Sample Paper

ENGINEERING

Aakash
Medical | IIT-JEE | Foundations

Aakash NATIONAL TALENT HUNT EXAM 2025

KASHMIR

(Class X Studying Moving to Class XI)

Physics, Chemistry, Mathematics & Mental Ability

INSTRUCTIONS FOR CANDIDATE

1. Duration of Test is 1 hr.
2. The Test Booklet consists of **40** questions. The maximum marks are **90**. There is **no negative marking** for wrong answer.
3. Pattern of the questions are as under:
   (i) The question paper consists of four parts *i.e.*, **Physics, Chemistry, Mathematics** and **Mental Ability**. Each part has **two sections**.
   (ii) **Section-I:** This section contains **35** multiple choice questions, which have **only one** correct answer. Each question carries **+2 marks** for correct answer.
   (iii) **Section-II:** This section contains **5** multiple choice questions, in which **one or more than one** choice(s) is(are) correct. Each question carries **+4 marks** for correct answer.

Aakash National Talent Hunt Exam (Kashmir)-2025

SAMPLE PAPER

(*Class X Studying Moving to Class XI*)

(The questions given in sample paper are indicative of the level and pattern of questions that will be asked in ANTHE-2025)

PHYSICS

Time : 1 Hour **MM : 90**

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 9 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

1. In moving a charge of 3 C across a battery, 300 J of energy is dissipated. If the negative terminal of the battery is at an electric potential of –20 V, then the electric potential of the positive terminal is

   (1) 40 V (2) 20 V

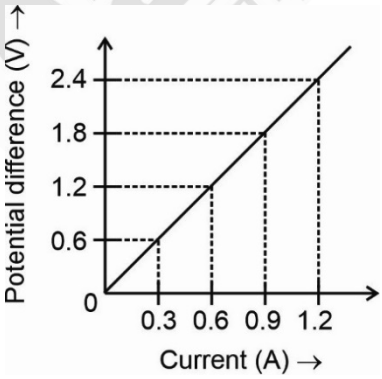
   (3) 60 V (4) 80 V

2. Time taken by a laser beam to travel a distance of 5 km under water having refractive index $\frac{4}{3}$, will be

   (1) 4×10^{-4} s (2) 4×10^{-5} s

   (3) 2.2×10^{-4} s (4) 2.2×10^{-5} s

3. The variation of potential difference (V) with current (I) flowing through a metallic wire is shown in the figure. The resistance of the wire is



   (1) 1 Ω (2) 2 Ω

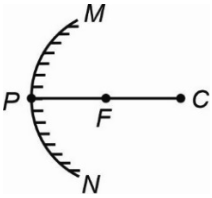
   (3) 3 Ω (4) 4 Ω

4. A far-sighted person uses a lens of power 2 D to correct his vision. The near point of the person without using the lens is

   (1) 0.5 m (2) 1 m

   (3) 1.5 m (4) 1.75 m

5. For the convex mirror shown in the figure, the aperture is represented by



(1) *PF* (2) *MN*

(3) *PC* (4) *FC*

6. Which of the following statements is incorrect?

(1) The resistance of a conductor depends on the nature of material

(2) Both the resistance and resistivity of a material vary with temperature

(3) Resistivity is a characteristic property of a material

(4) The resistivity of an alloy is generally lower than that of its constituent metals

7. In which of the following defects of vision the far point is less than infinity?

(1) Cataract

(2) Presbyopia

(3) Myopia

(4) Hypermetropia

8. A spherical lens has power +2.5 D, then its focal length is

(1) 25 cm

(2) 20 cm

(3) 40 cm

(4) 10 cm

9. Which of the following colour of light has maximum wavelength?

(1) Blue

(2) Orange

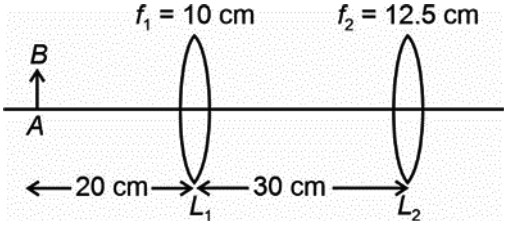
(3) Green

(4) Violet

SECTION-II : ONE OR MORE THAN ONE CORRECT ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **ONE OR MORE THAN ONE** choice(s) is(are) correct.

10. Two convex lenses L_1, L_2 and an object AB are arranged as shown in figure. The correct option(s) is/are



(1) Lens L_1 forms a real image of the object

(2) Distance of real image from lens L_1 is 20 cm

(3) Lens L_2 forms a virtual image

(4) Distance of virtual image from lens L_1 is 20 cm

CHEMISTRY

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 9 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

11. Shyam mixed 2 mL aqueous solution of potassium sulphate with 2 mL aqueous solution of barium chloride. The reaction can be classified as

(1) Combination reaction (2) Decomposition reaction

(3) Precipitation reaction (4) Redox reaction

12. Which of the following is correctly arranged on the basis of increasing pH value?

(1) Lemon juice, gastric juice, pure water (2) Pure water, milk of magnesia, 1M HCl

(3) Milk of magnesia, 1M NaOH, gastric juice (4) Gastric juice, pure water, milk of magnesia

13. Consider the following reactions:

$X(s) + YSO_4(aq) \rightarrow XSO_4(aq) + Y(s)$

$Y(s) + ZSO_4(aq) \rightarrow YSO_4(aq) + Z(s)$

$PSO_4(aq) + Z(s) \rightarrow ZSO_4(aq) + P(s)$

$QSO_4(aq) + X(s) \rightarrow$ No reaction

Now, choose the correct option.

(1) The correct order of reactivity is X > Y > Z > P > Q

(2) The correct order of reactivity is Q < X < Y < P < Z

(3) P, Q, X, Y and Z can be Cu, Na, Ca, Mg and Al respectively

(4) X, Y, Z, P and Q can be Na, K, Mg, Ag and Cu respectively

14. Consider the following reaction and the relevant statements given below

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

I. HCl is oxidised to Cl_2

II. HCl is an oxidising agent

III. MnO_2 is reduced to $MnCl_2$

IV. MnO_2 is reducing agent

The correct statements are

(1) I and II (2) II and III

(3) I and III (4) II and IV

15. Which of the following sets of compounds react to form ammonium chloride and baking soda?

(1) NaCl, O_2, CO and H_2O (2) NH_3, NaOH, Cl_2 and O_2

(3) NaCl, HCl, H_2O and CO_2 (4) NaCl, H_2O, CO_2 and NH_3

16. All of the following are the alloys, **except**

(1) 22 carat gold (2) Cinnabar

(3) Brass (4) Solder

17. Consider the following chemical equation

$aNH_3 + bO_2 \rightarrow cNO + dH_2O$

On balancing

(1) a : b = 4 : 3 (2) b : c = 5 : 6

(3) c + d > a + b (4) a + b = c + d

18. When limestone is heated strongly, it gives a gaseous product 'X' and a solid product 'Y'. 'Y' combines with water to give 'Z'. Which of the following is/are correct about 'X', 'Y' and 'Z'?

I. 'X' is CO_2 and 'Y' is quick lime.

II. 'Z' combines with chlorine gas to give bleaching powder.

III. 'X' is a basic oxide.

(1) Only I (2) Only II

(3) I and II (4) II and III

19. You are provided with two containers made up of iron and copper along with four solutions dil. HNO_3, dil. HCl, $ZnSO_4$(aq) and H_2O. Which of the following suggestions will help you to store them?

(1) $ZnSO_4$(aq) and H_2O can be stored in both the containers but dil. HNO_3 can be stored only in iron container.

(2) All the solutions can be well stored in both the containers

(3) Dil. HCl, $ZnSO_4$(aq) and H_2O can be stored in copper container but dil. HNO_3 cannot be stored in it.

(4) $ZnSO_4$(aq) and H_2O cannot be stored in the iron container.

SECTION-II : ONE OR MORE THAN ONE CORRECT ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **ONE OR MORE THAN ONE** choice(s) is(are) correct.

20. Consider the following elements and their electronic configuration

	K	L	M
A = x		x^3	x – 1
B = x		$x^3 – 2$	
C = x		$2x^2$	$2x^2 – 1$

Now, choose the correct option(s).

(1) 'A' is an alkali metal whereas 'B' and 'C' are the non-metals.

(2) 'B' and 'C' require 2 and 1 more electrons respectively to complete their octet.

(3) 'A' combines with 'B' and 'C' to form compounds 'A_2B' and 'AC' which are soluble in water.

(4) Compound formed between 'A' and 'B' is acidic in nature.

MATHEMATICS

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 10 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

21. If the zeroes of a quadratic polynomial are 3 and –5, then the polynomial can be

(1) $x^2 – 2x – 15$ (2) $\frac{x^2}{2} + x - \frac{15}{2}$

(3) $2x^2 + 4x – 15$ (4) $\frac{x^2 + 2x}{3} + 5$

22. In right triangle ABC, right angled at B, AB = 8 cm, BC = 6 cm. If P and Q are points on sides AB and AC respectively such that PQ = 2 cm, $\angle PQA = 90°$, then length QC equals

(1) $\frac{19}{3}$ cm (2) 6 m

(3) $\frac{22}{3}$ cm (4) 7 cm

23. The roots of the quadratic equation $2x^2 – 3x + 5 = 0$ are

(1) Irrational (2) Real and distinct

(3) Non-real (4) Real and equal

24. The HCF of 660 and 1001 is

(1) 6 (2) 11

(3) 44 (4) 77

25. The ratio of sum of zeroes and product of zeroes of the polynomial $p(x) = 3x^2 - 5x + 4$ is

(1) 5 : 4 (2) 4 : 5

(3) 5 : 3 (4) 4 : 3

26. If $2x + 3y = 10$ and $3x + 2y = 5$, then the value of $(x - y)$ is

(1) –15 (2) 15

(3) 5 (4) –5

27. The sum of a natural number and its square is 56. The number is

(1) 6 (2) 17

(3) 7 (4) 8

28. An AP consists of 41 terms. The sum of the three middlemost terms is 195 and the sum of the last three terms is 366. The sum upto 20 terms of this AP is

(1) 520 (2) 620

(3) 570 (4) 670

29. AD is median of ΔABC having vertices $A(5, 8)$, $B(2, 3)$ and $C(8, 3)$. If $E(x, y)$ is a point on AB such that $DE \perp AB$ and $DE \times AB - AD \times BD = 0$, then the relation between x and y can be

(1) $x^2 + y^2 + 340x - 20y = 0$

(2) $x^2 + y^2 + 931 = 0$

(3) $34x^2 + 34y^2 - 340x - 204y + 931 = 0$

(4) $34x^2 + 34y^2 + 340x + 204y = 0$

30. Sides AD, DC, CB and BA of parallelogram $ABCD$ are produced to E, H, G and F respectively such that BE intersects CD at I, AH intersects BC at L, DG intersects AB at K and CF intersects AD at J. Which of the following options is incorrect?

(1) $\Delta BCF \sim \Delta DJC$

(2) $CG \times DK = AD \times DG$

(3) $\frac{AB}{CI} - \frac{DH}{AB} = \frac{BE}{BI} - \frac{AH}{AL}$

(4) $\frac{AE \times CI \times CD}{AB \times BF \times CJ} = 1$

SECTION-II : ONE OR MORE THAN ONE CORRECT ANSWER TYPE

This section contains 2 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONE OR MORE THAN ONE** choice(s) is(are) correct.

31. If $9 + \text{cosec}^2\theta - 4\sin\theta = 4\cos^2\theta + \cot^2\theta + 5$, $0° < \theta < 90°$, then the correct option(s) is/are

(1) $\text{cosec}(2\theta) = \frac{2}{\sqrt{3}}$

(2) $\sec\theta = \frac{2}{\sqrt{3}}$

(3) $\tan(\theta + 30°) = \sqrt{3}$

(4) $\cot(\theta + 15°) = 0$

32. A boy is observing the top of a tree from ground at an elevation of 30° and a girl is also observing the top of that tree from the top of a building at an elevation of 60°. If the boy, foot of the tree and the base of building are in same line, height of tree is 100 m, the tree is in between of boy and the building and distance of tree from the building is 30 m, then the correct option(s) is/are

(1) Height of building is $\left(100 - 30\sqrt{3}\right)$ m

(2) Distance between the building and boy is $10\left(3 + 10\sqrt{3}\right)$ m

(3) Distance between the girl and the boy is $20\sqrt{109}$ m

(4) Distance of boy from tree is $100\sqrt{3}$ m

MENTAL ABILITY

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 7 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

33. Ram is brother of Geeta. Geeta is daughter of Meena. Mohan is son of Meena. Sintu and Rinku are sons of Ram. Jyoti is daughter of Geeta. Pinku is son of Rakesh, who is husband of Geeta. Who is cousin of Sintu?

(1) Pinku (2) Meena

(3) Rinku (4) Mohan

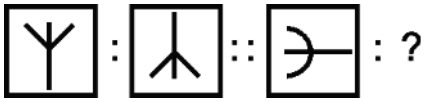
34. Find the next term.

D40J, H112N, L216R, P352V, ?

(1) U525Y (2) T520Z

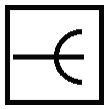
(3) Z502T (4) U21A

35. Choose the correct option in place of (?).



(1) 

(2) 

(3) 

(4) 

36. In a certain code language 'NUMBER' is coded as 'SFCNVO' and 'ANALOGY' is coded as 'ZHPMBOB', then 'ALPHABET' is coded as

(1) UFCBQIMB

(2) GVCBIQMB

(3) BMQIBCFU

(4) UFCBIQMB

37. Four friends Raj, Rohan, Rani and Rohit play different games namely Cricket, Hockey, Basketball, Badminton not necessarily in the same order.

Rohan does not play Cricket and Hockey. Raj plays Badminton. Rani does not play Hockey and Basketball. Which game is played by Rani?

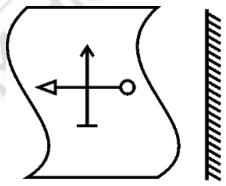
(1) Cricket

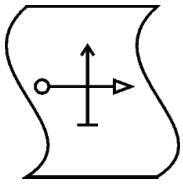
(2) Hockey

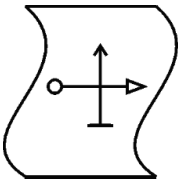
(3) Badminton

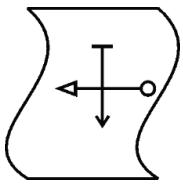
(4) Basketball

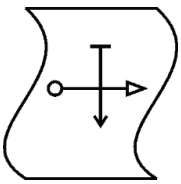
38. Choose the correct mirror image.



(1) 

(2) 

(3) 

(4) 

39. Study the given information carefully and answer the following question.

Marks of Rahul obtained in different classes out of 500.

Class	10^{th}	9^{th}	8^{th}	7^{th}	6^{th}	5^{th}
Marks	482	385	390	450	475	490

By what percent the total marks obtained by Rahul in Class 9^{th}, 8^{th} and 5^{th} altogether is more than the total marks obtained in class 10^{th} and 7^{th} together?

(1) 28.78% (2) 35.73%

(3) 42.69% (4) 84.76%

SECTION-II : ONE OR MORE THAN ONE CORRECT ANSWER TYPE

This section contains 1 multiple choice question, which has 4 choices (1), (2), (3) and (4) out of which **ONE OR MORE THAN ONE** choice(s) is(are) correct.

40. If 4ψ8$9 = 137, 5ψ6$4 = 165 and 8ψ7$4 = 565, then which option(s) follow(s) the same operation?

(1) 6ψ5$9 = 250 (2) 8ψ3$7 = 546

(3) 7ψ8$3 = 410 (4) 9ψ8$7 = 800

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899 Classroom Students Aakashians Qualified in IOQM 2024	**161** Classroom Students Aakashians Qualified in RMO 2024-25	**420** Classroom Students Aakashians Qualified in NSEs 2024-25	**25** Classroom Students Aakashians Qualified for OCSCs/IMOTC /APMO 2024-25	**4902** Classroom Students Aakashians Qualified in NSO (Level-I) 2024-25

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