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SAMPLE PAPER

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CODE A

Sample Paper - 1 Year Program

Admission & Scholarship Test

Duration : 3.0 Hrs **Maximum Marks: 300**

PAPER SCHEME :

- The paper contains 75 Objective Type Questions divided into three sections: **Section - I (Chemistry), Section - II (Physics) and Section - III (Mathematics)**.
- Each section contains **25 Multiple Choice Questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

MARKING SCHEME :

- For each question in Section-I, II and III, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

GENERAL INSTRUCTIONS :

- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET.** IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

SUGGESTIONS:

- *Before starting the paper, spend 2-3 minutes to check whether all the pages are in order and report any issue to the invigilator immediately.*
- Try to attempt the Sections in their respective order.
- Do not get stuck on a particular question for more than 2-3 minutes. Move on to a new question as there are 75 questions to solve.

SECTION - I [CHEMISTRY]

1. What is the concentration of nitrate ions if equal volumes of 0.1 M $AgNO_3$ and 0.1 M NaCl are mixed together ?

(A) 0.1 M **(B)** 0.2 M **(C)** 0.05 M **(D)** 0.25 M

2. The percentage of nitrogen in urea is about :

(A) 46 **(B)** 85 **(C)** 18 **(D)** 28

3. The empirical formula of a compound is CH_2O. 0.0835 moles of the compound contains 1.0 *g* of hydrogen. Molecular formula of the compound is :

(A) $C_2H_{12}O_6$ **(B)** $C_5H_{10}O_5$ **(C)** $C_4H_8O_8$ **(D)** $C_3H_6O_3$

4. Two samples of lead oxide were separately reduced to metallic lead by heating in a current of hydrogen. The weight of lead from one oxide was half the weight of lead obtained from the other oxide. The data illustrates :

(A) Law of reciprocal proportions **(B)** Law of constant proportions
(C) Law of multiple proportions **(D)** Law of equivalent proportions

5. The ratio between kinetic energy and the total energy of the electrons of hydrogen atom according to Bohr's model is :

(A) 2 : 1 **(B)** 1 : 1 **(C)** 1 : – 1 **(D)** 1 : 2

6. Which of the following transitions have minimum wavelength ?

(A) $n_4 \rightarrow n_1$ **(B)** $n_2 \rightarrow n_1$ **(C)** $n_4 \rightarrow n_2$ **(D)** $n_3 \rightarrow n_1$

7. Which of the following sets of quantum numbers represent an impossible arrangement ?

	n	l	m	m_s		n	l	m	m_s
(A)	3	2	– 2	$(+)\frac{1}{2}$	**(B)**	4	0	0	$(-)\frac{1}{2}$
(C)	3	2	–3	$(+)\frac{1}{2}$	**(D)**	5	3	0	$(-)\frac{1}{2}$

8. The total number of electrons that can be accommodated in all the orbitals having principal quantum number 2 and azimuthal quantum number 1 is :

(A) 2 **(B)** 4 **(C)** 6 **(D)** 8

9. The correct sequence of increasing covalent character is represented by :

(A) $LiCl < NaCl < BeCl_2$ **(B)** $BeCl_2 < NaCl < LiCl$
(C) $NaCl < LiCl < BeCl_2$ **(D)** $BeCl_2 < LiCl < NaCl$

10. Which of the following compounds does not follow the octet rule for electron distribution ?

(A) PCl_5 **(B)** PCl_3 **(C)** H_2O **(D)** PH_3

11. If HCl molecule is completely polarized, so expected value of dipole moment is 6.12D (Debye), but experimental value of dipole moment is 1.03D. Calculate the percentage ionic character.

(A) 17 **(B)** 83 **(C)** 50 **(D)** 90

12. BF_3 and NF_3 both molecules are covalent, but BF_3 is non-polar and NF_3 is polar. Its reason is :

(A) In uncombined state boron is metal and nitrogen is gas

(B) $B-F$ bond has no dipole moment whereas $N-F$ bond has dipole moment

(C) The size of boron atom is smaller than nitrogen

(D) BF_3 is planar whereas NF_3 is pyramidal

13. Two separate bulbs contain ideal gases A and B. The density of gas A is twice that of gas B. The molecular mass of A is half that of gas B. The two gases are at the same temperature. The ratio of the pressure of A to that of gas B is :

(A) 2 **(B)** 1/2 **(C)** 4 **(D)** 1/4

14. There are 6.02×10^{22} molecules each of N_2, O_2 and H_2 which are mixed together at 760 *mm* and 273 K. The mass of the mixture in grams is :

(A) 6.2 **(B)** 4.12 **(C)** 3.09 **(D)** 7

15. Work done during isothermal expansion of one mole of an ideal gas from 10 *atm* to 1 *atm* at 300 *K* is (Gas constant = 2) :

(A) 938.8 *cal* **(B)** 1138.8 *cal* **(C)** 1381.8 *cal* **(D)** 1581.8 *cal*

16. 9.0 *gm* of H_2O is vaporised at 100^oC and 1 atm pressure. If the latent heat of vaporisation of water is $x\ J/gm$, then ΔS is given by :

(A) $\frac{x}{373}$ **(B)** $\frac{18x}{100}$ **(C)** $\frac{18x}{373}$ **(D)** $\frac{1}{2}\times\frac{18x}{373}$

17. The molar heat capacity of water at constant pressure is $75\ JK^{-1}mol^{-1}$. When 1.0 *kJ* of heat is supplied to 100 *g* of water which is free to expand, the increase in temperature of water is :

(A) 6.6 K **(B)** 1.2 K **(C)** 2.4 K **(D)** 4.8 K

18. Entropy is maximum in case of :

(A) Steam **(B)** Water at 0°C **(C)** Water at 4°C **(D)** Ice

19. How much of 80% pure $CaCO_3$ will be required to produce 44.8 L of CO_2 at STP?

(A) 200 g **(B)** 100 g **(C)** 180 g **(D)** 250 g

20. Hybridization of the underlined atom changes in:

(A) $\underline{Al}H_3$ changes to $\underline{Al}H_4^-$ **(B)** $H_2\underline{O}$ changes to $H_3\underline{O}^+$

(C) $\underline{N}H_3$ changes to $\underline{N}H_4^+$ **(D)** In all cases

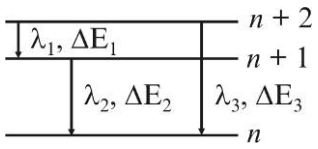
21. At what temperature would a reaction having $\Delta H = 4\ kcal\ mol^{-1}$ and $\Delta S = 10\ cal\ K^{-1}mol^{-1}$, be spontaneous?

(A) 400 K **(B)** Above 400 K **(C)** Below 400 K **(D)** Uncertain

22. Which of the following relations is correct for the facts shown in the given figure ?

(A) $\lambda_3 = \lambda_1 + \lambda_2$ **(B)** $\lambda_1 + \lambda_2 + \lambda_3 = 0$

(C) $\lambda_3 = \dfrac{\lambda_1\lambda_2}{\lambda_1 + \lambda_2}$ **(D)** $\lambda_3^2 = \lambda_1^2 + \lambda_2^2$



23. The kinetic energy of an electron in n^{th} of a uni-electron species of atomic number Z is $13.6\dfrac{Z^2}{n^2}$ eV. The potential energy of this electron in the same situation is:

(A) $-13.6\dfrac{Z^2}{n^2}$ eV **(B)** $-6.8\dfrac{Z^2}{n^2}$ eV **(C)** $-27.2\dfrac{Z^2}{n^2}$ eV **(D)** $+27.2\dfrac{Z^2}{n^2}$ eV

24. The radii of F, F^-, O and O^{-2} are in the order of :

(A) $O^{2-} > F^- > O > F$ **(B)** $O^{2-} > F^- > F > O$

(C) $F^- > O^{2-} > F > O$ **(D)** $O^{2-} > O > F^- > F$

25. The ionic conductance of following cation in a given concentration are in the order :

(A) $Li^+ < Na^+ < K^+ < Rb^+$ **(B)** $Li^+ > Na^+ > K^+ > Rb^+$

(C) $Li^+ < Na^+ > K^+ > Rb^+$ **(D)** $Li^+ = Na^+ < K^+ < Rb^+$

SECTION - II [PHYSICS]

26. If a vector $2\hat{i} + 3\hat{j} + 8\hat{k}$ is perpendicular to the vector $4\hat{j} - 4\hat{i} + \alpha\hat{k}$, then the value of α is :

(A) 1/2 **(B)** – 1/2 **(C)** 1 **(D)** – 1

27. Two vectors having equal magnitudes have addition resultant equal in magnitude to either of the two. The angle between them is :

(A) 90° **(B)** 60° **(C)** 120° **(D)** 0°

28. A student measures the time period of 100 oscillations of a simple pendulum four times. The data set is 90*s*, 91*s*, 95*s* and 92*s*. If the minimum division in the measuring clock is 1*s*, then the reported mean time should be :

(A) 92 ± 5.0 *s* **(B)** 92 ± 1.8 *s* **(C)** 92 ± 3 *s* **(D)** 92 ± 2 *s*

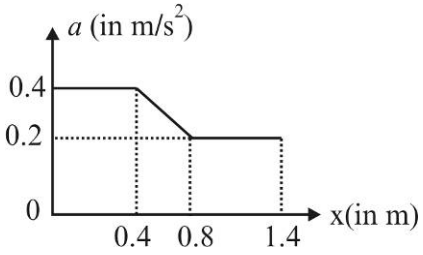
29. A, B, C and D are four different physical quantities having different dimensions. None of them is dimensionless. But we know that the equation AD = C ln(BD) holds true. Then which of the combination is **not** a meaningful quantity ?

(A) $A^2 - B^2C^2$ **(B)** $\dfrac{A-C}{D}$ **(C)** $\dfrac{A}{B} - C$ **(D)** $\dfrac{C}{BD} - \dfrac{A^2D^2}{C}$

30. The acceleration of a particle which moves along the positive *x*-axis varies with its position as shown. If the velocity of the particle is 0.8 *m*/*s* at *x* = 0, the velocity of the particle at *x* = 1.4 *m* is : (in *m*/*s*)

(A) 1.6 **(B)** 1.2

(C) 1.4 **(D)** 1.0



31. A swimmer crosses a flowing stream of width b to-and-fro in time t_1. The time taken to cover the same distance up and down the stream is t_2. If t_3 is the time swimmer would take to swim a distance $2b$ in still water, then :

(A) $t_1^2 = t_2 t_3$ **(B)** $t_2^2 = t_1 t_3$ **(C)** $t_3^2 = t_1 t_2$ **(D)** $t_3 = t_1 + t_2$

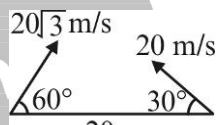
32. A particle is moving in a straight line. The velocity v of the particle varies with time t as $v = t^2 - 4t$, then the distance travelled by the particle during $t = 0$ *to* $t = 6s$ (where t is second and v is in m/s) is :

(A) $\frac{64}{3}m$ **(B)** Zero **(C)** $\frac{32}{3}m$ **(D)** $\frac{22}{3}m$

33. A glass wind screen whose inclination with the vertical can be changed is mounted on a car. The car moves horizontally with a speed of 2 m/s. At what angle α with the vertical should the wind screen be placed so that the rain drops falling vertically downwards with velocity 6 m/s strike the wind screen perpendicularly ?

(A) $\tan^{-1}(3)$ **(B)** $\tan^{-1}(1/3)$ **(C)** $\cos^{-1}(3)$ **(D)** $\sin^{-1}(1/3)$

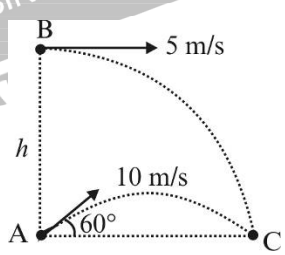
34. In the figure shown, the two projectiles are fired simultaneously. The minimum distance between them during their flight is :



(A) 20 m **(B)** $10\sqrt{3}m$

(C) 10 m **(D)** 5 m

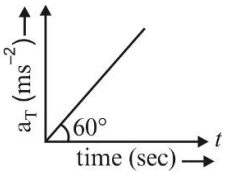
35. A particle A is projected from the ground with an initial velocity of 10 m/s at an angle of 60° with horizontal. From what height h should an-another particle B be projected horizontally with velocity 5 m/s so that both the particles collide at point C if both are projected simultaneously $(g = 10\, m/s^2)$?



(A) 10 m **(B)** 30 m

(C) 15 m **(D)** 25 m

36. Tangential acceleration of a particle moving in a circle of radius 1 m varies with time t as shown in the graph (initial velocity of particle is zero). Time after which total acceleration of particle makes an angle of 30° with radial acceleration is :

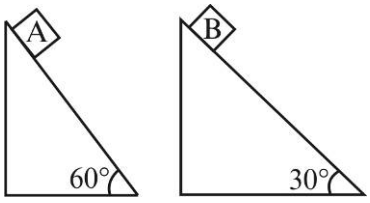


(A) 4 sec **(B)** 4/3 sec **(C)** $2^{2/3}$ sec **(D)** $\sqrt{2}$ sec

37. The co-ordinates(in m) of a moving particle at a time t, are given by, $x = 5\sin 10\,t, y = 5\cos 10t$. The speed of the particle (in m/s) is:

(A) 25 **(B)** 50 **(C)** 10 **(D)** 20

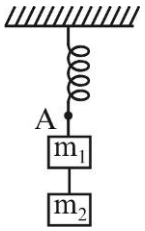
38. Two fixed frictionless inclined plane making an angle 30° and 60° with the vertical are shown in the figure. Two blocks A and B are placed on the two planes. What is the relative vertical acceleration of A with respect to B?



(A) 4.9 ms^{-2} in horizontal direction **(B)** 9.8 ms^{-2} in vertical direction

(C) zero **(D)** 4.9 ms^{-2} in vertical direction

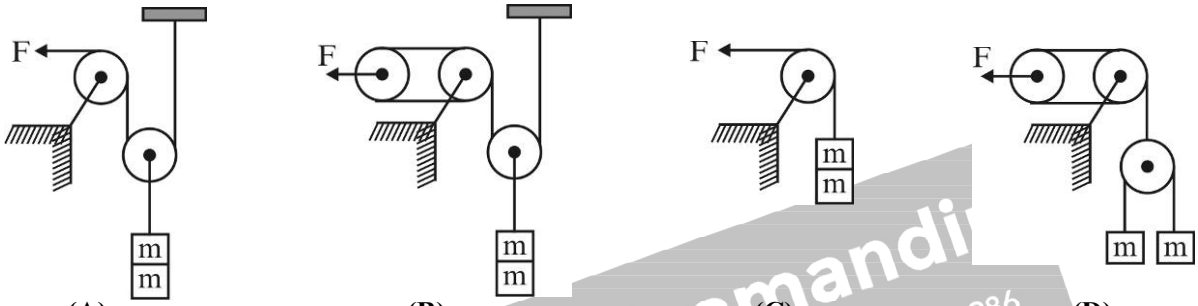
39. Consider the diagram. a_1 and a_2 are accelerations of two blocks m_1 and m_2 respectively just after cutting the spring at end A. Similarly, a_3 *and* a_4 are accelerations of two blocks just after cutting the string. Which one of the following options is **incorrect** ?



(A) $a_1 = g$ **(B)** $a_2 = g$

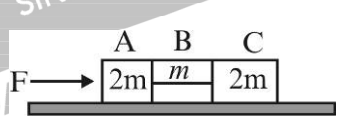
(C) $a_3 = m_1 g / m_2$ **(D)** $a_4 = g$

40. A man thinks about 4 arrangements as shown to raise two small bricks each having mass *m*. Which of the arrangements would take minimum time?



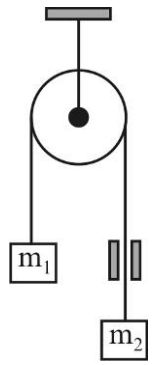
(A) **(B)** **(C)** **(D)**

41. The system is pushed by a force F as shown in figure in figure. All surfaces are smooth except between B and C. Friction coefficient between B and C is μ. Minimum value of F to prevent block B from downward slipping is :



(A) $\left(\frac{3}{2\mu}\right)mg$ **(B)** $\left(\frac{5}{2\mu}\right)mg$ **(C)** $\left(\frac{5}{2}\right)\mu mg$ **(D)** $\left(\frac{3}{2}\right)\mu mg$

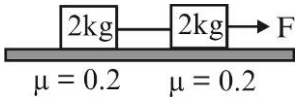
42. A weightless string passes through a slit over a pulley. The slit offers frictional force *f* to the string. The string carries two weights having masses m_1 and m_2, where $m_2 > m_1$, then acceleration of the weights is :

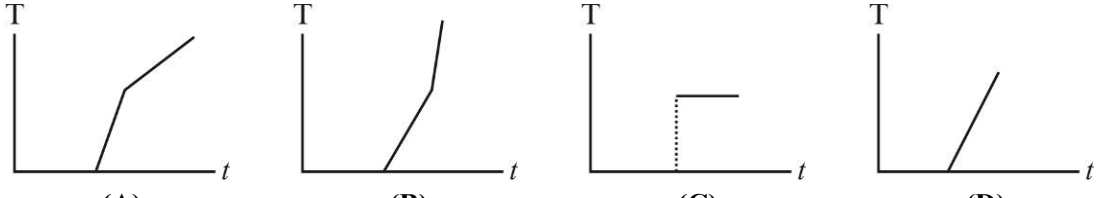


(A) $\frac{(m_2 - m_1)g - f}{m_1 + m_2}$ **(B)** $\frac{f - (m_1 - m_2)g}{m_1 + m_2}$

(C) $\frac{(m_1 - m_2)g - f}{(m_1 + m_2)}$ **(D)** $\frac{m_2 g - f}{(m_1 + m_2)}$

43. Two blocks each of mass $m = 2kg$ placed on rough horizontal surface connected by massless string as shown in the figure. A variable horizontal force F = *t* N (where *t* is time) is applied, then the tension T in string versus time graph is :





(A) **(B)** **(C)** **(D)**

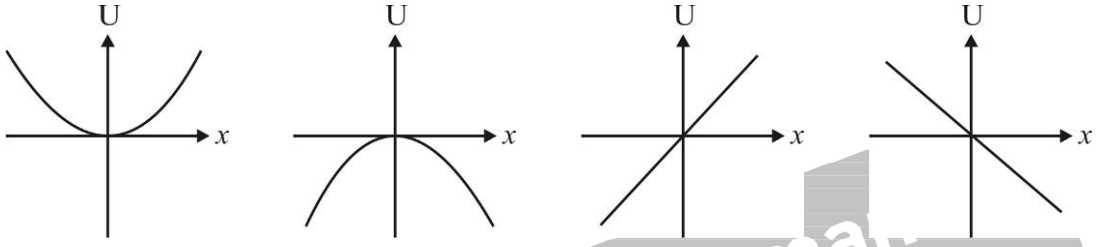
44. A stone tied to a string of length L is whirled in a vertical circle with the other end of the string at the centre. At a certain instant of time, the stone is at its lowest position, and has a speed *u*. The magnitude of the change in its velocity as it reaches a position where the string is horizontal is :

(A) $\sqrt{u^2-2gL}$ **(B)** $\sqrt{2gL}$ **(C)** $\sqrt{u^2-gL}$ **(D)** $\sqrt{2\left(u^2-gL\right)}$

45. A wind-powered generator converts wind energy intercepted by its blades into electrical energy. For wind speed *V*, the electrical power output will be proportional to :

(A) V **(B)** V^2 **(C)** V^3 **(D)** V^4

46. A particle is acted by a force F = – *kx*, where *k* is a positive constant. Its potential energy at $x = 0$ is zero. Which curve correctly represents the variation of potential energy of the block with respect to *x*?



(A) **(B)** **(C)** **(D)**

47. If the resultant of all the external forces action on a system of particles is zero, then from an inertial frame, one can surely say that the :

(A) linear momentum of the system does not change in time
(B) kinetic energy of the system does not change in time
(C) angular momentum of the system does not change in time
(D) potential energy of the system does not change in time

48. Two particles of masses m_1 and m_2 in projectile motion have velocities $\vec{v}_1$ and $\vec{v}_2$, respectively, at time $t = 0$. They collide at time t_0. Their velocities become $\vec{v}_1'$ and $\vec{v}_2'$ at time $2t_0$ while still moving in air. The value of $\left|\left(m_1\vec{v}_1'+m_2\vec{v}_2'\right)-\left(m_1\vec{v}_1+m_2\vec{v}_2\right)\right|$ is :

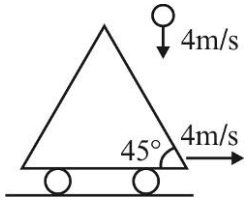
(A) Zero **(B)** $\left(m_1+m_2\right)gt_0$

(C) $\frac{1}{2}\left(m_1+m_2\right)gt_0$ **(D)** $2\left(m_1+m_2\right)gt_0$

49. A ball hits the floor and rebounds after an inelastic collision. In this case,

(A) the momentum of the ball just after the collision is the same as that just before the collision
(B) the mechanical energy of the ball remains the same in the collision
(C) the total momentum of the ball and the earth is conserved
(D) the total mechanical energy of the ball and the earth is conserved

50. A small ball falling vertically downward with constant velocity 4m/s strikes elastically a massive inclined cart moving with velocity 4m/s horizontally as shown. The velocity of the rebound of the ball is :



(A) $4\sqrt{2}m/s$ **(B)** $4\sqrt{3}m/s$ **(C)** $4\ m/s$ **(D)** $4\sqrt{5}\ m/s$

SECTION - III [MATHEMATICS]

51. In the expansion of $\left(3^{-x/4}+3^{5x/4}\right)^n$ the sum of binomial coefficient is 64 and term with the greatest binomial coefficient exceeds the third by $(n-1)$, the value of x must be :

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3

52. The value of $\sum_{r=1}^{15}\frac{r2^r}{(r+2)!}$ is equal to :

(A) $\frac{(17)!-2^{16}}{(17)!}$ **(B)** $\frac{(18)!-2^{17}}{(18)!}$ **(C)** $\frac{(16)!-2^{15}}{(16)!}$ **(D)** $\frac{(15)!-2^{14}}{(15)!}$

53. If the term independent of x in the $\left(\sqrt{x}-\frac{k}{x^2}\right)^{10}$ is 405, then k equals :

(A) 2, – 2 **(B)** 3, – 3 **(C)** 4, – 4 **(D)** 1, – 1

54. The coefficient of x^{53} in the expansion $\sum_{m=0}^{100}{}^{100}C_m(x-3)^{100-m}2^m$ is :

(A) ${}^{100}C_{47}$ **(B)** ${}^{100}C_{53}$ **(C)** $-({}^{100}C_{53})$ **(D)** $-({}^{100}C_{100})$

55. In the expansion of $\left(1+x+x^3+x^4\right)^{10}$, the coefficient of x^4 is :

(A) ${}^{40}C_4$ **(B)** ${}^{10}C_4$ **(C)** 240 **(D)** 310

56. The sum of rational term in $\left(\sqrt{2}+\sqrt[3]{3}+\sqrt[6]{5}\right)^{10}$ is equal to :

(A) 12632 **(B)** 1260 **(C)** 126 **(D)** None of these

57. The largest term common to the sequences 1, 11, 21, 31, ….to 100 terms and 31, 36, 41, 46, …. To 100 terms is :

(A) 381 **(B)** 471 **(C)** 281 **(D)** 521

58. Consider an A.P. $a_1,a_2,a_3,....$ such that $a_3+a_5+a_8=11$ and $a_4+a_2=-2$, then the value of $a_1+a_6+a_7$ is :

(A) – 8 **(B)** 5 **(C)** 7 **(D)** 9

59. Let $a_1,a_2,a_3,....$ in A.P., then a_p,a_q,a_r are in A.P. if p, q, r are in :

(A) A.P. **(B)** G.P. **(C)** H.P. **(D)** None of these

60. If $|a|<1$ and $|b|<1$, then the sum of the series $1+(1+a)b+\left(1+a+a^2\right)b^2+\left(1+a+a^2+a^3\right)b^3+...$ is:

(A) $\frac{1}{(1-a)(1-b)}$ **(B)** $\frac{1}{(1-a)(1-ab)}$

(C) $\frac{1}{(1-b)(1-ab)}$ **(D)** $\frac{1}{(1-a)(1-b)(1-ab)}$

61. If the sets A and B are defined as $A=\{(x,y): y=e^x, x\in R\}$; $B=\{(x,y): y=x, x\in R\}$, then :

(A) $B\subseteq A$ **(B)** $A\subseteq B$ **(C)** $A\cap B=\varphi$ **(D)** $A\cup B=A$

62. If $|z_1|=|z_2|$ and $\arg(z_1/z_2)=\pi$, then z_1+z_2 is equal to :

(A) 0 **(B)** purely imaginary
(C) purely real **(D)** None of these

63. If $k>0, |z|=|w|=k$ and $\alpha=\dfrac{z-\overline{w}}{k^2+z\overline{w}}$, then $\mathrm{Re}(\alpha)$ equals :

(A) 0 **(B)** $k/2$ **(C)** k **(D)** None of these

64. If α,β are the roots of the equation $u^2-2u+2=0$ and if $\cot\theta=x+1$,

then $\left[(x+\alpha)^n-(x+\beta)^n\right]/[\alpha-\beta]$ is equal to :

(A) $\dfrac{\sin n\theta}{\sin^n\theta}$ **(B)** $\dfrac{\cos n\theta}{\cos^n\theta}$ **(C)** $\dfrac{\sin n\theta}{\cos^n\theta}$ **(D)** $\dfrac{\cos n\theta}{\sin^n\theta}$

65. The greatest positive argument of complex number satisfying $|z-4|=\mathrm{Re}(z)$ is :

(A) $\dfrac{\pi}{3}$ **(B)** $\dfrac{2\pi}{3}$ **(C)** $\dfrac{\pi}{2}$ **(D)** $\dfrac{\pi}{4}$

66. Let a be a complex number such that $|a|<1$ and $z_1, z_2, z_3, \ldots$ be the vertices of a polygon such that $z_k=1+a+a^2+\ldots+a^{k-1}$ for all $k=1,2,3,\ldots$ Then $z_1, z_2, \ldots$ lie within the circle :

(A) $\left|z-\dfrac{1}{1-a}\right|=\dfrac{1}{|a-1|}$ **(B)** $\left|z+\dfrac{1}{1+a}\right|=\dfrac{1}{|a+1|}$

(C) $\left|z-\dfrac{1}{1-a}\right|=|a-1|$ **(D)** $\left|z+\dfrac{1}{a+1}\right|=|a+1|$

67. Let $a\neq 0$ and $p(x)$ be a polynomial of degree greater than 2. If $p(x)$ leaves remainders a and $-a$ when divided respectively, by $x+a$ and $x-a$, the remainder when $p(x)$ is divided by x^2-a^2 is:

(A) $2x$ **(B)** $-2x$ **(C)** x **(D)** $-x$

68. If α and β are roots of the equation $ax^2+bx+c=0$, then the roots of the equation $a(2x+1)^2-b(2x+1)(3-x)+c(3-x)^2=0$ are :

(A) $\dfrac{2\alpha+1}{\alpha-3}, \dfrac{2\beta+1}{\beta-3}$ **(B)** $\dfrac{3\alpha+1}{\alpha-2}, \dfrac{3\beta+1}{\beta-2}$ **(C)** $\dfrac{2\alpha-1}{\alpha-2}, \dfrac{2\beta+1}{\beta-2}$ **(D)** None of these

69. If α,β are the roots of $ax^2+bx+c=0$ and $\alpha+h, \beta+h$ are the roots of $px^2+qx+r=0$, then $h=$

(A) $-\dfrac{1}{2}\left(\dfrac{a}{b}-\dfrac{p}{q}\right)$ **(B)** $\left(\dfrac{b}{a}-\dfrac{q}{p}\right)$ **(C)** $\dfrac{1}{2}\left(\dfrac{b}{a}-\dfrac{q}{p}\right)$ **(D)** None of these

70. If roots of $x^2-(a-3)x+a=0$ are such that at least one of them is greater than 2, then :

(A) $a\in[7,9]$ **(B)** $a\in[7,\infty)$ **(C)** $a\in[9,\infty)$ **(D)** $a\in[7,9)$

71. In triangle ABC, $\tan A + \tan B + \tan C = 6$ and $\tan A \tan B = 2$, then the values of $\tan A, \tan B, \tan C$ are :

(A) 1, 2, 3 **(B)** $3, \frac{2}{3}, \frac{7}{3}$ **(C)** $4, \frac{1}{2}, \frac{3}{2}$ **(D)** None of these

72. The value of the expression $\frac{2(\sin 1° + \sin 2° + \sin 3° + ... + \sin 89°)}{2(\cos 1° + \cos 2° + ... + \cos 44°) + 1}$ equals :

(A) $\sqrt{2}$ **(B)** $1/\sqrt{2}$ **(C)** $1/2$ **(D)** 1

73. The value of $\sin^2 \frac{\pi}{8} + \sin^2 \frac{3\pi}{8} + \sin^2 \frac{5\pi}{8} + \sin^2 \frac{7\pi}{8}$ is :

(A) 1 **(B)** 2 **(C)** $1\frac{1}{8}$ **(D)** $2\frac{1}{8}$

74. Let $y = (\sin x + \text{cosec } x)^2 + (\cos x + \sec x)^2$ then the minimum value $y, \forall \in R,$ is :

(A) 7 **(B)** 3 **(C)** 9 **(D)** 0

75. Out of 800 boys in a school, 224 played cricket, 240 played hockey and 336 played basketball. Of the total, 64 played both basketball and hockey; 80 played cricket and basketball and 40 played cricket and hockey; 24 played all the three games. The number of boys who did not play any game is :

(A) 128 **(B)** 216 **(C)** 240 **(D)** 160

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Answers to Sample Paper | 1 Year

PART - I | CHEMISTRY									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
C	A	A	C	C	A	C	C	C	A
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A	D	C	A	C	D	C	A	D	A
21		**22**		**23**		**24**		**25**	
B		C		C		A		A	
PART - II | PHYSICS									
26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
A	C	D	B	B	A	A	A	C	C
36	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**
C	B	D	C	A	B	A	A	D	C
46		**47**		**48**		**49**		**50**	
A		A		D		C		D	
PART - III | MATHEMATICS									
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
A	A	B	C	D	D	D	C	A	C
61	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**
C	A	A	A	D	A	D	B	C	C
71		**72**		**73**		**74**		**75**	
A		A		B		C		D	

End of Sample Paper | 1 Year

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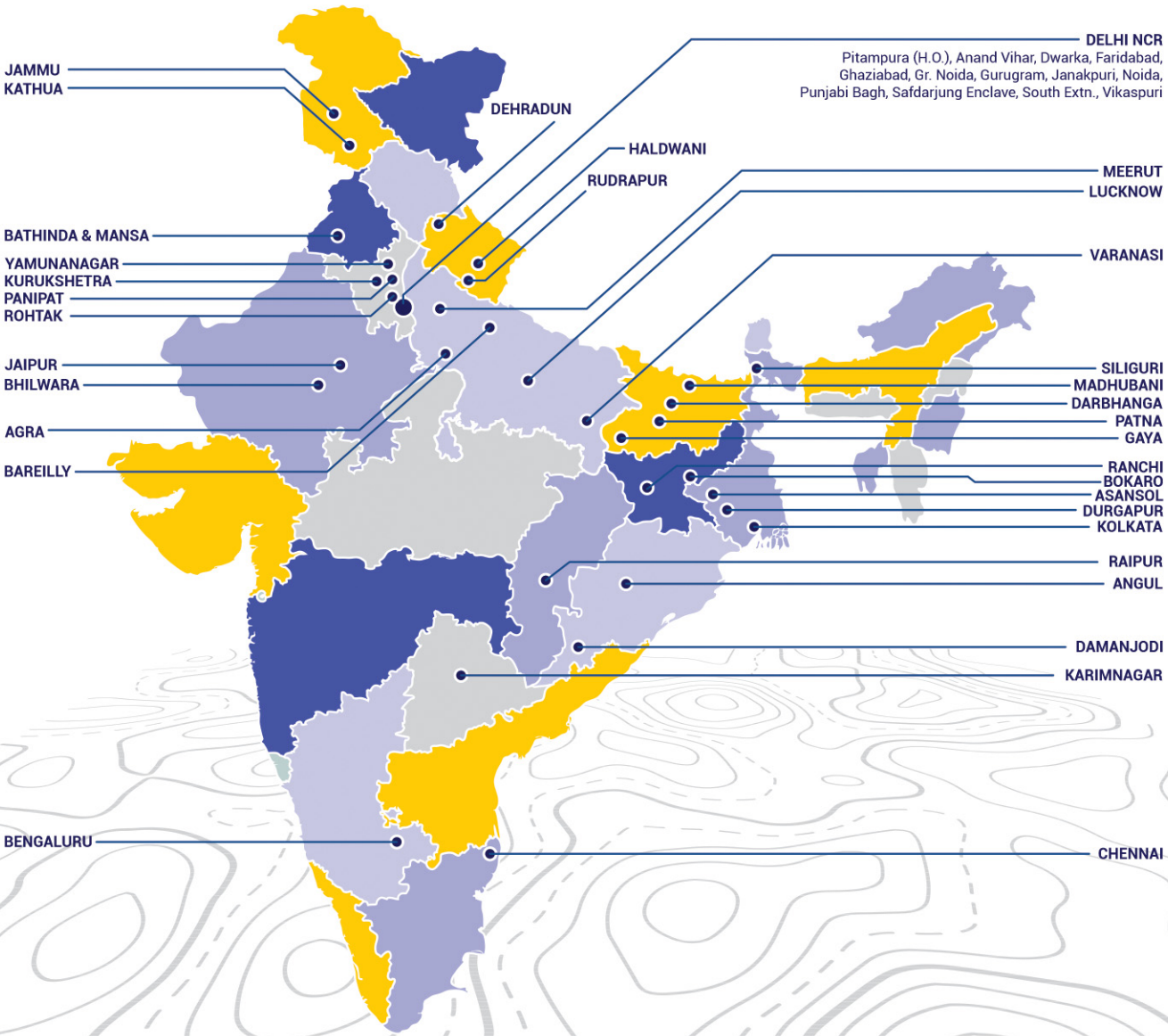

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