PGT MATHEMATICS

1. Who launched the 90-day campaign 'Azadi Se Antyodaya Tak'?

(A) Amit Shah

(B) Piyush Goyal

(C) Kiren Rijiju

(D) Giriraj Singh

Correct Answer: (D)

2. Which country signed agreements on training staff and IT cooperation to deepen railway cooperation In Sep 2022?

(A) Russia-India

(B) Ukraine-Turkey

(C) India-Bangladesh

(D) America-India

Correct Answer: (C)

3. The "Donbas War" is currently being fought in

(A) Serbia

(B) Ukraine

(C) Syria

(D) Lebanon

Correct Answer: (B)

4. Pedagogy is the study of

(A) education

(B) learning process

(C) teaching methods

(D) guiding students

Correct Answer: (C)

5. Dyslexia is associated with

(A) mental disorder

(B) mathematical disorder

(C) reading disorder

(D) behavioural disorder

Correct Answer: (C)

6. Which government organizations will develop guidelines for the education of gifted children?

(A) NCERT and NCFCS

(B) NCERT and NCTE

(C) NCERT and NTA

(D) NCERT and SCERT

Correct Answer: (B)

7.If A and B are two independent events such that $P(B) = 0.65$ and $P(A \cup B) = 0.85$, then $P(A) =$_____

Options:

(A) $\frac{4}{7}$

(B) $\frac{5}{13}$

(C) $\frac{7}{4}$

(D) $\frac{9}{13}$

Correct Answer: (A)

8. What is $\tan 10^0 \times \tan 20^0 \times \tan 30^0 \times \cdots \times \tan 80^0$?

      (A) 0

      (B) 1

      (C) Both 0 and 1

      (D) None of these

   Correct Answer: (B)

9. Consider $\binom{n}{r} = \frac{n!}{r!(n-r)!}$. If $A = \binom{n}{2} + \binom{n-1}{2}$. Which of the following statement is true?

Options:

      (A) A is perfect square only for $n = 3$.

      (B) A is perfect square all values of $n \geq 3$.

      (C) A is not perfect square all values of $n \in \mathbb{N}$.

      (D) *none of these*.

      Correct Answer: (B)

10 If $cos^2\theta = -\frac{(x^2+y^2+1)}{2x}$, then x must be

Options:

      (A) 1

      (B) π

      (C) 0

      (D) -1

      Correct Answer: (D)

11. If $2^{\log_2 x} + x^{\log_2 2} = 20$, then $x =$

Options:

(A) 16

(B) 32

(C) 10

(D) None of these

Correct Answer: (B)

12. If A is 3×3 matrix and determinate of A is 10. Then determinate of $5A$ is

Options:

(A) 1500

(B) 6250

(C) 1250

(D) 2500

Correct Answer: (C)

13. : The sum of the series $2021 + 2038 + 2055 + 2072 + \cdots + 10504$.

Options:

(A) 31,31,250

(B) 54,27,000

(C) 27,00,000

(D) 54,00,000

Correct Answer: (A)

14.   : The unit digit of the number 2^{2022} is

Options:

(A) 2

(B) 4

(C) 8

(D) 6

Correct Answer: (B)

15.   : If $\frac{\sqrt{x+2}+\sqrt{x-2}}{\sqrt{x+2}-\sqrt{x-2}} = \frac{1}{\sqrt{2}}$. Then $x =$

Options: (A) $\pm\frac{6}{\sqrt{2}}$

(B) $\pm\frac{6}{2\sqrt{2}}$

(C) $\pm\frac{3}{2\sqrt{2}}$

(D) ±3

Correct Answer: (B)

16. Consider the following statements
   1) Cauchy's Mean Value Theorem can be reduced to Lagrange's Mean Value Theorem.
   2) Lagrange's Mean Value Theorem is generalization of Rolle's Theo-rem.
      (A) The statement (1) is true but the statement (2) is false
      (B) The statement (2) is true but the statement (1) is false
      (C) The statements (1) and (2) are false
      (D) The statements (1) and (2) are true.

Correct Answer: D

17. Which of the following statement is true?
(1) $w = z^2$ is a single valued function.
(2) $w = \sqrt{z}$ is a multivalued function.
      (A) (1) and (2)
      (B) Only (1)
      (C) only (2)
      (D) Either (1) nor (2).

Correct Answer: (A)

18. Which of the following statement is true?
  (A) The sequence $\frac{1}{n^2} + \frac{n}{n+1} i$ is convergence to i.
  (B) The sequence $\frac{1}{n^2} + \frac{n}{n+1} i$ is convergence to $-i$
  (C) The sequence $\frac{1}{n^2} + \frac{n}{n+1} i$ is convergence to 0.
  (D) The sequence $\frac{1}{n^2} + \frac{n}{n+1} i$ is divergent.
Correct Answer: (A)

19. A hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is called equilateral hyperbola if
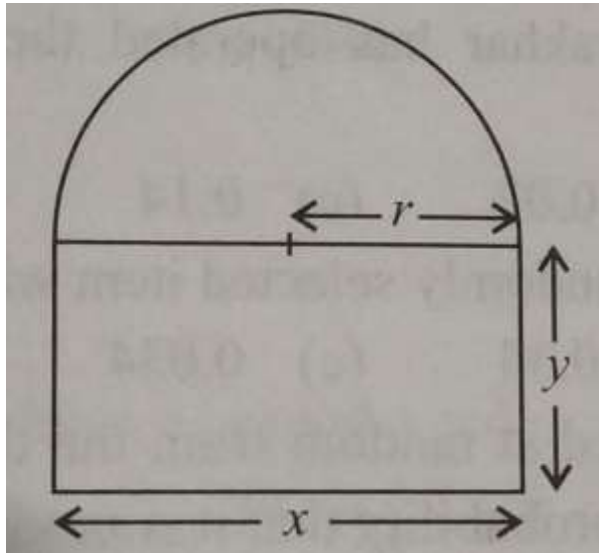(A) $a < b$
(B) $a > b$
(C) $a \neq b$
(D) $a = b$
    Correct Answer: (D)

CASE STUDY BASED QUESTION:

A window is in the form of rectangle surmounted by a semicircle as shown in the figure. The perimeter of the window is meters.

Based on the above information answer the following question:

20.The relation between the varable 'x' and 'y' is

Options:

(A) $4y +(4+\pi)x = 10$

(B) $4y +(2+\pi)x = 10$

(C) $4y +(4+\pi)x = 5$

 (D) $4y +(2+\pi)x = 5$

Correct Answer: (B) $4y +(2+\pi)x = 10$