl (increasing electron gain enthalpy)
(c) Li < Na < K < Rb (increasing metallic radius)
(d) $Al^{3+} < Mg^{2+} < Na^+ < F^-$ (increasing ionic size)

9. Which of the following set of molecules will have zero dipole moment?

(a) Boron trifluoride, hydrogen fluoride, carbon dioxide, 1, 3-dichlorobenzene
(b) Nitrogen trifluoride, beryllium difluoride, water, 1, 3-dichlorobenzene
(c) Boron trifluoride, beryllium difluoride, carbon dioxide, 1, 4-dichlorobenzene
(d) Ammonia, beryllium difluoride, water, 1, 4- dichlorobenzene

10. Match the List (I) with List (II)

List-I	**List-II**
A. Isothermal	1. No heat exchange
B. Isochoric	2. Carried out at constant temperature
C. Isobaric	3. Carried out at constant volume
D. Adiabatic	4. Carried out at constant pressure

Codes:

	A	**B**	**C**	**D**
(a)	2	3	4	1
(b)	1	2	3	4
(c)	3	2	1	4
(d)	3	1	2	4

SECTION-III BOTANY

11. The Hammerling Experiment on Acetabularia involves the exchanging of

(a) Nucleus (b) Cytoplasm (c) Gametes (d) Rhizoid

12. Identify the true statements from given below statements

(i) Increase in mass and increase in number of individuals are twin characteristics of growth

(ii) A multicellular organism grows by cell division

(iii) In plants growth occurs by cell division which is seen only up to a certain age

(iv) In animals, growth occurs continuously throughout their life span and cell division occurs in all tissues to replace lost cells

(v) Unicellular organisms multiply by cell division

(a) (i) and (iii) (b) (i), (ii) and (v)

(c) (i), (ii), (iii) and (v) (d) (i), (ii), (iv) and (v)

13. The process of appearance of recombination nodules occurs at which sub-stage of prophase I in meiosis?

(a) Diakinesis (b) Zygotene (c) Pachytene (d) Diplotene

14. Choose the wrong statement

(a) Yeast is unicellular and useful in fermentation

(b) *Penicillium* is multicellular and produces antibiotics

(c) *Neurospora* is used in the study of biochemical genetics

(d) Morels and truffles are poisonous mushrooms

15. In Calotropis, aestivation is

(a) Valvate (b) Vexillary (c) Imbricate (d) Twisted

SECTION-IV ZOOLOGY

16. This is a correct statement with reference to enzymes

(a) Holoenzyme = Coenzyme + Co-factor (b) Holoenzyme = Apoenzyme +Coenzyme

(c) Apoenzyme = Holoenzyme +Coenzyme (d) Coenzyme = Apoenzyme + Holoenzyme

17. Lungs are made up of air-filled sacs, the alveoli. They do not collapse even after forceful expiration, because of

(a) Expiratory reserve volume (b) Inspiratory reserve volume

(c) Residual volume (c) Tidal volume

18. Adult human RBCs are enucleated. Which of the following statement(s) is/are most appropriate explanation for this feature?

I. They are somatic cells

II. They do not need to reproduce

III. All their internal space is available to transport oxygen

IV. They do not metabolize

(a) I, II, and IV (b) III and IV (c) Only III (d) Only I

19. A decrease in blood pressure/volume will not cause the release of

(a) ADH (b) Renin

(c) Atrial natriuretic factor (d) Aldosterone

20. The pivot joint between atlas and axis is a type of

(a) Fibrous joint (b) Synovial joint

(c) Saddle joint (d) Cartilaginous joint

SECTION-V 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) 4^{th} floor (b) 6^{th} floor (c) 3^{rd} floor (d) 2^{nd} 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 I 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.

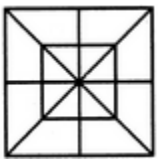
(a) 2 years (b) 3 years (c) 6 years (d) 4 years

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