Sample Paper

MEDICAL

Aakash
Medical | IIT-JEE | Foundations

Aakash
NATIONAL
TALENT HUNT EXAM
2025

KASHMIR

Class XI Studying Moving to Class XII

Physics, Chemistry & Biology

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 **Biology**. 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 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 (Kashmir)-2025)

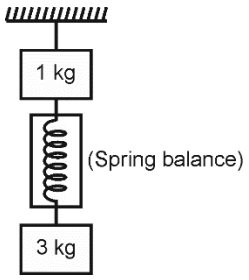
Time : 1 Hour **MM : 90**

PHYSICS

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. The dimensional formula of linear momentum is
   (1) $[ML^{-1}T^{-2}]$ (2) $[MLT^{2}]$
   (3) $[ML^{2}T^{-1}]$ (4) $[MLT^{-1}]$
2. The position-time relation of a moving particle is given as $x = 2t^2 + 3t + 4$ (where x is in m and t is in s). The velocity of the particle at $t = 1$ s will be
   (1) 7 m/s (2) 4 m/s
   (3) 3 m/s (4) 5 m/s
3. A ball is dropped from a height of 10 m, which after making repeated bounces finally comes to halt in 5 seconds, its average velocity is
   (1) Zero (2) 1 m/s
   (3) 2 m/s (4) 3 m/s
4. A swimmer swims with a speed 5 m/s w.r.t. river. Minimum time, that swimmer would take, to cross the river of width 300 m will be
   (1) 60 s (2) 30 s
   (3) 10 s (4) 5 s
5. A shell of mass 200 g is fired by a gun of mass 100 kg. If speed of the shell is 80 m/s then the recoil speed of the gun will be
   (1) 16 cm/s (2) 8 cm/s
   (3) 8 m/s (4) 16 m/s
6. The reading of spring balance as shown in figure is [$g = 10$ m/s^2]



   (1) 30 N (2) 20 N
   (3) 40 N (4) 10 N

7. A particle of mass m is moving with speed v_0 along a line $y = 2x + 4$. Angular momentum of particle about origin is

(1) Continuously increasing
(2) Continuously decreasing
(3) Remains constant
(4) Zero

8. Magnitude of vector product of two vectors $\vec{A}$ and $\vec{B}$ is $\sqrt{3}$ times their scalar product. Then angle between two vectors will be

(1) $\frac{\pi}{4}$
(2) $\frac{\pi}{6}$
(3) $\frac{\pi}{3}$
(4) $\frac{\pi}{2}$

9. The area under force-displacement curve gives

(1) Impulse
(2) Power
(3) Work
(4) Time

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. A couple is applied on a rigid rod, initially at rest then it will be in

(1) Translational equilibrium
(2) Pure rotational motion
(3) Pure translational motion
(4) Rotational equilibrium

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. If the mass percentage of magnesium in a biomolecule is 0.6% then the minimum molar mass of the biomolecule will be

(1) 12000 g mol^{-1}
(2) 4000 g mol^{-1}
(3) 8000 g mol^{-1}
(4) 2400 g mol^{-1}

12. The threshold frequency for a metal is $8 \times 10^{14}\ s^{-1}$. What is the maximum kinetic energy of an electron emitted when radiation of frequency $2 \times 10^{15}\ s^{-1}$ hits the metal? ($h = 6.626 \times 10^{-34}$ Js)

(1) 7.5×10^{-20} J
(2) 7.25×10^{-19} J
(3) 7.0×10^{-15} J
(4) 7.95×10^{-19} J

13. Maximum number of electrons in a subshell with n = 4 and l = 3 is

(1) 10
(2) 12
(3) 14
(4) 16

14. Largest ion among the given isoelectronic species is

(1) Mg^{2+}
(2) Al^{3+}
(3) N^{3-}
(4) O^{2-}

15. Hybridisation and shape of XeF_4 is

(1) sp^2, Trigonal planar (2) sp^3, Tetrahedral

(3) sp^3d^2, Octahedral (4) sp^3d^2, Square planar

16. According to VSEPR theory, the repulsive interaction of electron pairs decreases in the order of

(1) bp-lp > lp-lp > bp-bp (2) lp-lp > lp-bp > bp-bp

(3) bp-bp > lp-bp > lp-lp (4) lp-lp > bp-bp > lp-bp

17. The IUPAC official name of the element with atomic number 106 is

(1) Mendelevium (2) Dubnium

(3) Seaborgium (4) Bohrium

18. For which of the following reaction, $\Delta H \neq \Delta U$?

(1) $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$

(2) $N_2(g) + O_2(g) \rightarrow 2NO(g)$

(3) $C(s) + O_2(g) \rightarrow CO_2(g)$

(4) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(\ell)$

19. The work done by 2 mol of an ideal gas when it expands isothermally and reversibly at 27°C from a volume of 3 L to 6 L is

(1) 2425 J (2) –4215 J

(3) 9725 J (4) –3458 J

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. Which of the following concentration term(s) is/are independent of temperature?

(1) Molarity (2) Mole fraction

(3) $\left(\frac{w}{w}\%\right)$ (4) Molality

BIOLOGY

SECTION-I : SINGLE CORRECT ANSWER TYPE

This section contains 17 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which **ONLY ONE** choice is correct.

21. All of the following cell organelles are bound by membrane, **except**

(1) Ribosome (2) Chloroplast

(3) Golgi complex (4) Lysosome

22. The most dramatic period of the cell cycle is
    (1) Interphase
    (2) M-phase
    (3) S-phase
    (4) G_0-phase
23. Which one of the following is **not** a significance of mitosis?
    (1) Growth of multicellular organisms
    (2) Restoration of nucleo-cytoplasmic ratio of cell
    (3) Replacement of older cells
    (4) Increasing genetic variability in the population
24. Which of the following is the basic and lowest taxonomic category?
    (1) Phylum (2) Division
    (3) Species (4) Family
25. A common feature between members of kingdom Fungi and Plantae is
    (1) Being autotrophic
    (2) Presence of cell wall
    (3) Composition of cell wall
    (4) Absence of nuclear membrane
26. Which kingdom in five kingdom classification proposed by Whittaker does **not** have well defined boundaries?
    (1) Monera (2) Fungi
    (3) Plantae (4) Protista
27. In maize seed, single large and shield shaped cotyledon is called
    (1) Coleoptile (2) Coleorhiza
    (3) Scutellum (4) Hilum
28. In animal cell, S phase is **not** characterized by
    (1) DNA replication
    (2) Centriole duplication
    (3) Chromosomal condensation
    (4) Chromosome duplication
29. Triglyceride molecule contains
    (1) Three glycerol molecules joined to three fatty acids by ester bonds
    (2) Three fatty acid molecules joined to one glycerol molecule by ester bonds
    (3) Three glycerol molecules linked to three fatty acid molecules by glycosidic bonds
    (4) One fatty acid molecule joined to three glycerol molecules by ether bonds
30. Which of the following is a pentose sugar?
    (1) Fructose (2) Ribose
    (3) Glucose (4) Glycogen

31. Which of the following is **incorrect** w.r.t. pleural fluid?
    (1) Present between pleura
    (2) Reduces friction on the lung surface
    (3) Secreted by pericardium
    (4) Secreted by pleural membranes

32. Rh incompatibility has been observed between the
    (1) Rh+ve blood of pregnant mother and Rh–ve blood of foetus
    (2) Rh–ve blood of pregnant mother and Rh–ve blood of foetus
    (3) Rh+ve blood of pregnant mother and Rh+ve blood of foetus
    (4) Rh–ve blood of pregnant mother and Rh+ve blood of foetus

33. pH of blood is/can
    (1) Same in both oxygenated and deoxygenated state
    (2) More in oxygenated and less in deoxygenated state
    (3) More in deoxygenated and less in oxygenated state
    (4) Not be compared

34. A patient 'X' has no antibodies in his/her blood plasma against blood group antigens. Select the option that correctly depicts its donor group(s).
    (1) A and B only
    (2) A and O only
    (3) O only
    (4) AB, A, B and O

35. A fall in glomerular blood pressure can activate the 'A' cells to release 'B' which converts angiotensinogen in blood to angiotensin I. Select the **correct** option to fill in the respective blanks.

	'A'	**'B'**
(1)	JG	Renin
(2)	Renin	Aldosterone
(3)	JG	ANF
(4)	JG	Angiotensin II

36. Match column I with column II w.r.t. humans and choose the **correct** option.

	Column I (Bones)		**Column II (Number of bones)**
a.	Limb bones	(i)	10
b.	Palm bones	(ii)	14
c.	Facial bones	(iii)	06
d.	Girdle bones	(iv)	120

    (1) a(i), b(ii), c(iii), d(iv)
    (2) a(ii), b(iii), c(iv), d(i)
    (3) a(iii), b(iv), c(i), d(ii)
    (4) a(iv), b(i), c(ii), d(iii)

37. Which of the following can't be taken as a feature of 'I' band of a skeletal muscle fibre?
    (1) Consists of only actin filaments
    (2) Has a light appearance
    (3) Middle part contains a variable light zone called 'H' zone
    (4) Shortens during contraction of muscle fibre

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

This section contains 3 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.

38. Select the feature(s) which is/are common to the two types of locomotory structures found in the eukaryotic cells.
    (1) They are hair-like outgrowths of the cell membrane.
    (2) They have basal bodies that arise from a structure that shows cartwheel like organisation.
    (3) They work like oars, causing the movement of either the cell or the surrounding fluid.
    (4) They show 9 + 2 array of microtubules.

39. The first phase of karyokinesis is characterized by
    (1) Untangling of chromosomal material
    (2) Alignment of centromere of each chromosome towards the pole
    (3) A furrow that gradually deepens and ultimately joins in the centre
    (4) The process in which centrosomes present at the poles radiate out microtubules

40. Which of the following substances are reabsorbed in DCT?
    (1) Na^+ and H_2O
    (2) K^+ and H^+
    (3) HCO_3^- and H^+
    (4) H_2O and HCO_3^-

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Olympiads Results

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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