प्रतिभा Khoj

VSAT is a talent search exam, which aims to identify, reward and nurture the talent

M.M. ....   TIME ....

Name   : ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Father Name   : ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Mobile No.   : ☐☐☐☐☐☐☐☐☐☐

Subject   : *Physics, Chemistry, Biology/Math, Mental Aptitude*

IMPORTANT INSTRUCTIONS

1. This booklet contains 100 Questions.
2. All questions are compulsory and carry ..... mark,
3. There will be no negative marking.
4. Immediately fill in the particulars on this page of the Test Booklet with Blue/Black Ball Point Pen. Use of pencil is strictly prohibited.
5. You will not be supplied the Answer-Sheet separetely by the invigilator. You must complete the details of *Name , Father Name and Mobile Number* on the Answer-Sheet carefully, as per detailed instructions supplied by Academy, before you actually start answering the questions, failing which your Answer-Sheet will not be evaluated and you will be awarded 'ZERO' mark.

6. No candidate is allowed to carry any textual material, printed or written, bits of papers, mobile phone, any electronic device, etc., except the I - Card, inside the examination hall/room.
7. Rough work is to be done on the space provided for this purpose in the Test Booklet only. Use of white fluid for correction is not permissible on the Answer Sheet. No rough work is to be done on the Answer-Sheet.
8. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/ Hall; however, the candidates are allowed to take away this Test Booklet with them.

VIGYAN DHARA

## IIT-JEE/NEET/AIIMS

The Temple of Education

PHYSICS

1 The vectors $\vec{P} = a\hat{i} + a\hat{j} + 3\hat{k}$ and $\vec{Q} = a\hat{i} - 2\hat{j} - \hat{k}$ are perpendicular to each other. The positive value of a is -

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

2 If the speed of light (c), acceleration due to gravity (g) and pressure (p) are taken as fundamental units, the dimensions of gravitational constant (G) are -

(A) $c^0 g p^{-3}$ (B) $c^2 g^3 p^{-2}$ (C) $c^0 g^2 p^{-1}$ (D) $c^2 g^2 p^{-2}$

3 For a particle moving along a straight line, the displacement x depends on time t as $x = \alpha t^3 + \beta t^2 + \gamma t + \delta$. The ratio of its initial acceleration to its initial velocity depends -

(A) only on α and β (B) only on β and γ (C) only on α and γ (D) only on α

4 The displacement-time graph of a moving particle with constant acceleration is shown in the figure. The velocity-time graph is given by _
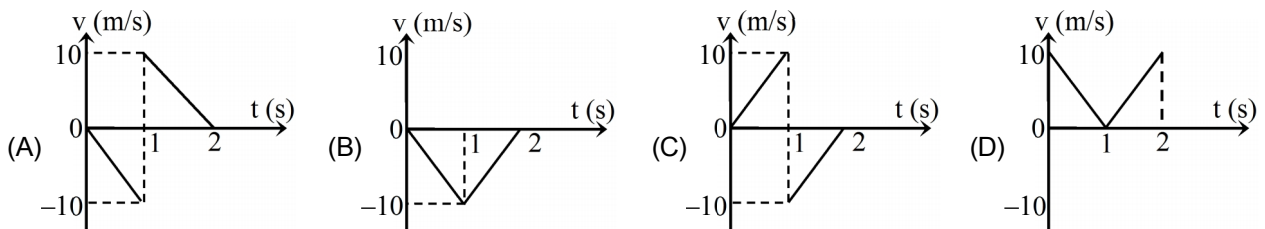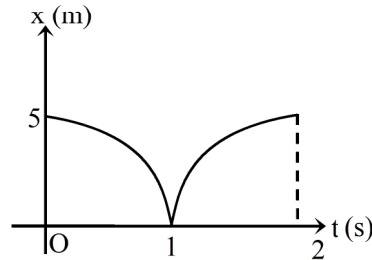

5 An artillery piece which consistently shoots its shell with the same muzzle speed has a maximum range of R. To hit a target which is R/2 from the gun and on the same level, at what elevation angle should the gun be pointed(height of gun from ground in neglected)-

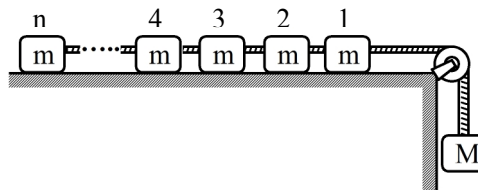(A) 30°   (B) 45°   (C) 60°   (D) 75°

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6 A stunt performer is to run and dive off a tall platform and land in a net in the back of a truck below. Originally the truck is directly under the platform, it starts moving forward with a constant acceleration 'a'. At the same instant the performer leaves the platform. If the platform is height H above the net in the truck, then the horizontal velocity u that the performer must have as he leaves the platform is –
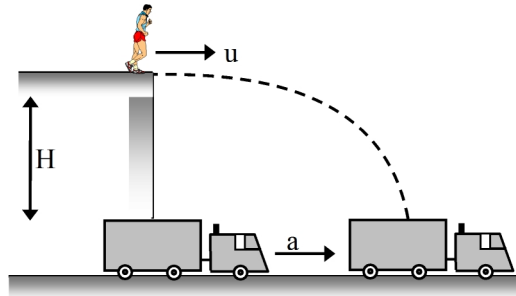
(A) $a\sqrt{2H/g}$ (B) $a\sqrt{H/2g}$ (C) $\sqrt{g/2H}$ (D) None of these

7 A force - time graph for the motion of a body is shown in figure. Change in linear momentum between 0 and 8 s is –
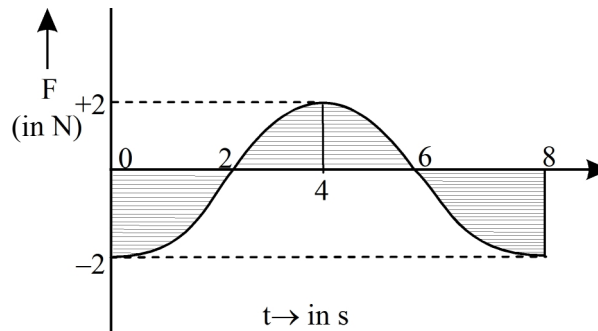

(A) zero (B) 4 N-s (C) 8 N-s (D) None

8 In the given arrangement, n number of equal masses are connected by strings of negligible masses. The tension in the string connected to n^{th} mass is–


(A) $\dfrac{mMg}{nm+M}$ (B) $\dfrac{mMg}{nM+m}$ (C) mg (D) mng

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9 Block A has a mass of 2kg and block B has 20 kg. If the coefficient of kinetic friction between block B and the horizontal surface is 0.1, and B is accelerating towards the right with a = 2 m/s², then the mass of the block C will be-
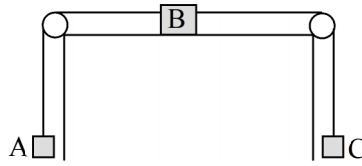
(A) 15 kg (B) 12.5 kg (C) 5.7 kg (D) 10.5 kg

10 Two blocks of masses M = 3kg and m = 2kg are in contact on a horizontal table. A constant horizontal force F = 5N is applied to block M as shown. There is a constant frictional force of 2N between the table and the block m but no frictional force between the table and the first block M, then the acceleration of the two blocks is –
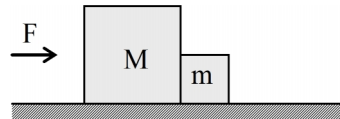
(A) 0.4 ms⁻² (B) 0.6 ms⁻² (C) 0.8 ms⁻² (D) 1 ms⁻²

11 A particle of mass m is fixed to one end of a light spring of force constant k and unstretched length ℓ. The system is rotated about the other end of the spring with an angular velocity ω, in gravity free space. The increase in length of the spring will be-
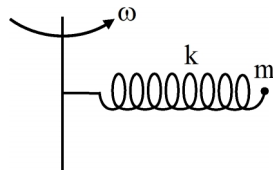
(A) $\dfrac{m\omega^2\ell}{k}$ (B) $\dfrac{m\omega^2\ell}{k-m\omega^2}$ (C) $\dfrac{m\omega^2\ell}{k+m\omega^2}$ (D) None of these

12 A rod of length ℓ slides down along the inclined wall as shown in figure. At the instant when the speed of end A is v, speed of B is-

(A) $\dfrac{v\cos\alpha}{\cos\beta}$ (B) $\dfrac{v\sin\alpha}{\sin\beta}$

(C) $\dfrac{v\sin\beta}{\cos\alpha}$ (D) $\dfrac{v\cos\beta}{\cos\alpha}$

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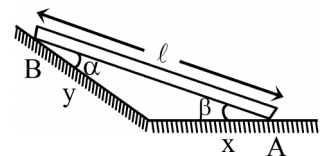
13 Two springs A and B ($k_A = 2k_B$) are stretched by applying forces of equal magnitudes at the four ends. If the energy stored in A is E, then energy that in B is-

(A) E/ 2   (B) 2E   (C) E   (D) E/4

14 A constant power P is applied to a car starting from rest. Then if in time t the car travels a distance x, its kinetic energy will be proportional to -

(A) $x^{1/3}$ (B) $x^{2/3}$ (C) x   (D) $x^{3/2}$

15 If a man increases his speed by 2 m/sec, his K.E. is doubled. The original speed of the man is -

(A) $(2 + \sqrt{2})$ m/s   (B) $(2 + 2\sqrt{2})$ m/s   (C) 4 m/s   (D) $(1 + \sqrt{2})$ m/s

**16** A balloon of mass M with a light rope and monkey of mass m are at rest in mid air. If the monkey climbs up the rope and reaches the top of the rope, the distance by which the balloon descends will be-

(The length of the rope = L)
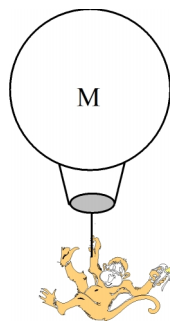
(A) $\dfrac{m}{(m+M)^2}$ (B) $\dfrac{mL}{m+M}$ (C) $\dfrac{(m+M)L}{m}$ (D) $\dfrac{(m+M)}{mL}$

17 Two blocks A(3kg) and B(6kg) are connected by a spring of stiffness 512 N/m and placed on a smooth horizontal surface. Initially the spring has its equilibrium length. Velocities 1.8m/s and 2.2 m/s are imparted to A and B in opposite direction. The maximum extension in the spring will be –-
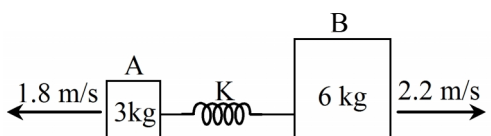
(A) 25 cm   (B) 10 cm   (C) 12 cm   (D) 2.5 cm

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18 A circular disc A of radius r is made from an iron plate of thickness t and another circular disc B of radius 4r is made from an iron plate of thickness t/4. The relation between the moments of inertia I_A and I_B is-

(A) $I_A > I_B$

(B) $I_A = I_B$

(C) $I_A < I_B$

(D) depends on the actual values of t and r.

19 A uniform rod of length l is free to rotate in a vertical plane about a fixed horizontal axis through O. The rod is allowed to rotate from rest from its unstable vertical position. Then the angular velocity of the rod when it has turned through an angle θ is –

(A) $\sqrt{\dfrac{3g}{\ell}} \sin (\theta/2)$

(B) $\sqrt{\dfrac{6g}{\ell}} \sin (\theta/2)$

(C) $\sqrt{\dfrac{3g}{\ell}} \cos \theta/2$
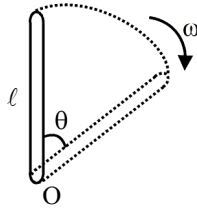
(D) $\sqrt{\dfrac{6g}{\ell}} \cos (\theta/2)$

20 The minimum value of F for which the cube(a) begins to topple about an edge is–
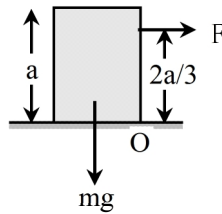
(A) $\dfrac{2}{3} mg$

(B) $\dfrac{3}{4} mg$

(C) $\dfrac{1}{2} mg$

(D) mg

Space for Rough Work

CHEMISTRY

21. A gaseous mixture contains $CO_2(g)$ and $N_2O(g)$ in 2 : 5 ratio by mass. The ratio of the number of molecules of $CO_2(g)$ and $N_2O(g)$ is :

(A) 5 :2   (B) 2 : 5   (C) 1 : 2   (D) 5 : 4

22 A compound possess 8% sulphur by mass. The least molecular mass is :

(A) 200   (B) 400   (C) 155   (D) 355

23. The mass of 70% H_2SO_4 required for neutralisation of 1 mol of NaOH.

(A) 49 gm   (B) 98 gm   (C) 70 gm   (D) 34.3 gm

24 What weight of $CaCO_3$ must be decomposed to produce the sufficient quantity of carbon dioxide to convert 21.2 kg of Na_2CO_3 completely in to $NaHCO_3$. [Atomic mass Na = 23, Ca = 40]

$$CaCO_3 \longrightarrow CaO + CO_2$$

$$Na_2CO_3 + CO_2 + H_2O \longrightarrow 2NaHCO_3$$

(A) 100 Kg   (B) 20 Kg   (C) 120 Kg   (D) 30 Kg

25. Match the following

(a) Energy of ground state of He^+ (i) + 6.04 eV

(b) Potential energy of I orbit of H-atom   (ii) –27.2 eV

(c) Kinetic energy of II excited state of He^+ (iii) 54.4 V

(d) Ionisation potential of He^+ (iv) – 54.4 eV

(A) A – (i), B – (ii), C – (iii), D – (iv)   (B) A – (iv), B – (iii), C – (ii), D – (i)

(C) A – (iv), B – (ii), C – (i), D – (iii)   (D) A – (ii), B – (iii), C – (i), D – (iv)

26. Suppose that a hypothetical atom gives a red, green, blue and violet line spectrum . Which jump according to figure would give off the red spectral line.

(A) 3 → 1   (B) 2 → 1   (C) 4 → 1   (D) 3 → 2

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27. In H-atom, if 'x' is the radius of the first Bohr orbit, de Broglie wavelength of an electron in 3rd orbit is :

(A) $3 \pi x$ (B) $6 \pi x$ (C) $\dfrac{9x}{2}$ (D) $\dfrac{x}{2}$

28. The possible set of quantum no. for the unpaired electron of chlorine is :

	n	ℓ	m			n	ℓ	m
(A)	2	1	0	(B)		2	1	1
(C)	3	1	1	(D)		3	0	0

29. The rates of diffusion of SO_3, CO_2, PCl_3 and SO_2 are in the following order -

(A) $PCl_3 > SO_3 > SO_2 > CO_2$ (B) $CO_2 > SO_2 > PCl_3 > SO_3$

(C) $SO_2 > SO_3 > PCl_3 > CO_2$ (D) $CO_2 > SO_2 > SO_3 > PCl_3$

30. The temperature of an ideal gas is increased from 120 K to 480 K. If at 120 K the root-mean-square velocity of the gas molecules is v, at 480 K it becomes :

(A) 4v   (B) 2v   (C) v/2   (D) v/4

31. The values of Vander Waal's constant "a" for the gases O_2, N_2, NH_3 & CH_4 are 1.36, 1.39, 4.17, 2.253 L^2 atm mol^{-2} respectively. The gas which can most easily be liquified is:

(A) O_2 (B) N_2 (C) NH_3 (D) CH_4

32. Helium atom is two times heavier than a hydrogen molecule. At 298 K, the average kinetic energy of a helium atom is

(A) two times that of a hydrogen molecules

(B) same as that of a hydrogen molecules

(C) four times that of a hydrogen molecules

(D) half that of a hydrogen molecules

33. The size of isoelectronic species F^-, Ne and Na^+ is affected by :

(A) nuclear charge (Z)

(B) valence principal quantum number (n)

(C) electron-electron interaction in the outer orbitals

(D) none of the factors because their size is the same.

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34. Which represents alkali metals (i.e. 1st group metals) based on $(IE)_1$ and $(IE)_2$ values (in kJ/mol) ?

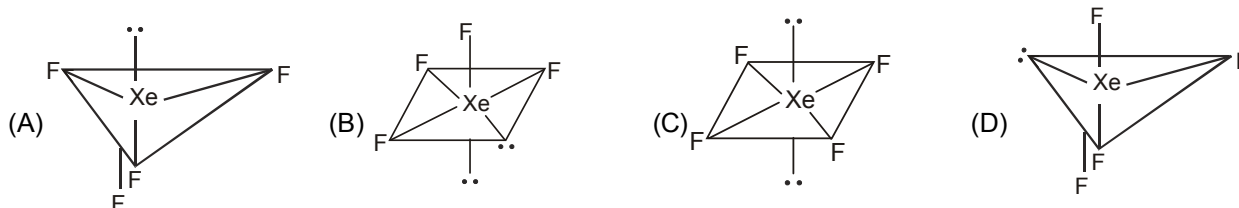|		$(IE)_1$	$(IE)_2$			$(IE)_1$	$(IE)_2$
(A)	X	500	1000	(B)	Y	600	2000
(C)	Z	550	7500	(D)	M	700	1400

35. Among halogens, the correct order of amount of energy released in electron gain (electron gain enthalpy) is :

(A) $F > Cl > Br > I$ (B) $F < Cl < Br < I$ (C) $F < Cl > Br > I$ (D) $Cl > Br > F > I$

36. The order of basic character of given oxides is :

(A) $Na_2O > MgO > CuO > SiO_2$ (B) $MgO > SiO_2 > CuO > Na_2O$

(C) $SiO_2 > MgO > CuO > Na_2O$ (D) $CuO > Na_2O > MgO > SiO_2$

37. Which is the right structure of XeF_4 ?

38. Consider the following statement and arrange in the order of true / false.

S_1 : In $SnCl_2$ the bonding takes place in ground state and the bond angle Cl–Sn–Cl is slightly less than $120°$.

S_2 : The molecular geometry of XeF_7^+ is pentagonal bipyramidal having two different Xe–F bond lengths.

S_3 : In SF_4 , the bond angles, instead of being $90°$ and $180°$ are $89°$ and $177°$ respectively due to the presence of a lone pair.

(A) T T T   (B) F T T   (C) T T F   (D) T F T

39. The correct order of increasing C-O bond length of CO, CO_3^{2-}, CO_2 is :

(A) $CO_3^{2-} < CO_2 < CO$ (B) $CO_2 < CO_3^{2-} < CO$ (C) $CO < CO_3^{2-} < CO_2$ (D) $CO < CO_2 < CO_3^{2-}$

40. S_1 : The HOMO in F_2^- is $\pi 2p_x = \pi 2p_y$ molecular orbitals.

S_2 : Bond order of O_2^- is more then O_2^+ .

S_3 : NO^+ is more stable than N_2^+

S_4 : C_2 is more stable than C_2^+

State, in order, whether S_1, S_2, S_3, S_4 are true or false

(A) FFFT   (B) FTTT   (C) FTFT   (D) FFTT

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BIOLOGY

41. In which of the following group of plants, sporophyte is completely dependent on gametophyte?

    (A) Gymnosperms   (B) Bryophytes   (C) Angiosperms   (D) Both A and B

42. The cell organelle concerned with conversion of lipids/oils to glucose at the time of seed germination is

    (A) Golgi   (B) Ribosome   (C) Peroxisome   (D) Glyoxysome

43. As we move from lower rank to higher rank in taxonomic hierarchy, the number of common characters keep on

    (A) Decreasing   (B) Increasing

    (C) Either increase or decrease   (D) Remain same

44. Which of the following histones is linker histone?

    (A) H_1 (B) H_2 (C) H_3 (D) H_4

45. Life cycle of angiosperms is

    (A) Haplontic   (B) Diplontic   (C) Haplo-Diplontic   (D) None of these

46. The second word in scientific name is

    (A) Genus name   (B) Species name

    (C) Specific epithet   (D) Sub species

47. During which phase of cell cycle DNA replication occurs?

    (A) Prophase   (B) S phase   (C) G_1 phase   (D) G_2 phase

48. Sarcoplasmic reticulum is concerned with

    (A) Protein synthesis   (B) Spindle formation

    (C) Calcium storage   (D) Protein modification

49. Phycobillin pigment are found in

    (A) Green algae   (B) Brown algae   (C) Red algae   (D) Both A and C

50. Which of the following is meant for ex-situ conservation of plants?

    (A) Museum   (B) Botanical garden

    (C) Herbarium   (D) Monograph

51. The functional junction between the axon of one neuron and the dendrite of the next is called

    (A) Desmosome   (B) Synapse

    (C) Nodes of ranvier   (D) Tight junction

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52. Which of the following is incorrect w.r.t. junction and its function?

    (A) Tight junction   – Promotes leaking of substances across a tissue

    (B) Adhering junction   – Keeps neighbouring cells together by cementing

    (C) Gap junction   – Connects the cytoplasm of adjoining cells for rapid transfer of ions and small molecules

    (D) Gap junction   – Facilitates the cells to communicate with each other

53. Contractile unit of muscle is part of myofibril between

    (A) Z-line and I-band   (B) Z-line and Z-line

    (C) Z-line and A-band   (D) A-band and I-band

54. How much amount of blood passes through the kidneys in a healthy person?

    (A) 1100-1200 ml/hr   (B) 600-700 ml/min   (C) 1100-1200 ml/min   (D) 180 litre/min

55. The somatic neural system relays impulses

    (A) From CNS to involuntary organs   (B) From CNS to skeletal muscles

    (C) From PNS to smooth muscles   (D) From PNS to voluntary organs

56. The order of three layers of cells in the retina from outside to inside is

    (A) Bipolar cells → Ganglion cells → Photoreceptor cells

    (B) Photoreceptor cells → Ganglion cells → Bipolar cells

    (C) Ganglion cells → Bipolar cells → Photoreceptor cells

    (D) Photoreceptor cells → Bipolar cells → Ganglion cells

57. Diabetes mellitus occurs due to hyposecretion of

    (A) Insulin   (B) Glucagon   (C) Thyroxine   (D) Adrenaline

58. The volume of air remaining in the lungs even after a forcible expiration is

    (A) Expiratory reserve volume   (B) Expiratory capacity

    (C) Residual volume   (D) Both A and B

59. In ABO system of blood grouping, transfusion is not possible from

    (A) A to AB   (B) B to AB   (C) O to O   (D) A to O

60. In which of the following disorder of digestive system there is abnormal frequency of bowel movement and increased liquidity of the faecal discharge?

    (A) Vomiting   (B) Diarrhoea   (C) Constipation   (D) Indigestion

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MATHEMATICS

61. Solution set of the inequality, $2 - \log_2(x^2 + 3x) \geq 0$ is -

(A) $[-4, 1]$ (B) $[-4, -3) \cup (0, 1]$ (C) $(-\infty, -3) \cup (1, \infty)$ (D) $(-\infty, -4) \cup [1, \infty)$

62. Least Integral real values of x satisfying $\log_{1/2}(x^2 - 6x + 12) \geq -2$ is -

(A) 2   (B) 3   (C) 4   (D) 5

63. If $b^2 \geq 4ac$ for the equation $ax^4 + bx^2 + c = 0$, then all roots of the equation will be real if -

(A) $b > 0, a < 0, c > 0$ (B) $b < 0, a > 0, c = 0$

(C) $b > 0, a > 0, c > 0$ (D) $b > 0, a < 0, c < 0$

64. The set of values of 'a' for which the inequality $(x - 3a)(x - a - 3) < 0$ is satisfied for all x in the interval $1 \leq x \leq 3$

(A) $(1/3, 3)$ (B) $(0, 1/3)$ (C) $(-2, 0)$ (D) $(-2, 3)$

65. Equation $2x^2 - 2(2a + 1)x + a(a + 1) = 0$ has one root less than 'a' and other root greater than 'a', then 'a' does not belongs to

(A) $0 < a < 1$ (B) $-1 < a < 0$ (C) $a > 0$ (D) $a < -1$

66. The value of 'a' for which the expression $y = x^2 + 2a\sqrt{a^2 - 3}\,x + 4$ is perfect square, is -

(A) 4   (B) $\pm\sqrt{3}$ (C) ± 2 (D) $a \in (-\infty, -\sqrt{3}\,] \cup [\sqrt{3}, \infty)$

67. Consider an A.P. with first term 'a' and the common difference 'd'. Let S_k denote the sum of its first K terms. If $\dfrac{S_{kx}}{S_x}$ is independent of x, then

(A) $a = d/2$ (B) $a = d$ (C) $a = 2d$ (D) none of these

68. If $x_i > 0$, $i = 1, 2, ..., 50$ and $x_1 + x_2 + .. + x_{50} = 50$, then the minimum value of $\dfrac{1}{x_1} + \dfrac{1}{x_2} + ... + \dfrac{1}{x_{50}}$ equals to

(A) 50   (B) $(50)^2$ (C) $(50)^3$ (D) $(50)^4$

69. If $x > 1, y > 1, z > 1$ are in GP, then $\dfrac{1}{1 + \ell n\,x}, \dfrac{1}{1 + \ell n\,y}, \dfrac{1}{1 + \ell n\,z}$ are in :

(A) AP   (B) HP   (C) GP   (D) none of these

70. The co–efficient of x^4 in the expansion of $(1 - x + 2x^2)^{12}$ is:

(A) $^{12}C_3$ (B) $^{13}C_3$ (C) $^{14}C_4$ (D) $^{12}C_3 + 3\,^{13}C_3 + {}^{14}C_4$

71. The last two digits of the number 3^{400} are:

(A) 81   (B) 43   (C) 29   (D) 01

Space for Rough Work

72. If $(1 + x)^n = \sum_{r=0}^{n} a_r x^r$ and $b_r = 1 + \dfrac{a_r}{a_{r-1}}$ and $\prod_{r=1}^{n} b_r = \dfrac{(101)^{100}}{100!}$, then n equals to :

(A) 99   (B) 100   (C) 101   (D) none of these

73. $\dfrac{\cos 20° + 8\sin 70° \sin 50° \sin 10°}{\sin^2 80°}$ is equal to:

(A) 1   (B) 2   (C) 3/4   (D) none of these

74. AB is a vertical pole and C is the middle point. The end A is on the level ground and P is any point on the level ground other than A. The portion CB subtends an angle β at P. If AP : AB = 2 : 1, then β is equal to-

(A) $\tan^{-1}\left(\dfrac{1}{9}\right)$ (B) $\tan^{-1}\left(\dfrac{4}{9}\right)$ (C) $\tan^{-1}\left(\dfrac{5}{9}\right)$ (D) $\tan^{-1}\left(\dfrac{2}{9}\right)$

75. A man on the top of a vertical tower observes a car moving at a uniform speed coming directly towards it. If it takes 12 minutes for the angle of depression to change from 30º to 45º, then the car will reach the tower in

(A) 17 minutes 23 seconds   (B) 16 minutes 23 seconds

(C) 16 minutes 18 seconds   (D) 18 minutes 22 seconds

76. The expression $\dfrac{\cos 6x + 6\cos 4x + 15\cos 2x + 10}{\cos 5x + 5\cos 3x + 10\cos x}$ is equal to

(A) $\cos 2x$ (B) $2\cos x$ (C) $\cos^2 x$ (D) $1 + \cos x$

77. The equation of second degree $x^2 + 2\sqrt{2}\, xy + 2y^2 + 4x + 4\sqrt{2}\, y + 1 = 0$ represents a pair of straight lines. The distance between them is

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

78. A $\triangle ABC$ is formed by the lines $2x - 3y - 6 = 0$, $3x - y + 3 = 0$ and $3x + 4y - 12 = 0$. If the points $P(\alpha, 0)$ and $Q(0, \beta)$ always lie on or inside the $\triangle ABC$, then ;

(A) $\alpha \in [-1, 2]$ & $\beta \in [-2, 3]$ (B) $\alpha \in [-1, 3]$ & $\beta \in [-2, 4]$

(C) $\alpha \in [-2, 4]$ & $\beta \in [-3, 4]$ (D) $\alpha \in [-1, 3]$ & $\beta \in [-2, 3]$

79. If $z = \dfrac{\sqrt{3} - i}{2}$, then $(i^{101} + z^{101})^{103}$ equals-

(A) iz (B) z (C) $\bar{z}$ (D) None of these

80 Let z_1 and z_2 be complex numbers such that $z_1 \neq z_2$ and $|z_1| = |z_2|$. If z_1 has positive real part and z_2 has negative imaginary part, then $\dfrac{z_1 + z_2}{z_1 - z_2}$ may be

(A) zero   (B) real and positive   (C) real and negative   (D) purely imaginary

Space for Rough Work

MENTAL APTITUDE

Directions (81-85) : In each of the following questions, find out missing number/letter from the following given options/figures.

81. 0, 6, 24, 60, ?

(A) 80   (B) 100   (C) 120   (D) 140

82.

(A) 72   (B) 84   (C) 68   (D) 66

83.

(A) –15   (B) –10   (C) –35   (D) –40

84.

25	16	64
144	?	324
49	36	100

(A) 18   (B) 256   (C) 81   (D) 100

Space for Rough Work

85.

```
        4              7              7
   7  (66)  8   3   (38)  9  11  ( ? )  9
        6              4              2
```

(A) 91   (B) 108   (C) 116   (D) 119

Directions (86-89) : In each of the following questions, select the related letter/word/number from the given altrnatives.

86. India : New Delhi : : Australia : ?

(A) Canberra   (B) Sydney   (C) Melbourne   (D) Perth

87. Energy : Joule : : ?

(A) Axe : Grind   (B) Ammeter : Current   (C) Resistance : Ohm   (D) Power : Ampere

88. If ÷ means +, – means ÷, × means – and + means ×, then 32 ÷ 8 – 4 × 12 + 4 = ?

(A) 12   (B) 1/12   (C) 40   (D) –14

89. If 2 × 1 = 81; 3 × 2 = 278; 2 × 5 = 8125, then 1 × 3 = ?

(A) 127   (B) 271   (C) 126   (D) 129

Directions (90-98) : In each of the following questions, a statement is given. Read the statement carefully and choose the correct answer:

90. A father tells his son, "I was of your present age when you were born." If the father is 46 now, how old was the boy 5 years back?

(A) 18 years   (B) 19 years   (C) 17 years   (D) 20 years

91. In a certain code, LABOUR is written as KBAPTS. How is CANDID written in that code language?

(A) DBOEJE   (B) BBMEHE   (C) BBMCHC   (D) DZOCJC

92. If 'black' is called 'red', 'red' is called 'white', 'white' is called 'brown', 'brown' is called 'yellow', 'yellow' is called 'blue' is called 'green', then what is the colour of milk?

(A) blue   (B) green   (C) white   (D) brown

93. Nitin ranks eighteenth in a class of 49 students. What is his rank from the last?

(A) 18   (B) 19   (C) 32   (D) 31

94. In a group of six children T, K, V, O, M and W, T is fatter than M but not as fat as W. K is not the fattest nor is W whereas V is the thinest. Who is the fattest among them all?

(A) O   (B) T   (C) M   (D) Data inadequate
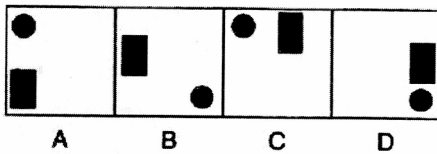
Space for Rough Work

95. Pointing to a woman in the photograph a man said, "She is the daughter of my grandmother' s only son. How is the woman related to the man?

(A) Mother   (B) Daughter   (C) Sister-in-law   (D) Sister

96. Abha correctly remembers that her mother's birthday is before Friday but after Monday. Her brother Abhay correctly remembers that their mother's birthday is after Wednesday while before Saturday. On which of the following days does their mother's birthday definitely fall?

(A) Tuesday   (B) Wednesday   (C) Thursday   (D) Friday

97. Six persons A, B, C, D, E and F are standing in a circle. B is between F and C, A is between E and D, F is to the left of D. Who is between A and F?

(A) B   (B) C   (C) D   (D) E

98. How many maximum squares are in the following figure?
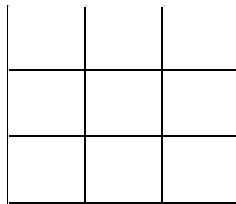
(A) 9   (B) 10   (C) 13   (D) 14

Directions (99-100) : In each question four figures are given. One of the answer figure match with the problem figures. Choose the correct answer.

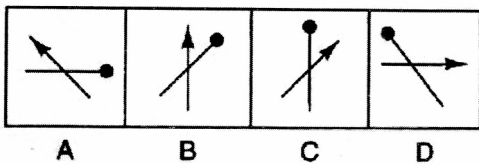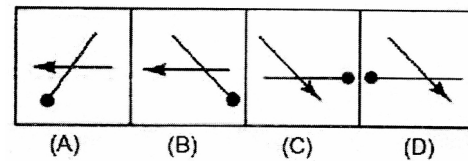99. **Problem Figures**   **Answer Figures**

100. **Problem Figures**   **Answer Figures**

Space for Rough Work

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ANSWER KEY (CLASS 11TH)																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
D	C	B	A	D	B	A	A	D	B	B	D	B	B	B	B	A	C	B	B
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
B	B	C	B	C	D	B	C	D	B	C	B	A	C	C	A	C	A	D	D
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
B	D	A	A	B	C	B	C	C	B	B	A	B	C	B	B	A	C	D	B
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
B	A	D	B	B	C	A	B	B	D	D	B	B	D	B	B	C	D	C	D
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
C	B	B	D	B	A	C	D	A	A	B	D	C	A	D	C	D	D	D	D