Sample Paper

ENGINEERING

Aakash
Medical | IIT-JEE | Foundations

Aakash
NATIONAL
TALENT HUNT
EXAM
2026
ANTHE

(Class XI Studying Moving to Class XII)

Physics, Chemistry & Mathematics

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 three parts *i.e.*, **Physics, Chemistry and Mathematics.** 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-2026
Sample Paper
(*Class XI Studying Moving to Class XII*)

(The questions given in sample paper are indicative of the level and pattern of questions that will be asked in ANTHE-2026)

Time : 1 Hour **MM : 90**

PHYSICS

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 11 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

1. The distance travelled by an object is given by $x = at + \frac{bt^2}{(c+a)}$, where t is time and a, b, c are constants. The dimensions of b and c respectively are

   (1) $[LT^{-2}]$, $[LT^{-1}]$ (2) $[L^2T^{-3}]$, $[LT^{-1}]$

   (3) $[LT^{-1}]$, $[L^2T^{-1}]$ (4) $[LT^{-1}]$, $[LT^{-2}]$

2. A quantity is represented by $X = M^aL^bT^c$. The percentage error in measurement of M, L and T are α%, β% and γ% respectively. The percentage error in X would be

   (1) $(\alpha a + \beta b + \gamma c)$% (2) $(\alpha a - \beta b + \gamma c)$%

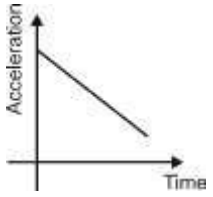
   (3) $(\alpha a - \beta b - \gamma c)$% (4) None of these

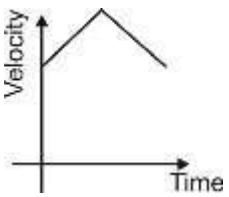
3. A particle moves along a straight line so that its position is given by $x = (at^3 + bt + 5)$, where t is time in second. If its acceleration after 4 s is 48 m/s^2, then a is equal to

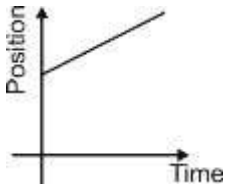
   (1) 3 (2) 1

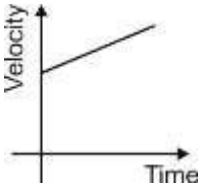
   (3) 2 (4) 4

4. A body moves with uniform acceleration in a straight line, then which of the following graph is correct?

   (1) 

   (2) 

   (3) 

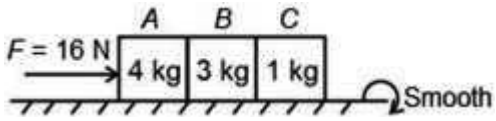
   (4) 

5. A stone is just released from the window of a train moving along a horizontal straight track. The stone will hit the ground following

(1) Straight path (2) Circular path

(3) Parabolic path (4) Hyperbolic path

6. From the figure, the contact force between *B* and *C* is



(1) 10 N (2) 8 N

(3) 16 N (4) 2 N

7. The force of friction on the block at t = 12 second is

(1) 5 N (2) Zero

(3) 6 N (4) 8 N

8. A body of mass 6 kg is under a force which causes displacement in it given by $s = \frac{t^2}{4}$ metres, where t is in seconds. The work done by the force in 2 seconds is

(1) 12 J (2) 9 J

(3) 6 J (4) 3 J

9. When two bodies collide elastically with each other, then for just before the collision and just after the collision, select correct option.

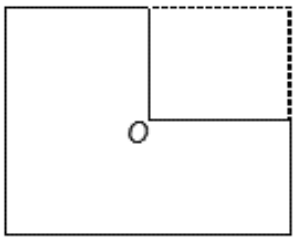
(1) Only kinetic energy of the system is conserved

(2) Only momentum of the system is conserved

(3) Both kinetic energy and momentum of the system are conserved

(4) Neither the momentum nor the kinetic energy of the system is conserved

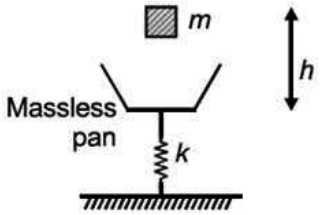
10. The moment of inertia of square plate about an axis passing through centre of mass (O) and perpendicular to the plane is I. If one quarter of section of the plate is removed as shown, then moment of inertia of the remaining plate about same axis is



(1) $\frac{1}{3}I$ (2) $\frac{1}{2}I$

(3) $\frac{3}{4}I$ (4) $\frac{2}{3}I$

11. A small block of mass m falls from height h onto a massless pan (which is fixed on a vertical spring of stiffness k). Maximum compression in the spring (x) is given by which of the following expressions?



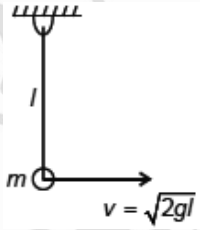
(1) $mgh = \frac{1}{2}kx^2$ (2) $mg(h+x) = \frac{1}{2}kx^2$

(3) $mg(h-x) = \frac{1}{2}kx^2$ (4) $mg = kx$

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.

12. A bob of mass m is given velocity $v = \sqrt{2gl}$ at its lowest point. If T_{max} and T_{min} is maximum and minimum tension in the string during motion of bob, then



(1) $T_{max} = 3mg$ (2) $T_{min} = 0$

(3) $T_{max} = 4mg$ (4) $T_{max} = mg$

13. Which of the following statement(s) is/are correct for a spherical body rolling without slipping on a rough horizontal fixed surface?

(1) The acceleration of the point in contact with ground is zero

(2) The speed of some of the point(s) of the body is/are zero

(3) Friction force on the body may or may not be zero

(4) Work done by friction on the body may or may not be zero

CHEMISTRY

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 11 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

14. For a reaction to be spontaneous, the required conditions are

(1) $\Delta_rH°$ = –ve, $\Delta_rS°$ = –ve, at high T (2) $\Delta_rH°$ = +ve, $\Delta_rS°$ = +ve, at high T

(3) $\Delta_rH°$ = +ve, $\Delta_rS°$ = +ve, at low T (4) $\Delta_rH°$ = +ve, $\Delta_rS°$ = –ve, at all T

15. 14 g of nitrogen gas on reaction with 3 g of hydrogen will produce 17 g of Ammonia gas. The data illustrates
(1) Law of multiple proportions
(2) Law of conservation of mass
(3) Law of definite proportion
(4) Law of reciprocal proportion

16. The strongest H-bond is present when X is
X — H – – – – X
(1) F
(2) Cl
(3) O
(4) N

17. Which of the following set of oxides are amphoteric?
(1) Al_2O_3, As_2O_3
(2) Al_2O_3, CO_2
(3) NO_2, CO
(4) N_2O, Al_2O_3

18. The atomic number of element Unq is
(1) 102
(2) 103
(3) 104
(4) 105

19. How many moles of $Ca_3(PO_4)_2$ will contain 0.20 mol of oxygen atoms?
(1) 0.25
(2) 0.025
(3) 40
(4) 0.050

20. For a spontaneous process, which of the following relation is correct?
(1) $\Delta S_{total} = 0$
(2) $\Delta S_{total} > 0$
(3) $\Delta S_{total} < 0$
(4) Independent of ΔS

21. Consider the following statements :
(S_1) : If only two electrons are present in a sub-shell (with $l \neq 0$) then they must have opposite spin quantum number.
(S_2) : When an electron occupy all the available set of degenerate orbitals, Hund's rule of maximum multiplicity is observed.
(S_3) : All the noble gases have same valence shell electronic configuration.
Which of the given statement(s) is/are not correct?
(1) Only S_1 and S_3
(2) Only S_2
(3) Only S_2 and S_3
(4) S_1, S_2 and S_3

22. Which among the following molecules does not exist?
(1) Li_2
(2) Be_2
(3) B_2
(4) C_2

23. According to Bohr's model of atom, the lowest velocity of electron is associated with the electron in the
(1) 9^{th} orbit of Li^{2+} ion
(2) 4^{th} orbit of He^{+} ion
(3) 8^{th} orbit of Be^{3+} ion
(4) 5^{th} orbit of H atom

24. The element which belongs to 4^{th} period and 17^{th} group is
(1) Ge
(2) As
(3) I
(4) Br

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.

25. Consider the shape of PCl_3F_2 and identify the correct statement(s).
    (1) There is one fluorine atom per face
    (2) There are two chlorine atoms per face
    (3) Only one face contains 3 Cl atoms
    (4) No face contains two F atoms
26. Which of the following is/are the correct statement(s) regarding Heisenberg's uncertainty principle?
    (1) The effect of Heisenberg's uncertainty principle is significant only for microscopic objects
    (2) It rules out the existence of definite paths or trajectories of electrons and other similar particles
    (3) In dealing with milligram-sized or heavier objects, the associated uncertainties are of real consequence
    (4) It states that it is impossible to determine simultaneously, the exact position and momentum of an electron

MATHEMATICS

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 13 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

27. If $A = \{5, 6\}$, then $n(P(A))$, where $P(A)$ is the power set of A, is
    (1) 2 (2) 0
    (3) 1 (4) 4
28. $1 + (\sec^2 x)(\sin^2 x) =$
    (1) $\sin 2x$ (2) $\sin^2 x$
    (3) $\tan^2 x$ (4) $\sec^2 x$
29. $(3 - 4i)^3$ is equal to (where $i = \sqrt{-1}$)
    (1) $117 + 44i$ (2) $-117 + 44i$
    (3) $117 - 44i$ (4) $-117 - 44i$
30. The set of exhaustive values of x satisfying $|1 - x| \leq 4$ is
    (1) $[-3, 6]$ (2) $[-4, 4]$
    (3) $[-3, 5]$ (4) $[-2, 6]$
31. 8^{th} term of the series $2\sqrt{2} + \sqrt{2} + 0 + ...$ will be
    (1) $-5\sqrt{2}$ (2) $5\sqrt{2}$
    (3) $10\sqrt{2}$ (4) $-10\sqrt{2}$
32. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 2, 5\}$, $B = \{6, 7\}$, then $A \cap B^c$ is (where B^c is complement of B)
    (1) B^c (2) A
    (3) A^c (4) B

33. If $z_1 = 1 + i$, $z_2 = \sqrt{3} + i$, $z_3 = -\sqrt{3} - i$ and $z_4 = -1 - i$, then the modulus of $\frac{z_1 z_3}{z_2 z_4}$ is (where $i = \sqrt{-1}$)

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

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

34. The set of all values of x satisfying the inequations $2x + 3 > 3x - 1$ and $4x - 1 > 7$ is

(1) $(2, 4)$ (2) $[2, 4]$

(3) $(-\infty, 2] \cup [4, \infty)$ (4) $(-\infty, 2) \cup (4, \infty)$

35. The sum of the series $1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+...\infty$ is

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

(3) 2 (4) $\frac{5}{2}$

36. In a class of 100 students, 60 play cricket while 55 play hockey. If each student plays at least one of the games, then the number of students who play both cricket and hockey is

(1) 5 (2) 10

(3) 15 (4) 20

37. A polygon has 90 diagonals. The number of vertices of the polygon is

(1) 14 (2) 15

(3) 16 (4) 17

38. The value of $\sin\left(\frac{17\pi}{2}\right)+\cos\left(\frac{13\pi}{3}\right)$ is equal to

(1) $\frac{1}{2}$ (2) $-\frac{3}{2}$

(3) $\frac{3}{2}$ (4) $-\frac{1}{2}$

39. The number of ways in which 7 persons can be divided into 3 groups such that each group contains atleast 2 persons is equal to

(1) 210 (2) 105

(3) 245 (4) 490

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 $z_1 = 3 + 4i$, $z_2 = a + bi$, $z_3 = 2 - 3i$ and $z_1 z_3 = z_2$, then (where $i = \sqrt{-1}$)

(1) $a + b = 17$ (2) $\bar{z}_2 = 17 + i$

(3) $a \cdot b = -18$ (4) $|z_2| = 5\sqrt{13}$

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777 Classroom Students Aakashians Qualified in IOQM 2025	**134** Classroom Students Aakashians Qualified in RMO 2025-26	**378** Classroom Students Aakashians Qualified in NSEs 2025-26	**26** Classroom Students Aakashians Qualified for OCSCs/IMOTC /APMO 2025-26	**2072** Classroom Students Aakashians Qualified in NSO & IMO (Level-1) 2025-26

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