

Nata 2019 Maths  
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**NATA 2019 Mathematics Test Paper**

(Test Paper &amp; Answer key for Test held on 7-July-2019)

Q1: Given an A.P. whose terms are all positive integers. The sum of its first nine terms is greater than 200 and less than 220. If the second term in it is 12, then its 4th term is :

- A 20
- B 16
- C 8
- D 24

Correct Ans: A

Q2: The curved surface area of a cylindrical pillar is 264 m<sup>2</sup> and its volume is 924 m<sup>3</sup>. Find the ratio of its diameter to its height

- A 3 : 7
- B 7 : 3
- C 6 : 7
- D 7 : 6

Correct Ans: B

Q3: A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume of the hall is:

- A 720
- B 900
- C 1200
- D 1800

Correct Ans: C

Q4: If a sphere has a radius of 4.5 cm what would its total surface area come to?

- A 350.15
- B 246
- C 254.47
- D 128.06

Correct Ans: C

Q5: Area and perimeter of a rectangular field are 2000 sq.m. and 180 m respectively. What is the length and breadth?

- A l = 12, b = 40
- B l = 20, b = 15
- C l = 25, b = 30
- D l = 50, b = 40

Correct Ans: D

Q6: The difference of two positive integers is 3 and the sum of their squares is 117. What are the numbers?

- A 2,0
- B 2/3,1
- C 1,-2
- D 6,9

Correct Ans: D

Q7: If  $\tan^{-1}(\sin x) = \frac{\pi}{4}$ , then the value of x is:

- A  $\frac{\pi}{2}$
- B  $\frac{\pi}{6}$
- C  $\frac{\pi}{3}$
- D  $\frac{\pi}{8}$

Correct Ans: A

Q8: If  $\cos 2\theta + \sin \theta = \sqrt{2} \cos \theta$  Then  $\cos \theta - \sin \theta = ?$

- A  $\sqrt{2} \cos \theta$
- B  $2 \sin \theta$
- C  $\sqrt{2} \sin \theta$
- D  $2 \cos \theta$

Correct Ans: C

Q9: If  $\int_0^a 3x^2 dx = 8$  find the value of a.

- A 3
- B 2
- C 4
- D 8

Correct Ans: B

Q10: If  $\log_8 x + \log_4 x + \log_2 x = 11$ ,  $x = ?$

- A 11
- B 8
- C 12
- D 64

Correct Ans: D

Q11: You have a 9 x 9 x 9 cm box. How many cubes of side 5 cm will you be able to fit inside it?

- A 2
- B 1
- C None
- D 5

Correct Ans: B

Q12: If  $x = t, y = \frac{1}{t}$  then  $\frac{dy}{dx}$  is equal to:

- A  $\frac{y}{x}$
- B  $\frac{x}{y}$
- C  $-\frac{x}{y}$
- D  $-\frac{y}{x}$

Correct Ans: D

Q13:  $\log(\sin 1^\circ) \times \log(\sin 2^\circ) \times \dots \times \log(\sin 90^\circ)$  is

- A positive
- B negative
- C zero
- D lies between 1 and 180

Correct Ans: C

Q14: Area bounded by  $y=x^3$ ,  $y=8$  and  $x=0$  is

- A 2 sq. units
- B 14 sq. units
- C 12 sq. units
- D 6 sq. units

Correct Ans: C

Q15: The average age of 20 students in a class is 15 years. If the teacher's age is including, the average increases by 1. What is the teacher's age?

- A 30 years
- B 21 years
- C 42 years
- D 36 years

Correct Ans: D

Q16: The number of straight lines that can be formed by joining 20 points of which 4 points are collinear is

- A 183
- B 186
- C 185
- D 190

Correct Ans: C

Q17: A determinant is chosen at random from the set of order 2 with elements 0 or 1 only. The probability that the determinant chosen non zero is

- A  $3/8$
- B  $3/16$
- C  $1/4$
- D  $1/8$

Correct Ans: A

Q18: The probability that a leap year will have 53 Fridays or 53 Saturday is

- A  $2/7$
- B  $3/7$
- C  $4/7$
- D  $1/7$

Correct Ans: B

Q19: A complete cycle of a traffic light takes 60 seconds. During each cycle the light is green for 25 sec, yellow for 5 sec and red for 30 sec. At a randomly chosen time, the probability that the light will not be green is

- A  $1/3$
- B  $1/4$
- C  $1/12$
- D  $7/12$

Correct Ans: D

Q20: Let the following system of equations

$$kx + y + z = 1$$

$$x + ky + z = k$$

$$x + y + kz = k^2$$

Has no solution. Find  $|k|$ .

- A 0
- B 1
- C 2
- D 3

Correct Ans: C

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