PGT Mathematics

Q 1). Which Indian state is planning to launch a massive jungle safari project in the Aravalli Hills, aimed at promoting eco-tourism and sustainable development?

(A) Rajasthan

(B) Gujarat

(C) Madhya Pradesh

(D) Haryana

Correct Answer: (D)

Q 2). Prime Minister Modi had accorded a ceremonial welcome during his recent visit to Croatia at _____.

(A) St. Mark's Church

(B) Croatian Parliament

(C) Banski Dvori Palace

(D) Zagreb City Hall

Correct Answer: (C)

Q 3). Which of the following countries were recently elected to serve as a non-permanent member of the UN Security Council for a two-year term starting in January 2026?

1. Bahrain, Colombia, Latvia

2. Indonesia, Sri Lanka, Vietnam

3. Liberia, The Democratic Republic of Congo

(A) 1, 2 & 3

(B) 1 & 3

(C) Only 2

(D) 1 & 2

Correct Answer: (B)

Q 4). "How many characters are there in the story?" This question is of _____ level as per the revised Bloom's Taxonomy.

(A) remembering

(B) evaluation

(C) understanding

(D) application

Correct Answer: (A)

Q 5). Which of the following is an example of positive reinforcement as per child psychology?

(A) Giving a child a time-out for misbehavior.

(B) Praising a child for completing homework.

(C) Removing TV privileges for poor grades.

(D) Ignoring a child's tantrum.

Correct Answer: (B)

Q 6). As per NEP 2020, what is the proposed bagless period for students in Grades 6-8 in a year?

(A) 5 days

(B) 10 days

(C) 15 days

(D) 20 days

Correct Answer: (B)

Q 7). For interval (–1, 1] which of the following statement is true?

(A) –1 ∈ (–1, 1]

(B) 0 ∈ (–1, 1]

(C) (–1, 1] = {–1, 1}

(D) (–1, 1] = $\{\phi\}$

Correct Answer: (B)

Q 8). If $\begin{bmatrix} 3 & x+y \\ x & 3 \end{bmatrix} = \begin{bmatrix} 3 & 7 \\ -5 & 3 \end{bmatrix}$, then value of y is:

(A) −12

(B) −2

(C) 2

(D) 12

Correct Answer: (D)

Q 9). Find the length of an arc of a circle of radius 5cm subtending a central angle measuring 15°.

(A) $\frac{\pi}{12}$ cm

(B) 15 cm

(C) $\frac{5\pi}{12}$ cm

(D) 75 cm

Correct Answer: (C)

Q 10). If the zeroes of the quadratic polynomial $ax^2 + bx + c$, $c \neq 0$ are equal, then

(A) c and a have opposite signs.

(B) c and b have opposite signs.

(C) c and a have the same sign.

(D) c and b have the same sign.

Correct Answer: (C)

Q 11). What is the value of tan 1° tan 2° tan 3° … tan 89°?

(A) 0

(B) 1

(C) ½

(D) Not defined

Correct Answer: (B)

Q 12). 3 cards are drawn simultaneously from a well shuffled deck of 52 cards. Then the probability of drawn cards contains 1 king, 1 queen and 1 ace is _____.

(A) $\frac{3}{2326}$

(B) $\frac{15}{2600}$

(C) $\frac{1}{2226}$

(D) $\frac{16}{5525}$

Correct Answer: (D)

Q 13). 1, ω, ω^2 are cube root of 1, then $(1 + 2\,\omega + \omega^2)^{-12}$ is equal to which of the following?

(A) 64

(B) 1

(C) 81

(D) 729

Correct Answer: (B)

Q 14). What is the number of diagonals in octagon?

(A) 12

(B) 14

(C) 18

(D) 20

Correct Answer: (D)

Q 15). If f (x) = a cos (bx + c) + d, then what is the range of f(x)?

(A) [−a, a]

(B) [−d, d]

(C) [d −a, d + a]

(D) [−1, 1]

Correct Answer: (C)

Q 16). If $A = \{1, 2, 3, 4\}$ and $B = \{1, 2, 3, 4, 5\}$ then what is the value of $n(A \times B)$?

(A) 20

(B) 12

(C) 24

(D) 9

Correct Answer: (A)

Q 17). The largest possible area (in sq cm) of a right triangle whose hypotenuse is 5 cm long, is ____.

(A) 20

(B) $\frac{25}{4}$

(C) $\frac{25}{2}$

(D) 12

Correct Answer: (B)

Q 18). The Value of $\int_0^1 x(1-x)^{23}\,dx$, is:

(A) $\frac{1}{24}$

(B) 1

(C) $\frac{1}{23}$

(D) $\frac{1}{600}$

Correct Answer: (D)

Q 19). A student received the following marks in the six subjects of seven courses: 56, 78, 83, 86, 78 and 77. Average of his marks in six subjects is 78. How many marks did he receive in the sixth subject?

(A) 88

(B) 68

(C) 79

(D) 78

Correct Answer: (A)

Q 20). Consider the statement:

"One of the main applications of definite integrals is to find the average value of a function y = f(x) over a specific interval [a, b]. In order to find this average value, one must integrate the function and divide the answer by the length of the interval.

So, the average (or the mean) value of f(x) on [a, b] is defined by: $\bar{\mathbf{f}}(\mathbf{x}) = \frac{\mathbf{1}}{\mathbf{b-a}}\int_{\mathbf{a}}^{\mathbf{b}} \mathbf{f}(\mathbf{x})\mathbf{dx}$."

The average value of a function is the height of the rectangle that has an area that is equivalent to the area under the curve of the function.

This value also satisfies the Mean Value Theorem for Integrals for the function on the interval [a, b] i.e. If f(x) is a continuous function on [a, b] then there is at least a number c in (a, b) such that $(\mathbf{b}-\mathbf{a})\bar{\mathbf{f}}(\mathbf{c}) = \int_{\mathbf{a}}^{\mathbf{b}} \mathbf{f}(\mathbf{x})\mathbf{dx}$

Using the above information solves the question:

The average value of the function $f(x) = \sin^2 x$, over the interval $[0, \pi]$

(A) $\frac{\pi}{2}$

(B) $\frac{2}{\pi}$

(C) $\frac{1}{2\pi}$

(D) $\frac{1}{2}$

Correct Answer: (D)
