National Testing Agency

Question Paper Name :	JEE Main 2020 Paper 2B (B.Planning) Jan 6 Single sitting
Subject Name :	Paper 2B (B.Planning)
Creation Date :	2020-01-06 20:31:58
Duration :	180
Total Marks :	400

Paper 2B (B.Planning)

Group Id :	4050367

Mathematics

Section Number :	1
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100

Question Number : 1 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If $A = \{1, 2, 3, 4\}$, then the number of functions on the set A, which are **not** one - one, is :

Options :

1. 232

2. 240

3. 248

4. 256

Question Number : 2 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The sum of the values of x satisfying the equation, $\sqrt{x}\left(\sqrt{x}-4\right)-3\left|\sqrt{x}-2\right|+6=0$ $(x \geq 0)$, is :

Options :

1. 26

2. 25

3. 10

4. 8

Question Number : 3 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If m be the least value of $|z-3+i4|^2+|z-5-i2|^2$, $z\in\mathbb{C}$ attained at $z=z_0$, then the ordered pair $(|z_0|, m)$ is equal to :

Options :

1. $(\sqrt{13}, 10)$

2. $(\sqrt{17}, 20)$

3. $(\sqrt{17}, 10)$

4. $(\sqrt{13}, 20)$

Question Number : 4 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If for some $c < 0$, the quadratic equation, $2cx^2-2(2c-1)x+3c^2=0$ has two distinct real roots, $\frac{1}{a}$ and $\frac{1}{b}$, then the value of the determinant, $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix}$ is :

Options :

1. 2

2. 0

3. $\frac{4}{3}$

4. 1

Question Number : 5 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Let $A = \begin{bmatrix} x & 2y \\ -1 & y \end{bmatrix}; x, y \in \mathbf{R}$.

If $AA^T = \begin{bmatrix} 1 & 0 \\ 0 & \alpha \end{bmatrix} (\alpha \in \mathbf{R})$, then $\alpha + y^2$ is equal to :

Options :

1. 1
2. $\sqrt{2} - 1$
3. 2
4. $\sqrt{2}$

Question Number : 6 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Let S_n denote the sum of the first n terms of an A.P., $a_1, a_2, a_3, \ldots, a_n$. If $a_5 + a_9 = 1$ and $S_9 = 6$, then which one of the following is **not** true ?

Options :

1. $S_{13} = \frac{13}{2}$
2. $a_{13} = 0$
3. $a_6 + a_8 = 1$
4. $S_6 = \frac{19}{2}$

Question Number : 7 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If $\sum_{r=1}^{9} \left(\frac{r+3}{2^r}\right) {}^9C_r = \alpha\left(\frac{3}{2}\right)^9 + \beta$, then $\alpha + \beta$ is equal to :

Options :

1. 2

2. 9

3. 3

4. 6

Question Number : 8 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Let a function, $f:(-1,3)\to \mathbf{R}$ be defined as $f(x)=\min\{x[x],\ |x[x]-2|+2\}$, where $[x]$ denotes the greatest integer $\le x$. Then f is :

Options :

1. neither continuous nor differentiable at exactly 3 points.

2. not continuous at two points and not differentiable at 3 points.

3. neither continuous nor differentiable at exactly two points.

4. not continuous at only one point and not differentiable at three points.

Question Number : 9 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x\to 1}\left\{\log_e\left(e^{x(x-1)}-e^{x(1-x)}\right)-\log_e(4x(x-1))\right\}$ is equal to :

Options :

1. 1

2. $-\log_e 2$

3. $-2\log_e 2$

4. $1-\log_e 2$

Question Number : 10 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The function $f(x)=e^{x+1}\,(4x^2-16x+11)$ is :

Options :

1. increasing in $\left(-\infty, -\frac{1}{2}\right) \cup \left(\frac{5}{2}, \infty\right)$

2. increasing in $(-\infty, -2) \cup (2, \infty)$

3. decreasing in $\left(-\infty, -\frac{5}{2}\right) \cup \left(\frac{1}{2}, \infty\right)$

4. decreasing in $\left(-\infty, \frac{1}{2}\right) \cup \left(\frac{5}{2}, \infty\right)$

Question Number : 11 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The area (in sq. units) of the region $\left\{(x, y) : \frac{1}{2} \le y \le \sin x,\ 0 \le x \le \pi\right\}$ is :

Options :

1. $\sqrt{3} - \frac{\pi}{3}$

2. $3 - \frac{\pi}{3}$

3. $3 - \frac{2\pi}{3}$

4. $\sqrt{3} - \frac{\pi}{6}$

Question Number : 12 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If $x = x(y)$ is the solution of the differential equation, $y\,dx - (x + 2y^2)\,dy = 0$, with $x(-\pi) = \pi^2$, then x is equal to :

Options :

1. $2y^2 - \pi^2$

2. $-2y^2 + 3\pi y$

3. $-y^2 - 2\pi y$

4. $2y^2 + \pi y$

Question Number : 13 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

A ray of light is projected from the origin at angle of 60° with the positive direction of x-axis towards the line, $y = 2$, which gets reflected from the point $(\alpha, 2)$. Then the distance of the reflected ray of light from the point $(2, 2)$ is :

Options :

1. $\sqrt{3} - 1$

2. $2\left(1 - \frac{1}{\sqrt{3}}\right)$

3. $3 - \sqrt{3}$

4. $1 - \frac{1}{\sqrt{3}}$

Question Number : 14 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Let the ellipse, $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, $a > b$, pass through the point $(2, 3)$ and have eccentricity equal to $\frac{1}{2}$. Then equation of the normal to this ellipse at $(2, 3)$ is :

Options :

1. $2y - x = 4$

2. $2x - y = 1$

3. $3x - y = 3$

4. $3x - 2y = 0$

Question Number : 15 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If a variable plane in 3-dimensional space moves in such a way that the sum of the reciprocals of its intercepts on the x and y-axes exceeds the reciprocal of its intercept on the z-axis by 2, then all such planes will pass through the point :

Options :

1. $\left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right)$

2. $\left(\frac{1}{2}, \frac{1}{2}, -\frac{1}{2}\right)$

3. $\left(\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}\right)$

4. $\left(\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}\right)$

Question Number : 16 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If the volume of a parallelopiped whose coterminous edges are $\vec{a}=\hat{i}+\hat{j}+2\hat{k}$, $\vec{b}=2\hat{i}+\lambda\hat{j}+\hat{k}$ and $\vec{c}=2\hat{i}+2\hat{j}+\lambda\hat{k}$ is 35 cu.m, then a value of $\vec{a}\cdot\vec{b}+\vec{b}\cdot\vec{c}-\vec{c}\cdot\vec{a}$ is:

Options :

1. 2
2. -14
3. -10
4. 22

Question Number : 17 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

If $10\sin^4\alpha+15\cos^4\alpha=6$, $\alpha\in\left(-\frac{\pi}{2},\frac{\pi}{2}\right)$, then $27\,\text{cosec}^6\alpha+8\sec^6\alpha$ is equal to :

Options :

1. 280
2. 270
3. 250
4. 240

Question Number : 18 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

A bag contains 6 red balls and 10 green balls. 3 balls are drawn from it one by one randomly without replacement. If the 3rd drawn ball is red, then the probability that the first two drawn balls are green is :

Options :

1. 3/7

2. 3/8

3. 9/56

4. 9/49

Question Number : 19 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Let the data $4, 10, x, y, 27$ be in the increasing order. If the median of the data is 18 and its mean deviation about mean is 7.6, then the mean of this data is :

Options :

1. 15.5

2. 16

3. 16.5

4. 17

Question Number : 20 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which of the following is not equivalent to $\sim p \wedge q$?

Options :

1. $\sim(p \vee \sim q)$

2. $\sim p \rightarrow \sim q$

3. $\sim (q \rightarrow p)$

4. $\sim p \wedge (\sim p \rightarrow q)$

Question Number : 21 Question Type : SA Correct Marks : 4 Wrong Marks : 0

If the total number of ways in which 8-digit numbers can be formed by using all the digits 0, 1, 2, 3, 4, 5, 7, 9 such that no two even digits appear together is (5!)k, then k is equal to _____.

Question Number : 22 Question Type : SA Correct Marks : 4 Wrong Marks : 0

Let $f(x) = \begin{cases} |x-3| & , \text{ if } x < -1 \\ 3x+4 & , \text{ if } x \geq -1 \end{cases}$,

$g(x) = x^2 - bx - 2$ $(x \in \mathbf{R})$ and b is a real constant. If gof is continuous at $x = -1$, then b is equal to _____.

Question Number : 23 Question Type : SA Correct Marks : 4 Wrong Marks : 0

If $\int e^{2x}(\cos x + 7\sin x)\,dx = e^{2x}g(x) + c$, where c is a constant of integration, then $g(0) + g\left(\frac{\pi}{2}\right)$ is equal to _____.

Question Number : 24 Question Type : SA Correct Marks : 4 Wrong Marks : 0

If the line joining the points $(-1, 2, 5)$ and $(3, 4, -10)$ intersects the xy-plane at the point (x, y, z), then $\frac{y}{x}$ is equal to _____.

Question Number : 25 Question Type : SA Correct Marks : 4 Wrong Marks : 0

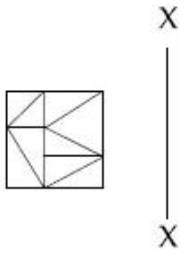
Let $a, b \in \mathbf{R}$ and $a > 0$. If the tangent at the point (2, 2) to the circle $x^2 + y^2 = 8$ touches the parabola $y^2 = 4a(x-b)$, then $b - a$ is equal to _____.

Aptitude Test

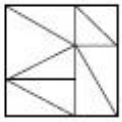
Section Number : 2
Number of Questions : 50
Number of Questions to be attempted : 50
Section Marks : 200

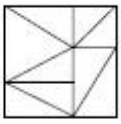
Question Number : 26 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

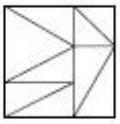
Which one of the answer figures is the correct mirror image of the problem figure with respect to X – X ?



Options :

1. 

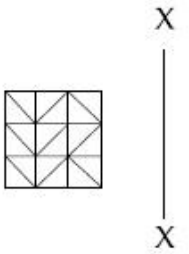
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3. 

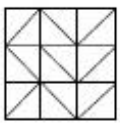
4. 

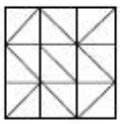
Question Number : 27 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

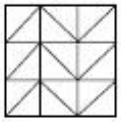
Which one of the answer figures is the correct mirror image of the problem figure with respect to X – X ?

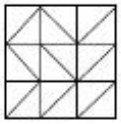


Options :

1. 

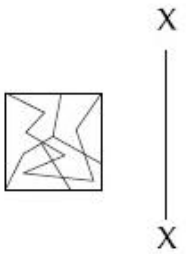
2. 

3. 

4. 

Question Number : 28 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the answer figures is the correct mirror image of the problem figure with respect to X – X ?



Options :

1. 

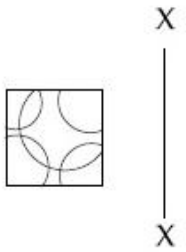
2. 

3. 

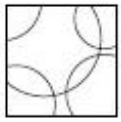
4. 

Question Number : 29 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the answer figures is the correct mirror image of the problem figure with respect to X – X ?



Options :

1. 

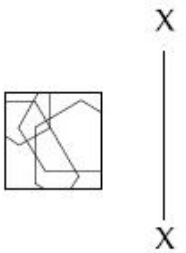
2. 

3. 

4. 

Question Number : 30 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the answer figures is the correct mirror image of the problem figure with respect to X – X ?



Options :

1. 

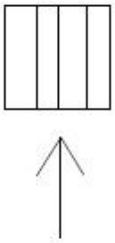
2. 

3. 

4. 

Question Number : 31 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The problem figure shows the top view of an object. Identify the correct elevation from amongst the answer figures looking in the direction of the arrow.



Options :

1. 

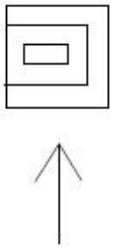
2. 

3. 

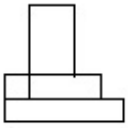
4. 

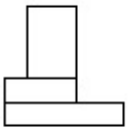
Question Number : 32 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

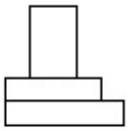
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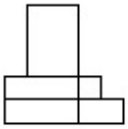


Options :

1. 

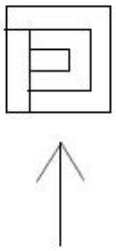
2. 

3. 

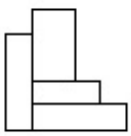
4. 

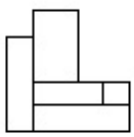
Question Number : 33 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

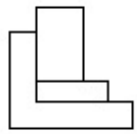
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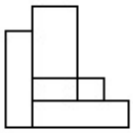


Options :

1. 

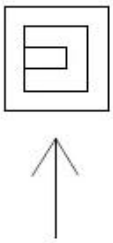
2. 

3. 

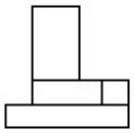
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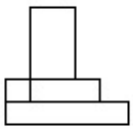
Question Number : 34 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

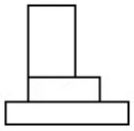
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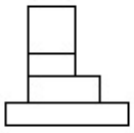


Options :

1. 

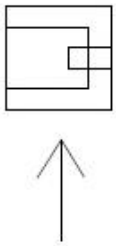
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3. 

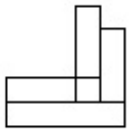
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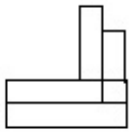
Question Number : 35 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

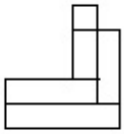
The problem figure shows the top view of an object. Identify the correct elevation from amongst the answer figures looking in the direction of the arrow.

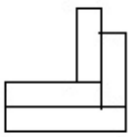


Options :

1. 

2. 

3. 

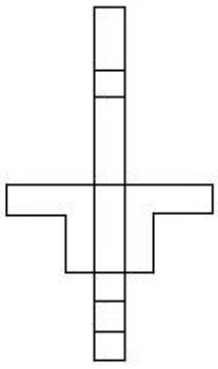
4. 

Question Number : 36 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

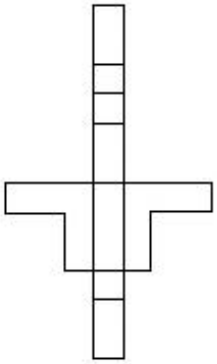
The 3 - D figure shows the view of an object. Identify the correct view when the figure is opened up, from amongst the answer figures.



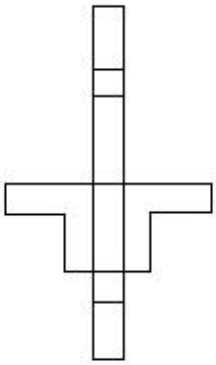
Options :

1. 

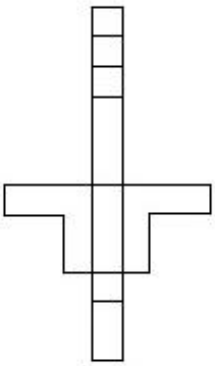
2.



3.



4.



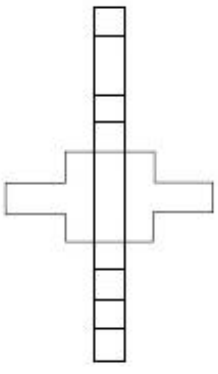
Question Number : 37 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The 3 - D figure shows the view of an object. Identify the correct view when the figure is opened up, from amongst the answer figures.

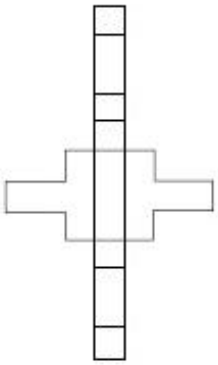


Options :

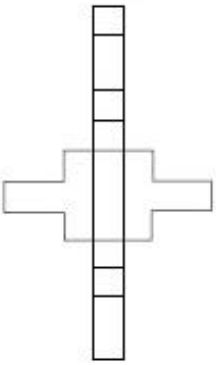
1.



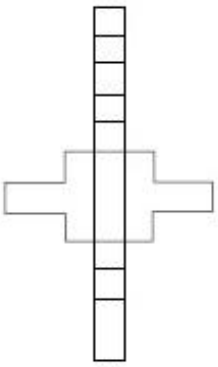
2.



3.

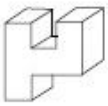


4.

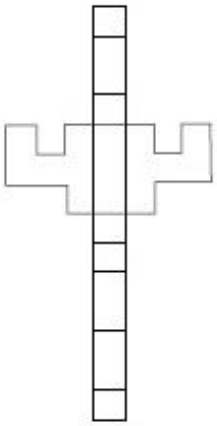


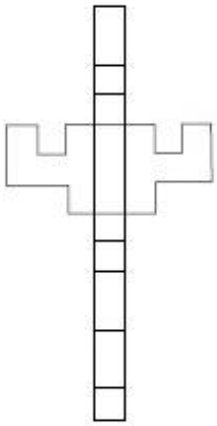
Question Number : 38 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

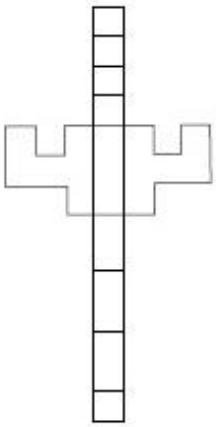
The 3 - D figure shows the view of an object. Identify the correct view when the figure is opened up, from amongst the answer figures.

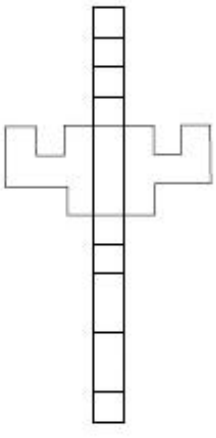


Options :

1. 

2. 

3. 

4. 

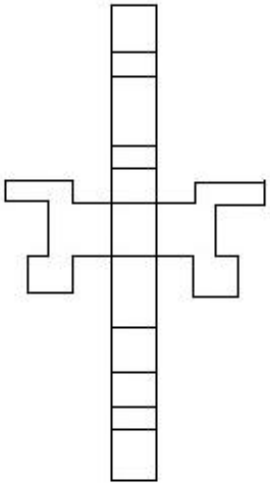
Question Number : 39 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The 3 - D figure shows the view of an object. Identify the correct view when the figure is opened up, from amongst the answer figures.

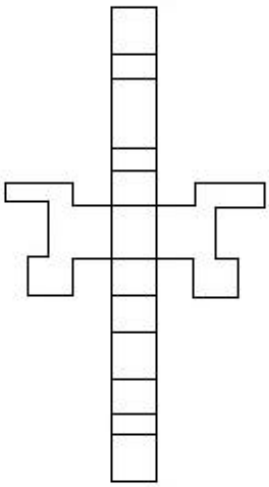


Options :

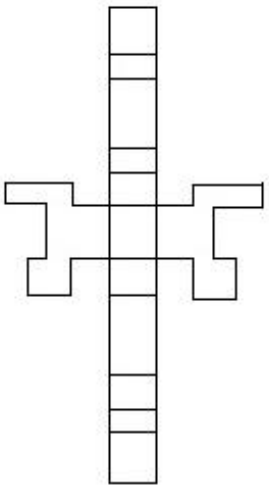
1.



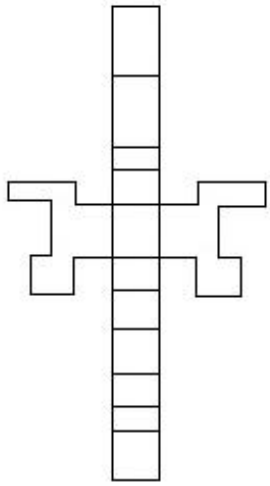
2.



3.

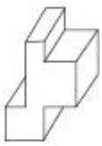


4.



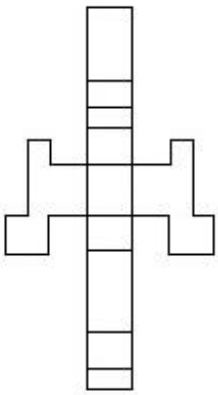
Question Number : 40 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The 3 - D figure shows the view of an object. Identify the correct view when the figure is opened up, from amongst the answer figures.

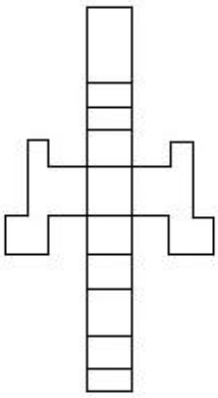


Options :

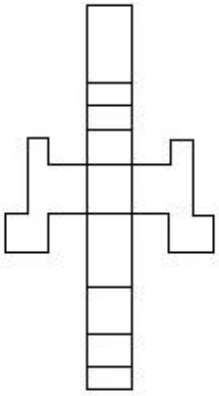
1.



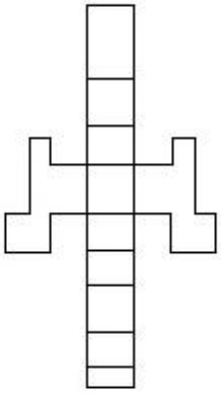
2.



3.

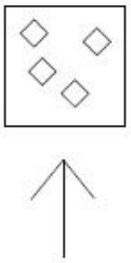


4.



Question Number : 41 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The problem figure shows the top view of objects. Looking in the direction of the arrow, identify the correct elevation, from amongst the answer figures.

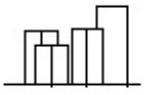


Options :

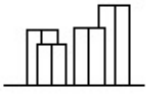
1.



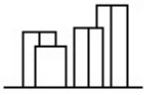
2.



3.

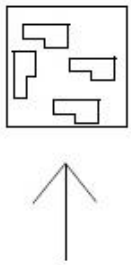


4.

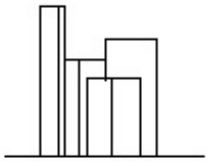


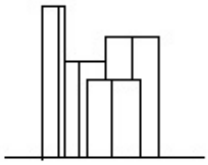
Question Number : 42 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

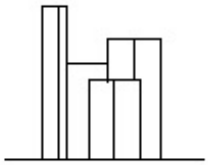
The problem figure shows the top view of objects. Looking in the direction of the arrow, identify the correct elevation, from amongst the answer figures.

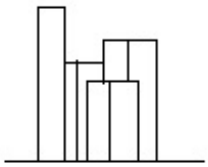


Options :

1. 

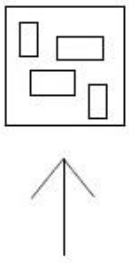
2. 

3. 

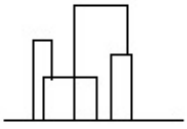
4. 

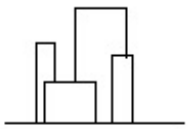
Question Number : 43 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

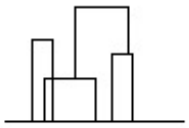
The problem figure shows the top view of objects. Looking in the direction of the arrow, identify the correct elevation, from amongst the answer figures.

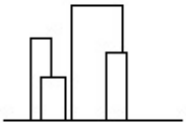


Options :

1. 

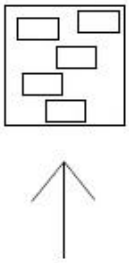
2. 

3. 

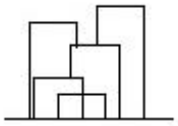
4. 

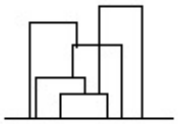
Question Number : 44 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

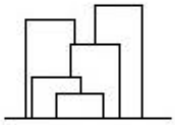
The problem figure shows the top view of objects. Looking in the direction of the arrow, identify the correct elevation, from amongst the answer figures.

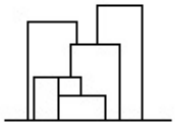


Options :

1. 

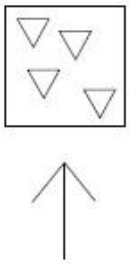
2. 

3. 

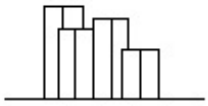
4. 

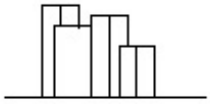
Question Number : 45 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

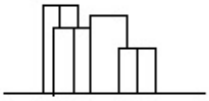
The problem figure shows the top view of objects. Looking in the direction of the arrow, identify the correct elevation, from amongst the answer figures.

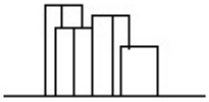


Options :

1. 

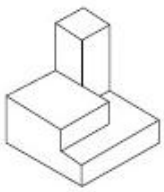
2. 

3. 

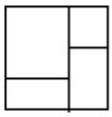
4. 

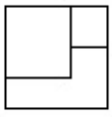
Question Number : 46 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

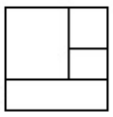
The 3 – D figure shows the view of an object. Identify the correct top view from amongst the answer figures.

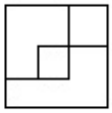


Options :

1. 

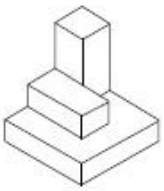
2. 

3. 

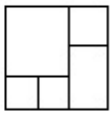
4. 

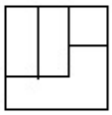
Question Number : 47 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

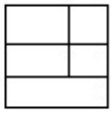
The 3 – D figure shows the view of an object. Identify the correct top view from amongst the answer figures.



Options :

1. 

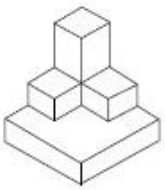
2. 

3. 

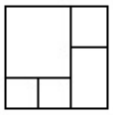
4. 

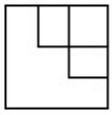
Question Number : 48 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

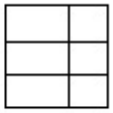
The 3 – D figure shows the view of an object. Identify the correct top view from amongst the answer figures.

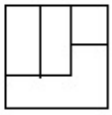


Options :

1. 

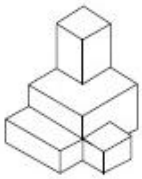
2. 

3. 

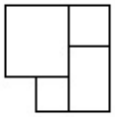
4. 

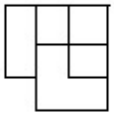
Question Number : 49 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

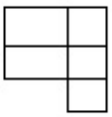
The 3 – D figure shows the view of an object. Identify the correct top view from amongst the answer figures.

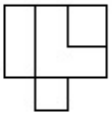


Options :

1. 

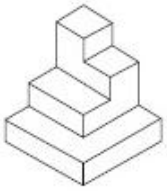
2. 

3. 

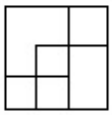
4. 

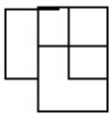
Question Number : 50 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The 3 – D figure shows the view of an object. Identify the correct top view from amongst the answer figures.

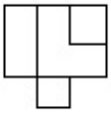


Options :

1. 

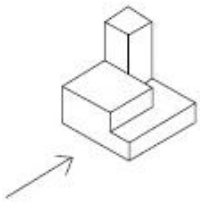
2. 

3. 

4. 

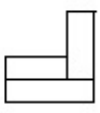
Question Number : 51 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

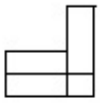
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

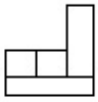


Options :

1. 

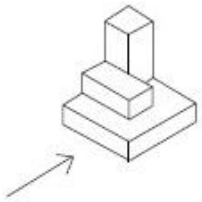
2. 

3. 

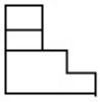
4. 

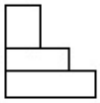
Question Number : 52 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

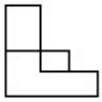
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

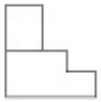


Options :

1. 

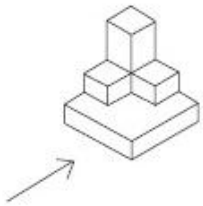
2. 

3. 

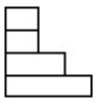
4. 

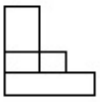
Question Number : 53 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

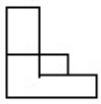
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

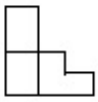


Options :

1. 

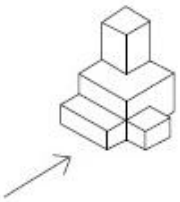
2. 

3. 

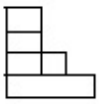
4. 

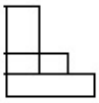
Question Number : 54 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

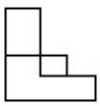
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

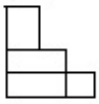


Options :

1. 

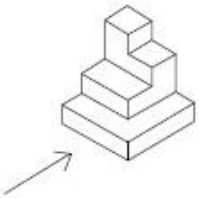
2. 

3. 

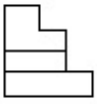
4. 

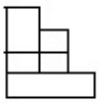
Question Number : 55 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

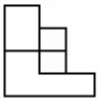
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

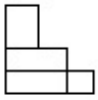


Options :

1. 

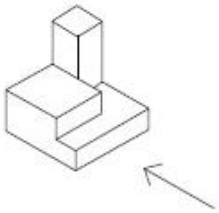
2. 

3. 

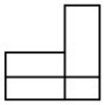
4. 

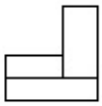
Question Number : 56 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

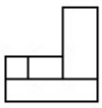
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

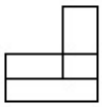


Options :

1. 

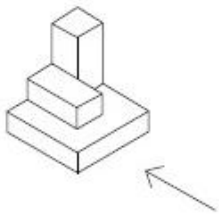
2. 

3. 

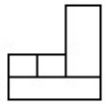
4. 

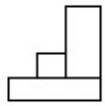
Question Number : 57 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

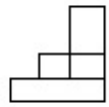
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

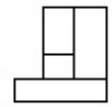


Options :

1. 

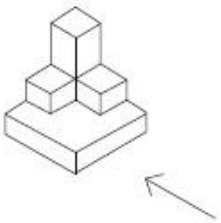
2. 

3. 

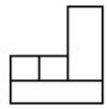
4. 

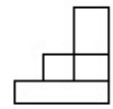
Question Number : 58 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

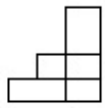
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

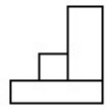


Options :

1. 

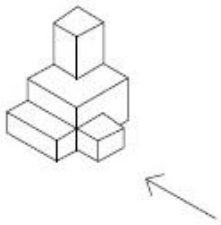
2. 

3. 

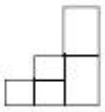
4. 

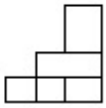
Question Number : 59 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

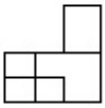
The 3 – D figure shows the view of an object. Identify the correct view in the direction of the arrow, from amongst the answer figures.

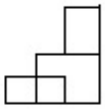


Options :

1. 

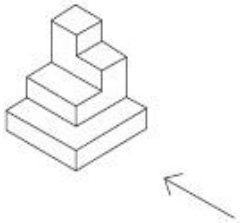
2. 

3. 

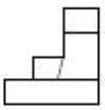
4. 

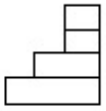
Question Number : 60 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

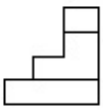
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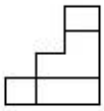


Options :

1. 

2. 

3. 

4. 

Question Number : 61 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Buckingham Palace is the Residence of which one of the following ?

Options :

1. Queen of England

2. King of Netherlands

3. King of Prussia

4. King of Nepal

Question Number : 62 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

In the Northern Hemisphere the winter sun rises from which one of the following directions ?

Options :

1. North East

2. North West

3. South East

4. South West

Question Number : 63 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the following is a purpose for installing false ceilings ?

Options :

1. Supporting the walls

2. Making the building water proof

3. Making the space acoustically effective

4. Making the building fire proof

Question Number : 64 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

What amongst the following is the thickness of a two brick wall ?

Options :

1. 18″

2. 20″

3. 16″

4. 22″

Question Number : 65 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Where from among the following is the famous St. Peters located ?

Options :

1. Denmark

2. Norway

3. Rome

4. Venice

Question Number : 66 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

In which State in India are the large Tea Gardens located ?

Options :

1. Punjab

2. Uttar Pradesh

3. Kerala

4. Odisha

Question Number : 67 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Where from the following is the National Gallery of Modern Art located ?

Options :

1. Bangalore

2. Lucknow

3. New Delhi

4. Mysore

Question Number : 68 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the following is a secondary color ?

Options :

1. Green

2. Red

3. Yellow

4. Blue

Question Number : 69 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the following is considered to be a calming color ?

Options :

1. Red
2. Orange
3. Green
4. Blue

Question Number : 70 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

What is the texture of sand-paper ?

Options :

1. Coarse
2. Glossy
3. Smooth
4. Shiny

Question Number : 71 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

What is the purpose of a chimney in a building ?

Options :

1. To give strength to a building
2. To hold the building up
3. To take out the smoke from a fire place
4. To make the building water proof

Question Number : 72 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

What among the following would be the ideal material for flooring of a steel factory ?

Options :

1. Wood

2. Tiles

3. Granite

4. Steel

Question Number : 73 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Who was the architect of the LIC Building in Connaught Place, New Delhi ?

Options :

1. Raj Rewal

2. Charles Correa

3. Louis Kahn

4. Zaha Hadid

Question Number : 74 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Who was the architect of the glass pyramid at the Louvre Paris ?

Options :

1. Frank Lloyd Wright

2. Walter Gropius

3. I.M. Pei

4. Charles Correa

Question Number : 75 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Who amongst the following is an architect ?

Options :

1. Geoffery Bawa

2. Sharmila Tagore

3. Louis Armstrong

4. Donald Trump

Planning

Section Number : 3
Number of Questions : 25
Number of Questions to be attempted : 25
Section Marks : 100

Question Number : 76 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

A system of economic enterprise based on market exchange is termed as :

Options :

1. Socialism

2. Communism

3. Capitalism

4. Feudalism

Question Number : 77 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which is the First Airport in India ?

Options :

1. Safdarjung Airport

2. Juhu Aerodrome

3. Kolkata Airport

4. Madras Airport

Question Number : 78 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which of these does **not** hold true for the following observation ?

Evidences of town planning principles in Indus Valley Civilisation is demonstrated through the discovery of the following :

Options :

1. Houses were connected directly to a drainage system

2. Public transport wagons moved in the cities

3. Great Bath that served the purpose of community bathing

4. Some of the towns were laid out in a grid pattern

Question Number : 79 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which one of the following is **not** a fundamental right as per Constitution of India ?

Options :

1. Right to Equality

2. Right to Education

3. Right to Freedom of Speech

4. Right to Property

Question Number : 80 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which of the following has the maximum slope ?

Options :

1. 1 : 20

2. 1 : 30

3. 1 : 15

4. 1 : 10

Question Number : 81 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which of the following Ministers has never held the portfolio of Urban Development ?

Options :

1. Hardeep Singh Puri

2. Venkaiah Naidu

3. Jaipal Reddy

4. Jairam Ramesh

Question Number : 82 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

What is the full form of GPS ?

Options :

1. Green Peace Society

2. Global Positioning System

3. Global Peace and Security

4. Global Position on Security

Question Number : 83 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

When was the first United Nations Conference on 'Human Settlements Habitat I' held ?

Options :

1. 1981

2. 1976

3. 1970

4. 1971

Question Number : 84 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The headquarters of International Labour Organisation (ILO) is located in which city ?

Options :

1. New York

2. Vienna

3. Washington DC

4. Geneva

Question Number : 85 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Topographical map of an area is used to understand :

Options :

1. Landform

2. Population Density

3. Economic Activity

4. Climate

Question Number : 86 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

With what amongst the given option is 'The White Revolution' in India associated ?

Options :

1. Rise in rice production

2. Cooperatives of milk producers

3. Cooperatives of paper mill workers

4. Rise in use of white marbles in buildings

Question Number : 87 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Sustainable Development takes care of the present and :

Options :

1. Community

2. Past

3. Population

4. Future

Question Number : 88 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The Eastern coast of India is also known as :

Options :

1. Bay of Bengal

2. Coromondal Coast

3. Konkan Coast

4. Bengal Coast

Question Number : 89 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Secondary sector economic activity is related to :

Options :

1. Trade and commerce

2. Agriculture

3. Industrial

4. Tourism

Question Number : 90 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Which was the most polluted city in India in 2018 as per Central Pollution Control Board ?

Options :

1. Lucknow

2. Ahmedabad

3. Gurugram

4. Patna

Question Number : 91 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Find the correct match :

(P)	Aligarh	(I)	Silk Sarees
(Q)	Firozabad	(II)	Brass product
(R)	Kanjeevaram	(III)	Bangles
(S)	Moradabad	(IV)	Locks

Options :

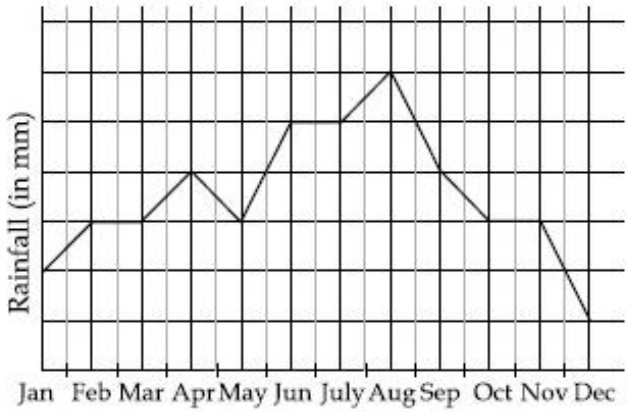
1. (P)-(I), (Q)-(III), (R)-(II), (S)-(IV)

2. (P)-(IV), (Q)-(III), (R)-(I), (S)-(II)

3. (P)-(II), (Q)-(IV), (R)-(I), (S)-(III)

4. (P)-(III), (Q)-(I), (R)-(IV), (S)-(II)

Question Number : 92 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1



The above graph depicts the average monthly rainfall for a particular year in the country XYZ. Select the **incorrect** option :

Options :

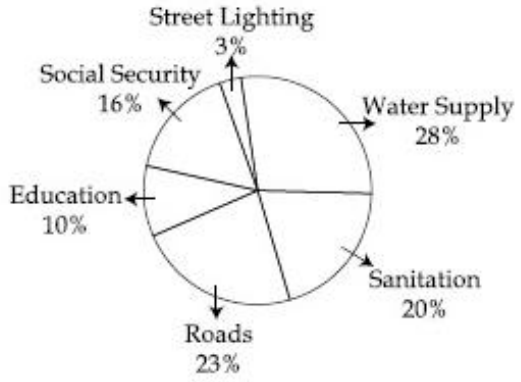
1. The driest months in the country are December and January.

2. February-March have the same average rainfall as October-November.

3. The country experiences the same average monthly rainfall in the months of May - June.

4. The wettest spell experienced by the country is in the month of August.

Question Number : 93 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1



The above graph shows a municipality's expenditure on different services for the financial year 2018-19. If the municipality spent a total of Rs. 50 crore during this period, the expenditure on 'Education' was :

Options :

1. Rs. 3 crores less than that spent on 'social security'.

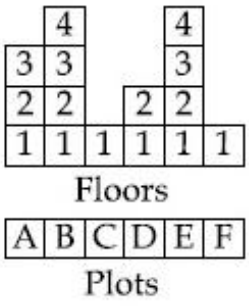
2. Rs. 7 crores more than that spent on 'street lighting'

3. Rs. 1 crore

4. Rs. 0.5 crore

Question Number : 94 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

The figure shows floors as 1, 2, 3, 4 on each plot A, B, C, D, E, F. Plot A, D and E are commercial on all floors. B, C and F are residential on all floors. Find the percentage of total floors that are commercial and residential respectively :



Options :

1. 60% and 40%

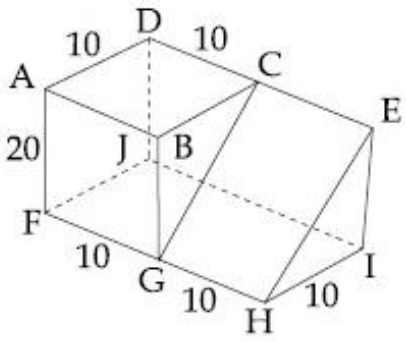
2. 40% and 60%

3. 50% and 50%

4. 10% and 90%

Question Number : 95 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Calculate the surface area of the solid shown in the figure excluding the bottom surface :



Options :

1. 1000.36

2. 1223.60

3. 1227.40

4. 1323.60

Question Number : 96 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Following table gives the number of households and their corresponding monthly incomes. What will be the average monthly income of the household ?

Sl. No.	No. of Households	Monthly Household income (Rs)
1	300	20000
2	200	50000
3	150	100000
4	50	500000

Options :

1. 56000

2. 67000

3. 70000

4. 80000

Question Number : 97 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Read the given passage and answer the questions.

'Jatra' is a musical folk theatre art form, popular in Bengali speaking areas of the Indian sub-continent including Bangladesh, West Bengal, Orissa, Assam and Bihar. The word 'jatra' means journey. While the original themes of 'jatra' were largely religious, by the end of the 19^{th} century, it began to include moral and later, even secular themes. The survival of this folk art form has been credited to its adaptability to changing social contexts.

Which of the following is indicated in the given paragraph ?

Options :

1. 'Jatra' refers to the journey of all folk-theatre forms in Bengal

2. 'Jatra' was performed originally in religious buildings only

3. 'Jatra' is popular in parts of India and Bangladesh

4. 'Jatra' came into existence in the 19th century

Question Number : 98 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Read the given passage and answer the questions.

'Jatra' is a musical folk theatre art form, popular in Bengali speaking areas of the Indian sub-continent including Bangladesh, West Bengal, Orissa, Assam and Bihar. The word 'jatra' means journey. While the original themes of 'jatra' were largely religious, by the end of the 19th century, it began to include moral and later, even secular themes. The survival of this folk art form has been credited to its adaptability to changing social contexts.

The passage attributes the continued popularity of 'jatra' to.

Options :

1. the different social castes in Bengal

2. its flexibility in evolving its contents

3. its moral preachings

4. its beautiful folk music

Question Number : 99 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

Statement I :

Exposure to computer based learning is common in most schools today.

Statement II :

Most jobs require at least basic computer literacy.

Pick the correct option :

Options :

1. Statement I is the cause and statement II is its effect

2. Statement II is the cause and statement I is its effect

3. Statements I and II are independent effects

4. Statements I and II are causes of some common effect

Question Number : 100 Question Type : MCQ Correct Marks : 4 Wrong Marks : 1

In a survey of tourists in a city, 120 tourists were women of which 35% stayed in the city for more than one day. Which of the following is the **correct** conclusion for this data ?

Options :

1. The majority of all tourists stay for less than a day.

2. Average stay of women tourists is approximately one day.

3. Approximately 35% of all tourists stay for more than one day.

4. Approximately 35% of women tourists stay for more than one day.