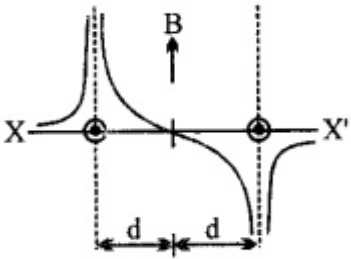
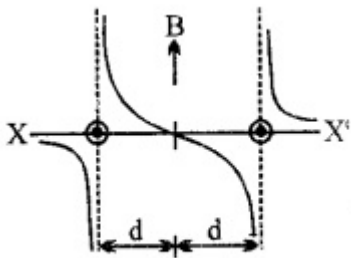
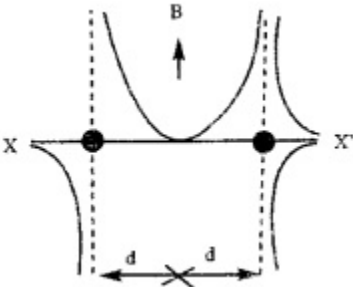
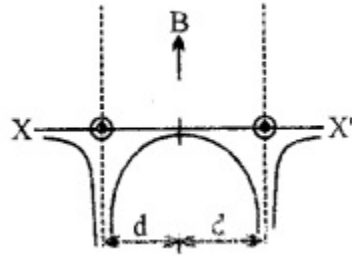


S r. N o.	Client Questi on ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	1	<p>Two long parallel wires are at a distance $2d$ apart. They carry steady equal currents flowing out of the plane of the paper, as shown. The variation of the magnetic field B along the line XX' given by</p> <p>A1 :</p>  <p>A2 :</p>  <p>– (Correct Alternative)</p> <p>A3 :</p> 	1	0.25

A4

:



Objective Question

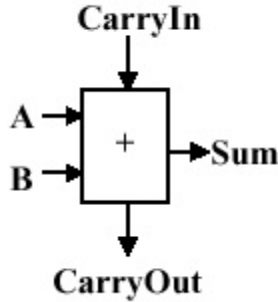
2	2	<p>The population p of an organism grows at a rate proportional to \sqrt{p}. If the initial population was p_0 at time $t=0$ and it gets doubled at time $t=T$, the proportionality constant for the growth rate will be</p> <p>A1 $(\sqrt{2}+1)\sqrt{p_0}/(2T)$</p> <p>:</p> <p>A2 $(\sqrt{2}-1)\sqrt{p_0}/(2T)$ – (Correct Alternative)</p> <p>:</p> <p>A3 $(-\sqrt{2}+1)\sqrt{p_0}/(2T)$</p> <p>:</p> <p>A4 $-(\sqrt{2}+1)\sqrt{p_0}/(2T)$</p> <p>:</p>	1 . 0	0. 25
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Objective Question

3	3	<p>If Millikan's oil drop experiment could be performed on the moon then what will the ratio of $\frac{\text{electronic } cl}{\text{electronic } cl}$</p> <p>($g_E$ and g_M are the accelerations due to gravity on Earth and moon respectively)</p> <p>A1 1 – (Correct Alternative)</p> <p>:</p> <p>A2 0</p>	1 . 0	0. 25
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		<p>:</p> <p>A3 : g_E / g_M</p> <p>A4 : g_M / g_E</p>		
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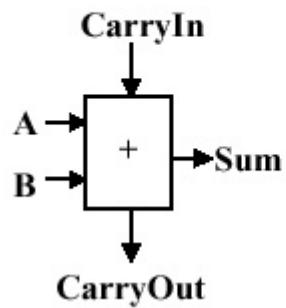
Objective Question

4	4	<p>The inputs of a full adder shown in the figure are $A=1, B=0, C_m$ (Carry In) = 1. The output will be</p>  <p>A1 10km :</p> <p>A2 15km – (Correct Alternative) :</p> <p>A3 29km :</p> <p>A4 30km :</p>	1 . 0	0. 25
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Objective Question

5	5		1 . 0	0. 25
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The inputs of a full adder shown in the figure are $A=1$, $B=0$, C_{in} (Carry In) = 1. The output will be



A1 : Sum = 0; CarryOut = 0

A2 : Sum = 1; CarryOut = 0

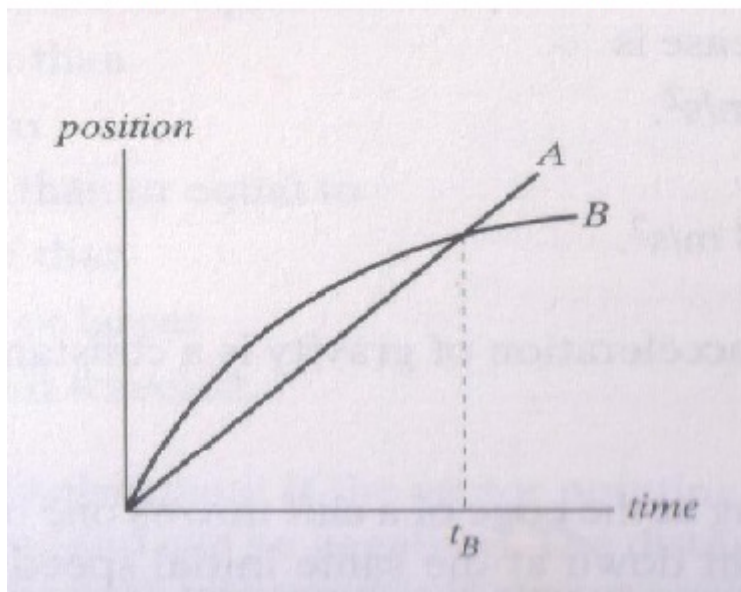
A3 : Sum = 0; CarryOut = 1 – (Correct Alternative)

A4 : Sum = 1; CarryOut = 1

Objective Question

6 6

Two trains are moving on parallel tracks and their position time graph is shown in figure below. Which of the following statement is true



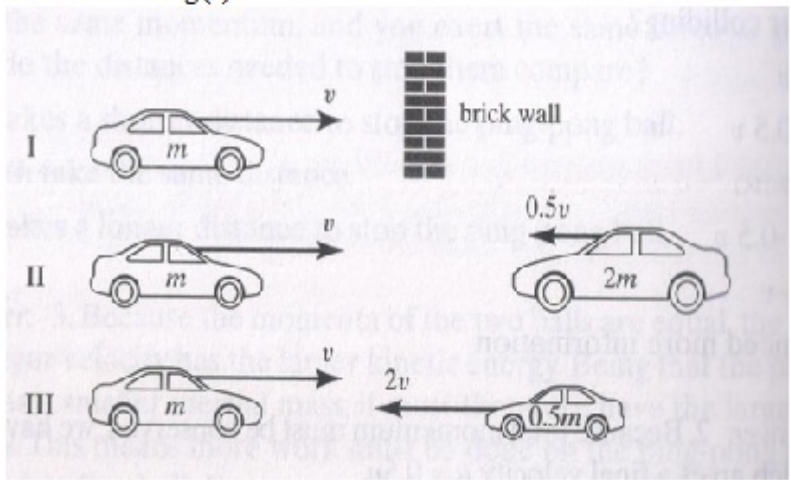
1 0.
0 25

		<p>A1 : At time t_B both the trains have the same velocity</p> <p>A2 : The two trains are speeding up all the time</p> <p>A3 Both trains have the same velocity at some time before t_B – (Correct Alternative)</p> <p>A4 : Somewhere on the graph the two trains have the same acceleration</p>		
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Objective Question

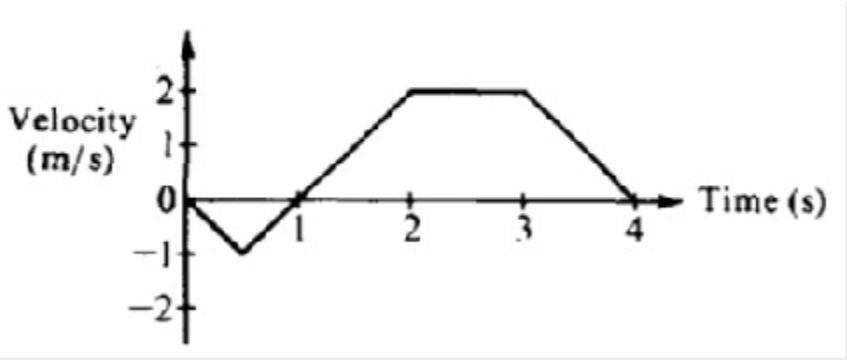
7	7	<p>A biconvex lens has a radius of curvature of magnitude 20 cm. The description of the image formed of an object of height 2 cm placed 40 cm from the lens is</p> <p>A1 Real, inverted, height = 1 cm – (Correct Alternative)</p> <p>A2 : Virtual, upright, height = 1 cm</p> <p>A3 : Virtual, upright, height = 0.5 cm</p> <p>A4 : Real, inverted, height = 4 cm</p>	1 . 0	0. 25
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Objective Question

8	8	<p>The figure below shows three collisions I, II and III. In which of these collisions bring(s) the car on the left to a halt</p> 	1 . 0	0. 25
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		<p>A1 II and III :</p> <p>A2 II :</p> <p>A3 III :</p> <p>A4 I, II, and III (all three) – (Correct Alternative) :</p>		
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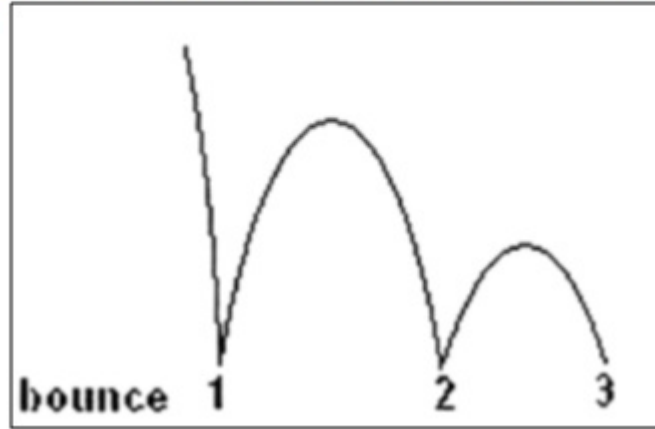
Objective Question

9	9	<p>The figure below shows the velocity versus time graph for an object moving in a straight line. At what time after $t=0$ does the object again pass through its initial position</p>  <p>A1 1 s :</p> <p>A2 Between 1 and 2 s – (Correct Alternative) :</p> <p>A3 2 s :</p> <p>A4 Between 2 and 3 s :</p>	1 . 0	0. 25
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Objective Question

10	10		1 . 0	0. 25
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A rubber ball bounces on the ground as shown in the figure below. After each bounce, the ball reaches one-half the height of the bounce before it. If the time the ball was in the air between the first and second bounce was 1 second. What would be the time between the second and third bounce?



A1
: 0.5 s

A2
: 0.71 s – (Correct Alternative)

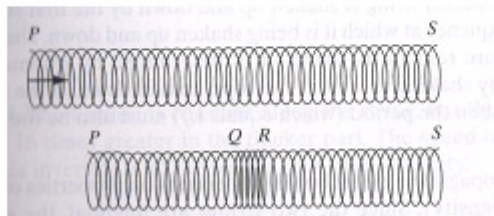
A3
: 1.0 s

A4
: 1.4 s

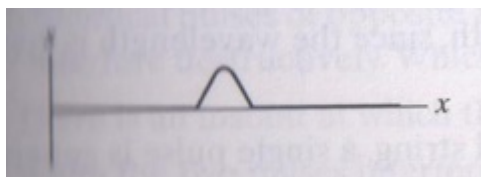
Objective Question

11 11

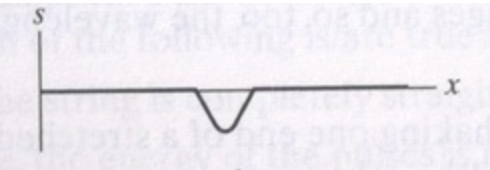
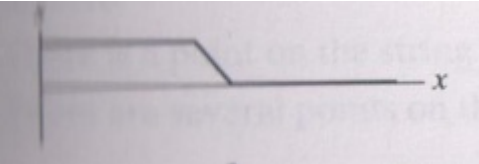
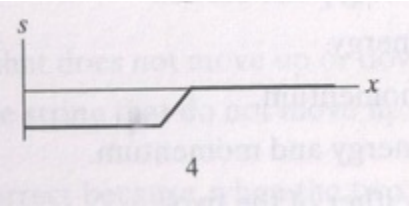
A wave is sent along a long spring by moving the left side end of the spring rapidly to the right. The figure shows the wave pulse at QR. RS part of the spring is not yet disturbed. The displacement versus position graph for the system is shown by



A1
:



1
.
0 0.25

		<p>A2 :</p> 		
		<p>A3 :</p>  <p>– (Correct Alternative)</p>		
		<p>A4 :</p> 		

Objective Question

12	12	<p>An athlete spinning freely in midair cannot change his</p> <p>A1 : Angular momentum – (Correct Alternative)</p> <p>A2 : Moment of inertia</p> <p>A3 : Rotational kinetic energy</p> <p>A4 : All of the above conclusions are valid</p>	1 . 0	0. 25
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Objective Question

13	13	<p>A solid block moving in air suddenly breaks into two parts. These parts separate from each other in air. Which statement is correct</p> <p>A1 : the total momentum is conserved – (Correct Alternative)</p> <p>A2 : the total kinetic energy is conserved</p> <p>A3 : the total momentum changes</p>	1 . 0	0. 25
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		: A4 Both the total kinetic energy and momentum changes :		
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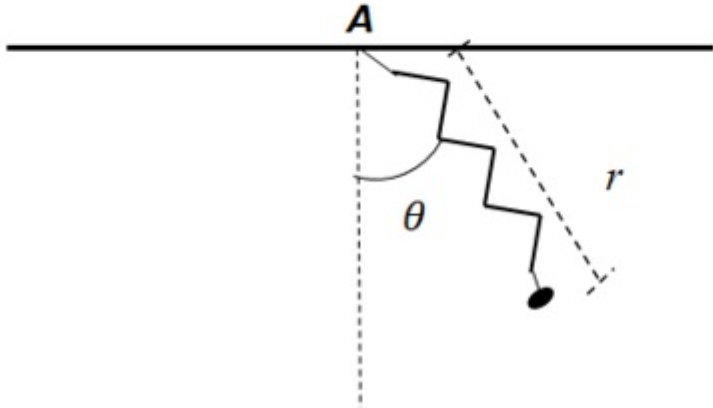
Objective Question

14	14	<p>The equation of a travelling wave of amplitude A, wave number angular frequency ω is given by $A \cos(kx - \omega t)$ where x is the position t is the corresponding time. Considering the wave is starting from the origin which of the following option is correct</p> <p>A1 The wave is travelling to the negative direction :</p> <p>A2 The velocity of the wave is $A\omega$:</p> <p>A3 The velocity of the wave is ω/k – (Correct Alternative) :</p> <p>A4 None of the above :</p>	1 . 0	0. 25
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Objective Question

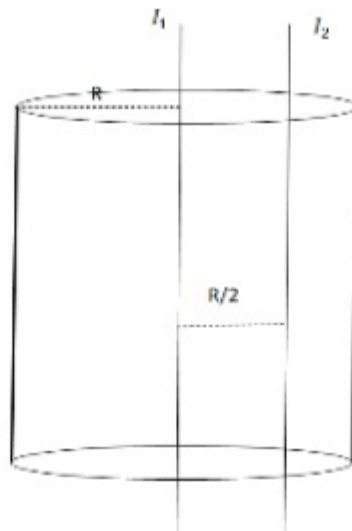
15	15	<p>In a clock we have number from 1 to 12. The angular velocity of the seconds and minute's needle are ____ and ____ respectively. Consider the movement of the needle as continuous in the present problem.</p> <p>A1 $\pi/30, \pi/3600$:</p> <p>A2 $\pi/60, \pi/3600$:</p> <p>A3 $\pi/60, \pi/1800$:</p> <p>A4 $\pi/30, \pi/1800$ – (Correct Alternative) :</p>	1 . 0	0. 25
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Objective Question

16	16	<p>A massless spring of spring constant k rest length L is suspended in e a point mass m with the other end fixed and make an angle θ w vertical axis. Considering the origin of the system as A acceleration gravity as g, \dot{r} is the derivative of r with respect to time. Which following gives the total energy of the system?</p>  <p>A1 : $\frac{1}{2} m \dot{r}^2 + \frac{1}{2} k (r - L)^2$</p> <p>A2 : $\frac{1}{2} m (\dot{r}^2 + r \dot{\theta}^2) + \frac{1}{2} k r^2$</p> <p>A3 : $\frac{1}{2} m \dot{r}^2 + \frac{1}{2} k (r - L)^2 + mgr \cos \theta$</p> <p>A4 : None of the above – (Correct Alternative)</p>	1 . 0	0. 25
Objective Question				
17	17		1 . 0	0. 25

		<p>When we increase the temperature of 2 kilogram of hydrogen (ideal gas) from 20°C to 40°C. The change in internal energy is _____ Joules (Take specific heat at constant volume 10 kJ/kgK)</p> <p>A1 200 :</p> <p>A2 0.2 :</p> <p>A3 200000 – (Correct Alternative) :</p> <p>A4 0.02 :</p>		
Objective Question				
18	18	<p>A 2 dimensional rough surface is given by the function $f(x,y)=3x-4y+xy$ (in meters). Calculate the maximum height of the surface in meters?</p> <p>A1 6 :</p> <p>A2 12 – (Correct Alternative) :</p> <p>A3 18 :</p> <p>A4 24 :</p>	1 . 0	0. 25
Objective Question				
19	19		1 . 0	0. 25

The moment of inertia along the axis I_1 is given by $\frac{1}{2}MR^2$. M is the mass of the solid cylinder and R is the radius of the cylinder. The moment of inertia along the I_2 axis which is at a distance of $\frac{R}{2}$ from the center of the cylinder is given by



A1
: $\frac{1}{2}MR^2$

A2
: $\frac{3}{2}MR^2$

A3
: $\frac{1}{4}MR^2$

A4
: $\frac{3}{4}MR^2$

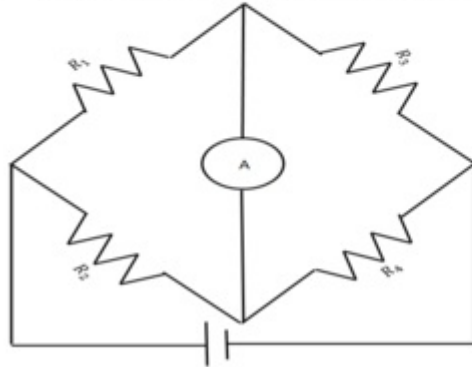
– (Correct Alternative)

Objective Question				
20	20	<p>A ray of light passing through a medium of refractive index 1 is incident on another medium having refractive index 1.5, where some part is reflected and some part is refracted. If the angle of reflection is θ_1 and the angle of refraction is θ_2, calculate the ratio $\frac{\sin \theta_1}{\sin \theta_2}$.</p> <p>A1 : 1.5 – (Correct Alternative)</p> <p>A2 : 3</p> <p>A3 : 0.75</p> <p>A4 : 0.67</p>	1 . 0	0. 25
Objective Question				
21	21	<p>A thin lens is given to you where the distance to the object as well as the image is positive. Which of the following statements is correct.</p> <p>A1 : The image formed will be real.</p> <p>A2 : It is a converging lens.</p> <p>A3 : The image formed will be inverted.</p> <p>A4 : All of the above. – (Correct Alternative)</p>	1 . 0	0. 25
Objective Question				
22	22		1 . 0	0. 25

		<p>Assume a 2 discrete level system having energies E_1 and E_2 in contact with a heat bath. There are N_1 number of particles with energy E_1 and N_2 number of particles with energy E_2. When a single emission happens the number of particles with energy E_1 and E_2 changes to $N_1 + 1$ and $N_2 - 1$. Calculate the change in entropy for this system (k_B is the Boltzmann's constant)</p> <p>A1 : $k_B \ln \frac{N_1 N_2}{N_1 + 1}$</p> <p>A2 : $k_B \ln \frac{N_1}{N_2}$</p> <p>A3 : $k_B \ln \frac{N_2}{N_1 + 1}$ – (Correct Alternative)</p> <p>A4 : $k_B \ln \frac{N_1 N_2}{N_2 + 1}$</p>		
Objective Question				
23	23	<p>An electromagnetic wave has wavelength λ. The momentum of a photon is given by (h is the Planck's constant)</p> <p>A1 : h/λ. – (Correct Alternative)</p> <p>A2 : 0</p> <p>A3 : $h\lambda$.</p>	1 . 0	0. 25

		A4 : None of the above		
Objective Question				
24	24	<p>If the frequency of oscillation for a harmonic oscillator is ν The n discrete energy levels of a quantum mechanical harmonic oscillator is given by _____ (h is the Planks constant)</p> <p>A1 : $n h \nu$</p> <p>A2 : $1/2 n h \nu$</p> <p>A3 : $(n+1/2) h \nu$ – (Correct Alternative)</p> <p>A4 : $(n- 1/2) h \nu$</p>	1 . 0	0. 25
Objective Question				
25	25	<p>Consider a LCR circuit in series with each other connected to an AC voltage source $V_0 = 9 \sin 50t$. The inductance $L = 0.12 \text{ H}$ capacitance is $C = 500 \mu\text{F}$ and the resistance $R = 4 \Omega$. Calculate the current through the circuit.</p> <p>A1 : $0.5 \sin 50t$ – (Correct Alternative)</p> <p>A2 : $0.25 \sin 50 t$</p> <p>A3 : $0.1 \sin 50t$</p> <p>A4 : $0.01 \sin 50t$</p>	1 . 0	0. 25
Objective Question				
26	26		1 . 0	0. 25

Consider the circuit given below where the resistances $R_1 = 5\Omega$, R_2 and $R_3 = 2\Omega$. When the voltage of the cell is $5V$, What should be the value of $R_4 = \underline{\hspace{2cm}}\Omega$ such that the current in the ammeter A is zero.



A1 2
:

A2 4 – (Correct Alternative)
:

A3 6
:

A4 8
:

Objective Question

27 27

The electric field inside a region is given by $x^2\hat{i} + y^2\hat{j} + z^2\hat{k}$. If x, y, z are positions, find the total charge contained inside a sphere of radius R , centered at the origin. (ϵ_0 is the permittivity of free space)

A1 $\frac{4\epsilon_0}{3}\pi R^3$
:

A2 $\frac{\epsilon_0}{4}\pi R^3$
:

1 0.
0 25

		<p>A3 : $2 \epsilon_0 \pi R^3$</p> <p>A4 : $\frac{8\epsilon_0}{3} \pi R^3$ – (Correct Alternative)</p>		
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Objective Question

28	28	<p>The electric potential at a point far away from an electric dipole moment p varies with the distance from the dipole r as</p> <p>A1 : $\frac{1}{r}$</p> <p>A2 : $\frac{1}{r^2}$ – (Correct Alternative)</p> <p>A3 : $\frac{1}{r^3}$</p> <p>A4 : $\frac{1}{r^4}$</p>	1 . 0	0. 25
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Objective Question

29	29	<p>An electron has a velocity $\vec{v} = (10^7 \hat{i} + 10^6 \hat{j}) m/s$, moving in a magnetic field of $\vec{B} = 100 \hat{j} T$. Calculate the force acting on the electron if the charge of the electron is $1.6 \times 10^{-19} C$?</p> <p>A1 : $1.6 \times 10^{-15} \hat{k} N$</p>	1 . 0	0. 25
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		<p>A2 : $1.6 \times 10^{-15} \hat{i} N$</p> <p>A3 : $1.6 \times 10^{-10} \hat{k} N$ – (Correct Alternative)</p> <p>A4 : $1.6 \times 10^{-10} \hat{i} N$</p>		
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Objective Question

30	30	<p>The packing fraction of a simple cubic crystal structure is _____</p> <p>A1 : 68%</p> <p>A2 : 74%</p> <p>A3 : 34%</p> <p>A4 : 52% – (Correct Alternative)</p>	1 . 0	0. 25
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Objective Question

31	31	<p>What is the remainder when $f(x) = 2x^3 - 3x^2 - 6x + 10$ is divided by $x - 1$?</p> <p>A1 : 3 – (Correct Alternative)</p> <p>A2 : 4</p> <p>A3 : 5</p> <p>A4 : 6</p>	1 . 0	0. 25
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Objective Question

32	32	<p>The function $f(x) = x^3 - 10x^2 + 32x - 32$ has a zero of multiplicity one at $x = 2$. Factor $f(x)$ and determine which of the following statements is true.</p> <p>A1 The graph of $f(x)$ touches (but does not cross) the x-axis at $x = 2$.</p> <p>A2 The graph of $f(x)$ crosses the x-axis at $x = 2$.</p> <p>A3 The graph of $f(x)$ crosses the x-axis at $x = 4$.</p> <p>A4 The graph of $f(x)$ touches (but does not cross) the x-axis at $x = 4$. (Correct Alternative)</p>	1 . 0	0. 25
Objective Question				
33	33	<p>Find the domain of the function $f(x) = \ln\left(\frac{x+5}{x-8}\right)$.</p> <p>A1 $(-\infty, 5) \cup (8, \infty)$</p> <p>A2 $(-\infty, -5) \cup (8, \infty)$ – (Correct Alternative)</p> <p>A3 $(-5, 8)$</p> <p>A4 $(-\infty, -8)$</p>	1 . 0	0. 25
Objective Question				
34	34	<p>A telephone pole is 40 feet tall. How long should a cable be if it is to be attached to the top of the pole and the ground, and is to make an angle of 30° with the ground?</p> <p>A1 80 feet – (Correct Alternative)</p>	1 . 0	0. 25

		<p>A2 $40\sqrt{2}$ feet :</p> <p>A3 20 feet :</p> <p>A4 $40 / \sqrt{3}$ feet :</p>		
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Objective Question

35	35	<p>Evaluate $\tan \left(\sin^{-1} \left(-\frac{1}{\sqrt{2}} \right) \right)$.</p> <p>A1 1 :</p> <p>A2 $-\sqrt{3}$:</p> <p>A3 -1 – (Correct Alternative) :</p> <p>A4 $-\frac{1}{\sqrt{3}}$:</p>	1 . 0	0. 25
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Objective Question

36	36	<p>Which of the following is an eigenvector of the matrix $A = \begin{bmatrix} 2 & 0 & 0 \\ 6 & 3 & 0 \\ -1 & 1 & 4 \end{bmatrix}$ corresponding to the eigenvalue $\lambda = 3$?</p> <p>A1 $\begin{bmatrix} 2 \\ 3 \\ 4 \end{bmatrix}$:</p> <p>A2 $\begin{bmatrix} 0 \\ 5 \\ -5 \end{bmatrix}$ – (Correct Alternative) :</p>	1 . 0	0. 25
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		<p>A3 : $\begin{bmatrix} 0 \\ 6 \\ 6 \end{bmatrix}$</p> <p>A4 : $\begin{bmatrix} 2 \\ 6 \\ -1 \end{bmatrix}$</p>		
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Objective Question

37	37	<p>Let T be a linear transformation from \mathbb{R}^3 to \mathbb{R}^2 given by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} 3x_1 - 5x_2 + x_3 \\ x_1 - 6x_3 \end{bmatrix}$. What is the standard matrix for T?</p> <p>A1 : $\begin{bmatrix} 3 & 1 \\ -5 & -6 \\ 1 & 0 \end{bmatrix}$</p> <p>A2 : $\begin{bmatrix} 3 & -5 & 1 \\ 1 & 0 & -6 \end{bmatrix}$ – (Correct Alternative)</p> <p>A3 : $\begin{bmatrix} 3 & 1 \\ -5 & 0 \\ 1 & -6 \end{bmatrix}$</p> <p>A4 : $\begin{bmatrix} 3 & -5 & 1 \\ 1 & -6 & 0 \end{bmatrix}$</p>	1 . 0	0. 25
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Objective Question

38	38	<p>Suppose that A and B are sets satisfying $n(A') = 3, n(B) = 3$ and $A \cap B = \emptyset$. If U is the universal set and $n(U) = 6$, what is $n(A \cup B)$? (Note that for any set X, $n(X)$ denotes the cardinality of X.)</p> <p>A1 : 5</p>	1 . 0	0. 25
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		<p>A2 6 – (Correct Alternative) :</p> <p>A3 7 :</p> <p>A4 8 :</p>		
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Objective Question

39	39	<p>A six-sided die is rolled 4 times. What is the probability that a six shows up exactly twice?</p> <p>A1 1 / 36 :</p> <p>A2 3 / 100 :</p> <p>A3 10 / 131 :</p> <p>A4 25 / 216 – (Correct Alternative) :</p>	1 . 0	0. 25
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Objective Question

40	40	<p>The values of a and b for which the function,</p> $f(x) = \begin{cases} \frac{x+1}{x^2-1} & \text{if } x < -1 \\ ax + b & \text{if } -1 \leq x \leq 1, \\ \sqrt{x^2 + 3} & \text{if } x > 1 \end{cases}$ <p>(is continuous for every real x, are)</p> <p>A1 $a = -\frac{3}{4}, b = -\frac{1}{4}$:</p> <p>A2 $a = \frac{3}{4}, b = -\frac{5}{4}$:</p> <p>A3 $a = -1, b = 3$:</p>	1 . 0	0. 25
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		<p>A4 : $a = \frac{5}{4}, b = \frac{3}{4}$ – (Correct Alternative)</p>		
Objective Question				
41	41	<p>The slope of the tangent to the curve $x^2 + \sqrt{y^3} = x + y$ at the point (1,1), is</p> <p>A1 $\frac{1}{2}$:</p> <p>A2 2 :</p> <p>A3 1 :</p> <p>A4 -2 – (Correct Alternative) :</p>	1 . 0	0. 25
Objective Question				
42	42	<p>The absolute maximum and minimum values, M and m respectively, of the function $f(x) = x^3 + 4x^2 - 3x$ defined on the closed interval $[0, 2]$, are</p> <p>A1 $m=2, M=18$:</p> <p>A2 $m = 0, M = \frac{14}{27}$:</p> <p>A3 $m = -\frac{14}{27}, M = 18$ – (Correct Alternative) :</p> <p>A4 $m=1, M=18$:</p>	1 . 0	0. 25
Objective Question				
43	43	<p>The value of the integral $\int_0^3 t^2 - 1 dt$, is equal to</p>	1 . 0	0. 25

		<p>A1 22/3 – (Correct Alternative)</p> <p>:</p> <p>A2 6</p> <p>:</p> <p>A3 -6</p> <p>:</p> <p>A4 20/3</p> <p>:</p>		
Objective Question				
44	44	<p>The volume of the solid obtained by rotating the $y = \sqrt{1-x}$, $y = 0$, and $x = 0$, about the x-axis,</p> <p>A1 $\pi/3$</p> <p>:</p> <p>A2 $\pi/2$ – (Correct Alternative)</p> <p>:</p> <p>A3 $2\pi/3$</p> <p>:</p> <p>A4 π</p> <p>:</p>	1 . 0	0. 25
Objective Question				
45	45	<p>The integral $\int \frac{3x}{x^2+x-2} dx$ is equal to</p> <p>A1 $\ln[x-1 \cdot (x+2)^2] + C$ – (Correct Alternative)</p> <p>:</p> <p>A2 $\ln[x^2+x-2] + C$</p> <p>:</p> <p>A3 $\ln[x+1 \cdot (x-2)^2] + C$</p> <p>:</p>	1 . 0	0. 25

		A4 $\ln[(x - 1)^2 \cdot x + 2] + C$:		
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Objective Question

46	46	<p>Consider the following two infinite series: (I) $\sum_{n=0}^{\infty}$</p> <p>$\sum_{n=2}^{\infty} \frac{n!}{3n^2}$. Which of the following is true for these</p> <p>A1 Only (I) converges :</p> <p>A2 Only (II) converges – (Correct Alternative) :</p> <p>A3 Both diverge :</p> <p>A4 Both converge :</p>	1 . 0	0. 25
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Objective Question

47	47	<p>Let $A = \begin{pmatrix} \cos^2 \alpha & \cos \alpha \sin \alpha \\ \cos \alpha \sin \alpha & \sin^2 \alpha \end{pmatrix}$ and</p> <p>$B = \begin{pmatrix} \cos^2 \beta & \cos \beta \sin \beta \\ \cos \beta \sin \beta & \sin^2 \beta \end{pmatrix}$</p> <p>Then for which of the following values of</p> <p>A1 0 :</p> <p>A2 $\pi/2$ – (Correct Alternative)</p>	1 . 0	0. 25
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		<p>:</p> <p>A3 π</p> <p>:</p> <p>A4 2π</p> <p>:</p>		
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Objective Question

48	48	<p>For what value of the k the following system</p> $x + 4y + 7z = 0$ $2x + 5y + 8z = 0$ $3x + 6y + kz = 0$ <p>has infinitely many solutions?</p> <p>A1 0</p> <p>:</p> <p>A2 3</p> <p>:</p> <p>A3 -3</p> <p>:</p> <p>A4 9 – (Correct Alternative)</p> <p>:</p>	1 . 0	0. 25
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Objective Question

49	49	<p>$\frac{2+i6\sqrt{3}}{5+i\sqrt{3}}$ is a root of which of the following equation?</p> <p>A1 $x^2 - 2x + 4 = 0$ – (Correct Alternative)</p> <p>:</p> <p>A2 $x^2 + 2x - 4 = 0$</p> <p>:</p>	1 . 0	0. 25
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		A3 $x^2 - x + 4 = 0$: A4 $x^2 + x - 4 = 0$:		
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Objective Question

50	50	<p>Area bounded between the parabola $y^2 = 4 - 2x$ and the line $y = x - 2$ is</p> <p>A1 $\frac{1}{3}$:</p> <p>A2 $\frac{2}{3}$ – (Correct Alternative) :</p> <p>A3 1 :</p> <p>A4 $\frac{4}{3}$:</p>	1 . 0	0. 25
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Objective Question

51	51	<p>If $y = f(x)$ is a function such that</p> $2 \frac{d^2 y}{dx^2} + 5 \frac{dy}{dx} - 2x - 5 = 0$ $f(0) = 0, \left(\frac{dy}{dx} \right)_{x=0} = -\frac{1}{2}$ <p>Then $f(-1) + f(1)$ is equal to.</p> <p>A1 : $e^2 - e^{-2} + e^{\frac{1}{2}} - e^{-\frac{1}{2}}$</p> <p>A2 : $e^2 + e^{-2} + e^{\frac{1}{2}} + e^{-\frac{1}{2}}$</p>	1 . 0	0. 25
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		<p>A3 : $e^2 + e^{-2} - e^{\frac{1}{2}} - e^{-\frac{1}{2}}$ – (Correct Alternative)</p> <p>A4 : $e^2 - e^{-2} - e^{\frac{1}{2}} + e^{-\frac{1}{2}}$</p>		
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Objective Question

52	52	<p>The value of α where</p> $100C_{10} - 101C_9 = \alpha 100C_9$ <p>(with nC_r denoting binomial symbol</p> <p>A1 : 1</p> <p>A2 : -1 – (Correct Alternative)</p> <p>A3 : 2</p> <p>A4 : -2</p>	1 . 0	0. 25
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Objective Question

53	53	<p>$\lim_{x \rightarrow 0} (e^{2x} + 2x)^{\frac{1}{4x}}$ is equal to</p> <p>A1 : e – (Correct Alternative)</p> <p>A2 : 2e</p>	1 . 0	0. 25
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		A3 : 0		
		A4 : 2		

Objective Question

54	54	<p>If $f(x) = \int_0^{x^2} \sqrt{4+t^2} dt$ for all $x \geq 0$,</p> <p>Than $f'(2)$ is equal to</p> <p>A1 : $4\sqrt{5}$</p> <p>A2 : $8\sqrt{5}$ – (Correct Alternative)</p> <p>A3 : 8</p> <p>A4 : $8\sqrt{3}$</p>	1 . 0	0. 25
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Objective Question

55	55	<p>If $f_{(x,y)} = e^{1-x \cos y}$, then the expressic</p> <p>$\frac{\partial f}{\partial x} + \frac{\partial f}{\partial y}$ at the point $(1, \pi)$ is equal to</p> <p>A1 : 1</p>	1 . 0	0. 25
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		<p>A2 e :</p> <p>A3 $e^2 - (\text{Correct Alternative})$:</p> <p>A4 $-e^2$:</p>		
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Objective Question

56	56	<p>If a vector \vec{v} lies in the plane containing $i - j + k$, and its projection on the vector \vec{v} is equal to</p> <p>A1 $5i - 3j + 5k - (\text{Correct Alternative})$:</p> <p>A2 $3i - j + 3k$:</p> <p>A3 $4i - 3j + 4k$:</p> <p>A4 $5i + 3j + 5k$:</p>	1 . 0	0. 25
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Objective Question

57	57	<p>For what value of k, the point (1, 0, 3), (-1, 3, 4), (1, 2, 1) and (k, 2, 5) are coplanar?</p> <p>A1 $1 - (\text{Correct Alternative})$:</p> <p>A2 -1 :</p> <p>A3 -7 :</p>	1 . 0	0. 25
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		A4 ₂ :		
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Objective Question

58	58	<p>If $\{a_n\}$ is a sequence of real number $\frac{1}{3}(a_n + 1)$ for all $n \geq 1$, then the number c which is/are correct?</p> <p>A. $\{a_n\}$ is a decreasing sequence</p> <p>B. $\{a_n\}$ is a bounded sequence</p> <p>C. $\{a_n\}$ converges to $\frac{1}{2}$</p> <p>D. $a_{n+2} - a_{n+1} = \frac{1}{3}(a_{n+1} + a_n)$</p> <p>A1₄ – (Correct Alternative)</p> <p>A2₁ :</p> <p>A3₂ :</p> <p>A4₃ :</p>	1 . 0	0. 25
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Objective Question

59	59	<p>Let A, B be two independent event such that $P(B A) = 0.5$ then $P(A \cup B)$ is</p>	1 . 0	0. 25
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		<p>A1 0.1 :</p> <p>A2 0.5 :</p> <p>A3 0.6 – (Correct Alternative) :</p> <p>A4 0.7 :</p>		
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Objective Question

60	60	<p>The shortest distance between the plane $4x + 2y + 4z + 5 = 0$ is</p> <p>A1 $\frac{3}{2}$:</p> <p>A2 $\frac{5}{2}$:</p> <p>A3 $\frac{7}{2}$ – (Correct Alternative) :</p> <p>A4 $\frac{9}{2}$:</p>	1 . 0	0. 25
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Objective Question

61	61	<p>FERA stands for</p> <p>A1 Foreign Exchange Regulation Act – (Correct Alternative) :</p> <p>A2 Foreign Exchange Restrictions Act :</p> <p>A3 Foreign Exchange Reserves Act :</p> <p>A4 None of these</p>	1 . 0	0. 25
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Objective Question				
62	62	Which is India's highest civilian honour?	1 . 0	0. 25
		A1 : Ashoka Chakra		
		A2 : Padma Bhushan		
		A3 : Padma Sri		
		A4 : One of the above – (Correct Alternative)		
Objective Question				
63	63	The ozone layer is part of the	1 . 0	0. 25
		A1 : Troposphere		
		A2 : Stratosphere – (Correct Alternative)		
		A3 : Ionosphere		
		A4 : Mesosphere		
Objective Question				
64	64	What is the currency of Indonesia?	1 . 0	0. 25
		A1 : Rupiah – (Correct Alternative)		
		A2 : Dinar		
		A3 : Riyal		

		A4 Rangit :		
Objective Question				
65	65	Israel's Rafale Defence Systems Ltd has formed a joint venture with _____ to produce anti-tank guided missiles for the Indian armed forces A1 Goa Shipyard : A2 Hindustan Aeronautics Limited : A3 Kalyani Group – (Correct Alternative) : A4 None of the above :	1 . 0	0. 25
Objective Question				
66	66	Method used for separation of water and alcohol is: A1 Evaporation : A2 Filtration : A3 Distillation – (Correct Alternative) : A4 Decantation :	1 . 0	0. 25
Objective Question				
67	67	The estimation of the age of the earth is done by: A1 Uranium dating – (Correct Alternative) : A2 Carbon dating :	1 . 0	0. 25

		A3 Atomic clock : A4 Bio clock :		
Objective Question				
68	68	Which gas is used to disinfect the drinking water? A1 Hydrogen : A2 Chlorine – (Correct Alternative) : A3 Fluorine : A4 Oxygen :	1 . 0	0. 25
Objective Question				
69	69	The ‘Concept of Inertia’ was developed by: A1 Galileo – (Correct Alternative) : A2 Newton : A3 Einstein : A4 Archimedes :	1 . 0	0. 25
Objective Question				
70	70	Maximum portion of the moon visible from the earth’s surface is: A1 50% : A2 59% – (Correct Alternative)	1 . 0	0. 25

		<p>:</p> <p>A3 41%</p> <p>:</p> <p>A4 47%</p> <p>:</p>		
Objective Question				
71	71	<p>To deprive someone of voting rights is</p> <p>A1 Disfranchise</p> <p>:</p> <p>A2 Disenfranchise – (Correct Alternative)</p> <p>:</p> <p>A3 Unfranchise</p> <p>:</p> <p>A4 franchise</p> <p>:</p>	1 . 0	0. 25
Objective Question				
72	72	<p>Where you are today, _____ What counts is where you are going.</p> <p>A1 Do not count</p> <p>:</p> <p>A2 Doesn't count – (Correct Alternative)</p> <p>:</p> <p>A3 Not count</p> <p>:</p> <p>A4 Isn't count</p> <p>:</p>	1 . 0	0. 25
Objective Question				
73	73	<p>The Prime Minister wants to call an all-party meeting to break the stalemate _____ this issue and _____ a consensus.</p> <p>A1 on, win</p>	1 . 0	0. 25

		: A2 : at, develop A3 : of, capture A4 : on, reach – (Correct Alternative)		
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Objective Question

74	74	It was a great _____ to _____ the high-level meeting between America and India. A1 : favour, part A2 : time, participate A3 : honour, witness – (Correct Alternative) A4 : period, watch	1 . 0	0. 25
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Objective Question

75	75	Internet has _____ revolutionised the world of _____ and knowledge. A1 : become, media A2 : really, college A3 : probably, application A4 : indeed, information – (Correct Alternative)	1 . 0	0. 25
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Objective Question

76	76	<p>The antonym of Discrepancy</p> <p>A1 : inconsistency</p> <p>A2 : consistency – (Correct Alternative)</p> <p>A3 : inappropriate</p> <p>A4 : variance</p>	1 . 0	0. 25
Objective Question				
77	77	<p>The antonym of Dismal is</p> <p>A1 : remarkable – (Correct Alternative)</p> <p>A2 : trivial</p> <p>A3 : reserved</p> <p>A4 : puzzled</p>	1 . 0	0. 25
Objective Question				
78	78	<p>They finally saw _____ on the business deal.</p> <p>A1 : face to face</p> <p>A2 : eye to eye – (Correct Alternative)</p> <p>A3 : eye and eye</p> <p>A4 : hand on hand</p>	1 . 0	0. 25

Objective Question				
79	79	By working part-time and looking after her kids two days a week she managed to _____	1 . 0	0. 25
		A1 : get the pie		
		A2 : take the pie		
		A3 : have the cake and eat it too		
		A4 : get the best of both worlds – (Correct Alternative)		
Objective Question				
80	80	Tick the word closest in meaning to the word in italics- a <i>baffling</i> problem:	1 . 0	0. 25
		A1 : difficult		
		A2 : simple		
		A3 : puzzling – (Correct Alternative)		
		A4 : long		
Objective Question				
81	81	Which of the below pair has the same relationship for Revolution: Change?	1 . 0	0. 25
		A1 : Disease : Medicine		
		A2 : Treaty : Peace – (Correct Alternative)		
		A3 : Food : Energy		
		A4 Famous : Notorious		

		:		
Objective Question				
82	82	<p>If in a certain language MYSTIFY is coded as NZTUJGZ, how is NEMISES coded in that code?</p> <p>A1 MDLHRDR :</p> <p>A2 OFNJTFT – (Correct Alternative) :</p> <p>A3 ODNHTDR :</p> <p>A4 PGOKUGU :</p>	1 . 0	0. 25
Objective Question				
83	83	<p>If Chi Kai Shi means Earth is round; Chu Chin Chi means Banana is sweet; Kul shak Kai means Balls are round, then which letter code stands for Earth?</p> <p>A1 Chi :</p> <p>A2 Shi – (Correct Alternative) :</p> <p>A3 Kai :</p> <p>A4 Chu :</p>	1 . 0	0. 25
Objective Question				
84	84	<p>A+B means A is the son of B; A–B means A is the wife of B; AXB means A is the brother of B; A/B means A is the mother of B; and A=B means A is the sister of B? What does P+R–Q mean?</p> <p>A1 Q is the father of P – (Correct Alternative) :</p> <p>A2 Q is the son of P</p>	1 . 0	0. 25

		: A3 Q is the uncle of P : A4 Q is the brother of P :		
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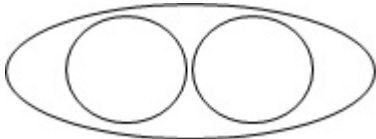
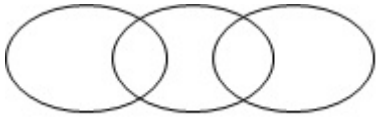
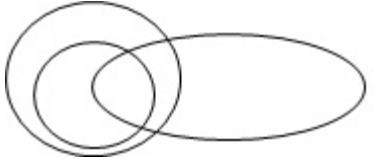
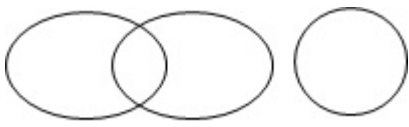
Objective Question

85	85	<p>Six persons A, B, C, D, E and F are sitting in two rows, three in each. E is not at the end of any row. D is the second to the left of F. C, the neighbor of E, is sitting diagonally opposite to D. B is the neighbor of F. Which of the following are sitting diagonally opposite to each other?</p> <p>A1 F and C :</p> <p>A2 D and A :</p> <p>A3 A and C :</p> <p>A4 A and F – (Correct Alternative) :</p>	1 . 0	0. 25
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Objective Question

86	86	<p>Abhinav walked 2 km west of his house and then turned south covering 4 km. Finally, he moved 3 km towards east and then again 1 km west. How far is he from his initial position?</p> <p>A1 2 km :</p> <p>A2 4 km – (Correct Alternative) :</p> <p>A3 9 km :</p> <p>A4 10 km :</p>	1 . 0	0. 25
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Objective Question

87	87	<p>Which of the following diagrams correctly represents elephants, wolves, and animals?</p> <p>A1 :</p>  <p>– (Correct Alternative)</p> <p>A2 :</p>  <p>A3 :</p>  <p>A4 :</p> 	1 . 0	0. 25
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Objective Question

88	88	<p>If by arranging the letters of the word NABMODINT, the name of a game is formed, what are the first and last letter of the word so formed.</p> <p>A1 : B, T</p> <p>A2 : M, T</p> <p>A3 : B, N – (Correct Alternative)</p> <p>A4 : M, N</p>	1 . 0	0. 25
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Objective Question

89	89	<p>If + means /, - means x, / means +, and x means -, then $36x12+4/6+2-3 =$ _____.</p> <p>A1 : 2</p>	1 . 0	0. 25
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		<p>A2 18 :</p> <p>A3 42 – (Correct Alternative) :</p> <p>A4 12 :</p>		
Objective Question				
90	90	<p>Considering α means greater than, if $3A \alpha B$ and $3B \alpha 2C$, then</p> <p>A1 $2A \alpha C$:</p> <p>A2 $4A \alpha B$:</p> <p>A3 $4A \alpha C$ – (Correct Alternative) :</p> <p>A4 $2A \alpha B$:</p>	1 . 0	0. 25
Objective Question				
91	91	<p>Choose the group of letters which is different from others in the group of BCD, KMN, QRS, GHI, and WXY</p> <p>A1 KMN – (Correct Alternative) :</p> <p>A2 GHI :</p> <p>A3 WXY :</p> <p>A4 BCD :</p>	1 . 0	0. 25
Objective Question				
92	92	<p>The unit's digit in the product $(3127)^{173}$ is _____.</p>	1 . 0	0. 25

		A1 1 : A2 3 : A3 7 – (Correct Alternative) : A4 9 :		
Objective Question				
93	93	5b2 is a three-digit number with b as a missing digit. If the number is divisible by 6, the missing digit is _____. A1 2 – (Correct Alternative) : A2 3 : A3 6 : A4 7 :	1 . 0	0. 25
Objective Question				
94	94	How many of the following numbers are divisible by 132? 264, 396, 462, 792, 968, 2178, 5184, 6336 A1 4 – (Correct Alternative) : A2 5 : A3 6 : A4 7 :	1 . 0	0. 25

Objective Question				
95	95	<p>The sum of three consecutive odd numbers is always divisible by_____.</p> <p>I. 2 II. 3 III. 5 IV. 6</p> <p>A1 : Only I</p> <p>A2 : Only II – (Correct Alternative)</p> <p>A3 : Only I and II</p> <p>A4 : Only II and IV</p>	1 . 0	0. 25
Objective Question				
96	96	<p>The least number which must be subtracted from 6709 to make it exactly divisible by 9 is_____.</p> <p>A1 2 :</p> <p>A2 3 :</p> <p>A3 : 4 – (Correct Alternative)</p> <p>A4 5 :</p>	1 . 0	0. 25
Objective Question				
97	97	<p>When a number is divided by 31, the remainder is 29. When the same number is divided by 16, what will be the remainder?</p> <p>A1 11 :</p> <p>A2 13 :</p> <p>A3 15 :</p>	1 . 0	0. 25

		A4 : Data inadequate – (Correct Alternative)		
Objective Question				
98	98	The average of first 10 even numbers is _____. A1 18 : A2 22 : A3 9 : A4 11 – (Correct Alternative) :	1 . 0	0. 25
Objective Question				
99	99	A man can row his boat with the stream at 6 km/h and against the stream in 4 km/h. The man's rate is _____ km/h A1 1 – (Correct Alternative) : A2 5 : A3 8 : A4 3 :	1 . 0	0. 25
Objective Question				
100	100	If Rs.7500 are borrowed at Compound Interest at the rate of 4% per annum, then after 2 years the amount to be paid is _____. A1 8112 – (Correct Alternative) : A2 8100 :	1 . 0	0. 25

		<p>A3 7900 :</p> <p>A4 8000 :</p>		
Objective Question				
101	101	<p>If the cost of M meters of wire is R rupees, then what would be the cost of N meters of same wire at the same rate?</p> <p>A1 (R/M).N – (Correct Alternative) :</p> <p>A2 (R/MN) :</p> <p>A3 (M/N).R :</p> <p>A4 (RM/N) :</p>	1 . 0	0. 25
Objective Question				
102	102	<p>A seller gives a discount of 4% on a product with MRP marked INR 1500. He earned a profit of 20% over its cost price in this transaction. Cost price of the product is</p> <p>A1 1200 – (Correct Alternative) :</p> <p>A2 1500 :</p> <p>A3 1600 :</p> <p>A4 1000 :</p>	1 . 0	0. 25
Objective Question				
103	103	<p>If the sides of a rectangle are increased by 30%, what will be the percentage increase in the area of the rectangle?</p>	1 . 0	0. 25

		A1 44% : A2 40% : A3 64% : A4 69% – (Correct Alternative) :		
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Objective Question

10 4	104	If $A + B = 99$, and B is half of A, then the value of A and B is? A1 33, 66 : A2 66, 33 – (Correct Alternative) : A3 77, 22 : A4 22, 77 :	1 . 0	0. 25
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Objective Question

10 5	105	What will be the unit's digit in $(564)^{202} + (564)^{203}$ A1 4 : A2 6 : A3 0 – (Correct Alternative) : A4 2 :	1 . 0	0. 25
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Objective Question

106	106	<p>Three varieties of tea called A, B and C respectively are mixed in the ratio of 2:1:3 to yield a mixture worth Rs 155 per kg. If the price of A is 120 per kg, and that of B is 150 per kg; what is the price of 2 kgs of C?</p> <p>A1 450 :</p> <p>A2 360 – (Correct Alternative) :</p> <p>A3 300 :</p> <p>A4 270 :</p>	10	0.25
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Objective Question

107	107	<p>A sum of money grows to Rs 325 when it is invested at 5% per annum simple interest. If same amount of money is invested for 4% it grows to Rs 312. How long was the money invested for?</p> <p>A1 4 Years :</p> <p>A2 7 Years :</p> <p>A3 5 Years – (Correct Alternative) :</p> <p>A4 10 Years :</p>	10	0.25
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Objective Question

108	108	<p>A shopkeeper provides successive discounts of 20% and 10% on an article, yet he manages to earn a profit of 8%. The selling price of the article is Rs 1296. The difference between the cost price and marked price is</p> <p>A1 400 :</p> <p>A2 500 :</p>	10	0.25
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		<p>A3 : 600 – (Correct Alternative)</p> <p>A4 : 800</p>		
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Objective Question

109	109	<p>Tap A can fill a tank in 9 hours and tap B can fill in 6 hours. Tap A is opened at 8:00 AM and tap B is opened at 11:00 AM. Time at which the tank would be filled is</p> <p>A1 : 1:00 PM</p> <p>A2 : 1:24 PM – (Correct Alternative)</p> <p>A3 : 1:20 PM</p> <p>A4 : 1:30 PM</p>	10	0.25
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Objective Question

110	110	<p>The average score of section A, B and C of a class is 75, 76 and 80 respectively. The numbers of students in three sections are in ratio 1:2:3. Average scores of all the sections combined is?</p> <p>A1 : 77.57</p> <p>A2 : 78.59</p> <p>A3 : 76.93</p> <p>A4 : 77.83 – (Correct Alternative)</p>	10	0.25
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Objective Question

111	111	<p>A doctor invents a kit to diagnose blood sugar levels. Such a kit is :</p>	10	0.25
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		<p>A1 Patentable – (Correct Alternative) :</p> <p>A2 Copyrightable :</p> <p>A3 Non patentable :</p> <p>A4 Trade mark related :</p>		
Objective Question				
112	112	<p>Cinematographic films and sound recordings can be protected under:</p> <p>A1 Design :</p> <p>A2 Trade Dress :</p> <p>A3 Copyright – (Correct Alternative) :</p> <p>A4 Patent :</p>	100	0.25
Objective Question				
113	113	<p>_____ is a registered geographical indication in India:</p> <p>A1 Samosa :</p> <p>A2 Burfi :</p> <p>A3 Tirupati laddu – (Correct Alternative) :</p> <p>A4 Gulab Jamun :</p>	100	0.25
Objective Question				

114	114	<p>In India, how long does copyright last for literary works?</p> <p>A1 : 10 years after the creation of the work</p> <p>A2 : 50 years after the creation of the work</p> <p>A3 : 10 years after the death of the person who created that work</p> <p>A4 60 years after the death of the person who created that work – (Correct Alternative)</p>	10	0.25
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Objective Question

115	115	<p>A group of researchers have developed a new technology which is which is an improvement over the technology used in existing mobile phones available in the market. What type of intellectual property can they use to stop others from copying their invention?</p> <p>A1 : Copyright</p> <p>A2 : Geographical indications</p> <p>A3 Patents – (Correct Alternative)</p> <p>A4 : Trademarks</p>	10	0.25
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Objective Question

116	116	<p>WIPO stands for :</p> <p>A1 : World International Protection Office</p> <p>A2 : World Indian Protection Office</p> <p>A3 : World Intellectual Protection Office</p>	10	0.25
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		A4 World Intellectual Property Organisation – (Correct Alternative)		
Objective Question				
117	117	<p>A patent gives the owner the right to:</p> <p>A1 : Collect a monetary award from the government</p> <p>A2 Prevent others from making, using or selling their invention – (Correct Alternative)</p> <p>A3 : Make the invention</p> <p>A4 : Market the product free of cost</p>	10	0.25
Objective Question				
118	118	<p>Which of the following will violate the IP rights of Late Shri Atal Bihari Vajpayee, a former Prime Minister.</p> <p>A1 : Republishing a picture of him while reciting a poetry during kavi Samelan</p> <p>A2 : Rebroadcasting the speech he gave from Red Fort in 2000.</p> <p>A3 Reprinting of his autobiography published by him in 2002. – (Correct Alternative)</p> <p>A4 : None of the above as he has passed away.</p>	10	0.25
Objective Question				
119	119	<p>What is the duration of copyright protection of a novel?</p> <p>A1 : A novel will not gain copyright protection</p> <p>A2 : The day the author dies</p>	10	0.25

		<p>A3 : The end of the calender year in which the author died</p> <p>A4 60 years from the end of the calender year in which the author died – : (Correct Alternative)</p>		
Objective Question				
120	120	<p>A provisional patent was applied for on 1 Jan 1999. The application was converted into final specification and filed on 1 July 1999. It was published 18 months later on Jan1, 2001 and granted on May 30, 2003. The patent is valid until what date?</p> <p>A1 : May 29,2023</p> <p>A2 : Dec. 31, 2019</p> <p>A3 : June 30,2019</p> <p>A4 Dec. 31,2018 – (Correct Alternative)</p>		