DO NOT OPEN THE TEST BOOKLET UNTIL ASKED TO DO SO BY THE INVIGILATOR

Name of the candidate ____

Roll No. ____

Centre of Examination ____

Date of Examination ____

Candidate's Signature ____

Signature of Invigilator ____

INSTRUCTIONS TO THE CANDIDATES

1. Please enter **THE FIVE DIGITS** of your roll no. in the OMR sheet. For example, if your roll no. is 72867, fill as

7	3	8	6	7

2. Each question carries ONE MARK. There is no negative marking.

3. Use only BLUE or BLACK BALL POINT PEN for completely darkening the answer circle. For Example:

Ⓐ Ⓑ Ⓒ ●

4. Rough work is to be done only on the Test Booklet and not on the answer sheet.

5. Any unfair means like copying/helping others, will lead to disqualification from examination.

6. Possession of any objectionable written/printed material, calculator, mobile phone, cordless phone, communication device, pager, scanner or other device (whether or not such materials/devices are used in the entrance examination) will lead to disqualification.

7. Candidates should hand over the answer sheet (OMR sheet) to the invigilator at the end of the examination.

8. Candidates shall not leave the examination hall until they are asked to do so.

Directions for questions 1 – 3: A function defined on an interval I is said to be continuous if it has no holes or jumps. f is said to have a *removable discontinuity* at a point c if the limit at c exists but is not equal to the value of the function f at c. If the left hand limit and the right hand limit both exist but are not equal then c is called the *jump discontinuity*. If eiher the left hand limit or the right hand limit does not exist then c is called an *infinite discontinuity*.

Q1) Let $f(x)=\begin{cases} x^2+5 & , \quad x<1 \\ 10 & , \quad x=1 \\ 2+4x & , \quad x>1 \end{cases}$, then $x = 1$ is

A. a point of continuity
B. is a jump discontinuity
C. is a removable discontinuity
D. is an infinite discontinuity

Q2) Let $f(x) = x + 7$ for $x < -3$; $f(x) = |x - 2|$ for -3 δ $x < -1$; $f(x) = x^2 - 2x$ for -1 δ $x < 3$; $f(x) = 2x - 3$ for x ε 3, then

A. $x = -1$ is a jump discontinuity
B. $x = -3$ is an infinite discontinuity
C. $x = -3$ is a jump discontinuity
D. $x = -1$ is a removable discontinuity

Q3) Let $f(x)=\begin{cases} 2 & , \quad x\le -3 \\ \dfrac{x}{3} & , \quad -3<x<9 \\ \sqrt{x} & , \quad x\ge 9 \end{cases}$, then

A. $f(x)$ is a continuous function
B. all the discontinuities are removable discontinuity
C. all the discontinuities are jump discontinuity
D. all the discontinuities are infinite discontinuity

Q4) If $f(x)$ is a differentiable function at a point a and $f'(a) \neq 0$, then which of the following statements is true

A. $-f'(a+h) = \lim_{h\to 0} \frac{f(a)-f(a-h)}{h}$
B. $f'(a+h) = \lim_{h\to 0} \frac{f(a+2h)-f(a+h)}{h}$
C. $f'(a+h) = \lim_{h\to 0} \frac{f(a+2h)-f(a)}{h}$
D. $f'(a+h) = \lim_{h\to 0} \frac{f(a+2h)-f(a-2h)}{2h}$

Q5) If $x = a \cos t$ and $y = a \sin t$ then $\frac{d^2x}{dy^2}$ is

A. $-a\sin t$
B. $-a\cos t$
C. $-\frac{1}{a}\sec^3 t$
D. $-\frac{1}{a}\cos t \operatorname{cosec}^3 t$

Q6) The function $f(x) = 1 + |\sin x|$ is

A. continuous nowhere
B. continuous everywhere but differentiable nowhere
C. neither continuous nor differentiable at $x = 0$
D. continuous everywhere but not differentiable at an infinite number of points

Q7) Differentiating the function $f(x) = (1 - x^2)^{120}$ sixty times will result in a polynomial of degree

A. 60
B. 4
C. 210
D. 180

Directions for questions 8 – 10: A police van, approaching a right-angled intersection from north, is chasing a car that has turned the corner and is now moving straight east. When the van is 0.6 km north of the intersection, the car is 0.8 km to the east. At that instant the police determines with the help of the radar that the distance between the car and the van is increasing at a rate of 20 km/ hr. The speed of the police van at that instant (T_1) is 60 km/ hr.

Q8) If s is the distance between the car and the van, x is the position of the car and y is the position of the van at time t, then

A. $\frac{ds}{dt} = \frac{2}{\sqrt{x^2 + y^2}}\left(\frac{dx}{dt} + \frac{dy}{dt}\right)$

B. $\frac{ds}{dt} = \frac{2}{\sqrt{x^2 + y^2}}\left(x\frac{dx}{dt} + y\frac{dy}{dt}\right)$

C. $\frac{ds}{dt} = \frac{1}{\sqrt{x^2 + y^2}}\left(\frac{dx}{dt} + \frac{dy}{dt}\right)$

D. $\frac{ds}{dt} = \frac{1}{\sqrt{x^2 + y^2}}\left(x^2\frac{dx}{dt} + y^2\frac{dy}{dt}\right)$

Q9) The speed of the car at the instant T_1 is

A. 70 km/hr
B. 75 km/hr
C. 80 km/hr
D. 60 km/hr

Q10) The police van now increases its speed to 84km/ hr and the car moves with the same speed that it had at the instant T_1. The time taken by the police to catch the car is

A. 4 minutes
B. 5 minutes
C. 6 minutes
D. will not be able to catch up

Q11) If $f(x) = |x - 1|$ and $g(x) = f(f(x))$, then for $x > 3$, $g'(x)$ is equal to

A. 2
B. 1
C. 0
D. not defined

Q12) A heavy rock is launched straight up on a planet. It is found that at time *t* minutes it reaches a distance 10 t – 36 t^2 + 12 kms. The acceleration due to gravity on the planet is

A. 72 m/ sec^2
B. 20 m/ sec^2
C. 7.2 m/ sec^2
D. 2 m/ sec^2

Q13) A manufacturing plant has a capacity of manufacturing 100 articles per week. Experience has shown that the cost of producing *x* articles per week is 200 + 3 x + x^2 and each article can be sold at a price of x + 2. The graph of the profit function will be

A. A parabola opening upwards
B. A parabola facing downward
C. A straight line with positive slope
D. A straight line with negative slope

Q14) If, $I = \int_{-2}^{2} |1 - x^4| \, dx$ then I is equal to

A. 6
B. 8
C. 12
D. 21

Q15) If $I = \int_{0}^{\pi/2} \cos^n x \sin^n x \, dx = \lambda \int_{0}^{\pi/2} \sin^n 2x \, dx$, then λ is equal to

A. $2^{1 - n}$
B. $2^{-n - 1}$
C. 2^{-n}
D. 2^{-1}

Q16) If $I_1 = \int_{0}^{\pi/2} f(\sin x) \sin x \, dx$ and $I_2 = \int_{0}^{\pi/2} f(\cos x) \cos x \, dx$, then $\frac{I_1}{I_2} =$

A. 1
B. 2
C. $\sqrt{2}$
D. $\frac{1}{\sqrt{2}}$

Q17) The area bounded by the curves $y = \sin x$ and $y = \cos x$, $0 \leq x \leq 2\pi$ is

A. 0
B. 2
C. $2\sqrt{2}$
D. $\sqrt{2}$

Q18) The degree of the differential equation $\sin\left(\frac{d^3y}{dx^3}\right)+\left(\frac{dy}{dx}\right)^2-y^4=2$ is

A. 1
B. 2
C. 4
D. not defined

Q19) The differential equation for the family of parabolas with vertex on the x – axis is of

A. second order and degree 1
B. second order and degree 2
C. first order and degree 1
D. first order and degree 2

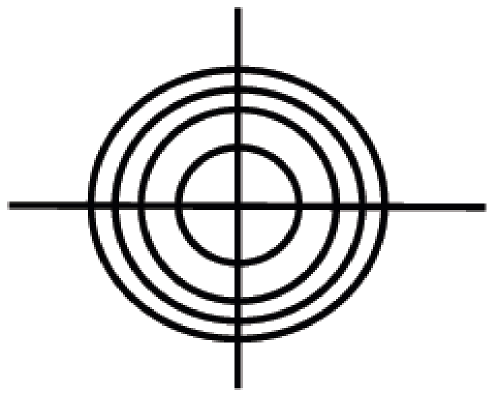
Q20) Two teams *A* and *B* of 11 players each is to made from a class of 22 students so that two students *c* and *d* are on the opposite sides. The number of ways in which this can be done is

A. ${}^{22}C_{11}$ x ${}^{2}C_{1}$
B. ${}^{20}C_{11}$ x ${}^{2}C_{1}$
C. ${}^{20}C_{10}$ x ${}^{2}C_{1}$
D. ${}^{20}C_{11}$

Q21) 3 – digit numbers have to be allotted to students so that at least one digit is repeated. The maximum number of roll numbers that can be allotted are (roll numbers may start from 0)

A. 720
B. 1000
C. 300
D. 280

Q22) The differential equation whose solution curves are



A. $x + y\frac{dy}{dx} = 0$

B. $x - y\frac{dy}{dx} = 0$

C. $x^2 + y^2\frac{dy}{dx} = 0$

D. $x + y^2\frac{dy}{dx} = 0$

Q23) A combination lock consists of three rings with 15 different alphabets. If the number of unsuccessful attempts to open the lock is *N* then which of the following statements is true?

A. *N* is a multiple of 7
B. *N* is a prime number
C. *N* is a product of 4 different primes
D. *N* is a multiple of 10

Q24) The sum of *n* terms of the series $1\cdot 3+2\cdot 7+3\cdot 11+4\cdot 15+\ldots$ is

A. $\left(\frac{n(n+1)}{2}\right)^2$

B. $\frac{n(n+1)(8n+1)}{6}$

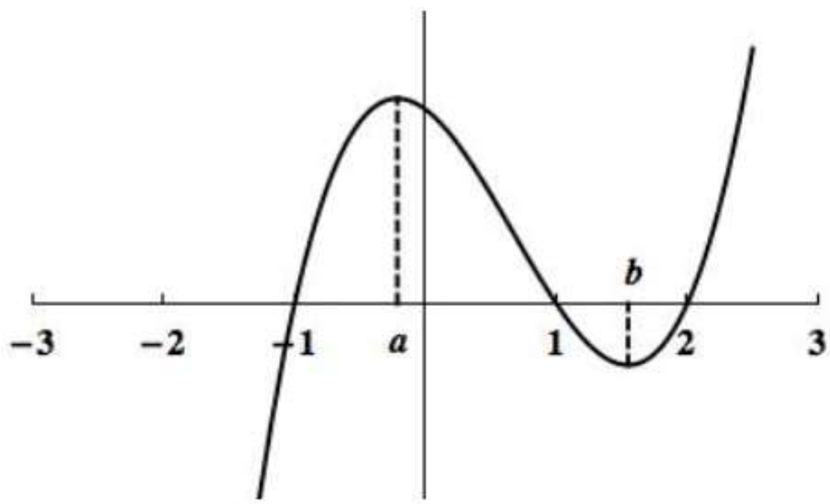
C. $\frac{n(n+1)(8n-1)}{6}$

D. $\frac{n(n+1)(2n+5)}{6}$

Q25) The interior angles of a polygon are in A.P. If the smallest angle is 120° and the common difference is 5°, then the number of sides of the polygon is

A. 7
B. 8
C. 9
D. 10

Directions for questions 26 – 28: The graph of the **derivative** of a function $f(x)$ is given below. Choose the correct options based on the information that you get from the graph.



Q26) A point of local maxima for the function $f(x)$ is

A. 1
B. a
C. -1
D. b

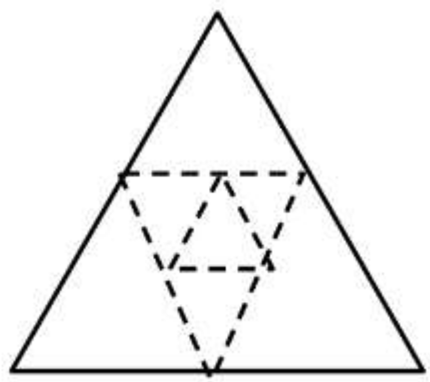
Q27) A point of local minima for the function $f(x)$ is

A. 1
B. a
C. -1
D. b

Q28) The function $f(x)$ increases in the interval

A. $(-1, a)$
B. $(-1, 1)$
C. $(-1, a) \cup (b, 2)$
D. $(b, 2)$

Directions for questions 29 – 30: You are given an equilateral triangle of side *a*. Another triangle is drawn inside this first triangle by joining the mid-points of the sides of the first triangle. A third triangle is drawn by joining the mid-points of the sides of the second triangle (Figure). The process is continued.



Q29) The ratio of the area of the fourth triangle to the first triangle is

A. $2^6 : 1$
B. $1 : 2^6$
C. $2^8 : 1$
D. $1 : 2^8$

Q30) The sum of the perimeter of the first five triangle is

A. $\frac{45a}{16}$
B. $\frac{93a}{16}$
C. $\frac{45a}{8}$
D. $\frac{93a}{32}$

Q31) If $z = x + iy$ and $w = \frac{z - i}{1 - iz}$, then $|w| = 1$ implies, that, in the argand plane

A. z lies on the imaginary axis
B. z lies on the real axis
C. z lies on the unit circle
D. none of these

Q32) If $z = x + iy$, then the roots of $z^4 = (z - 1)^4$ are represented in the argand plane by the points that are

A. collinear
B. concyclic
C. vertices of a parallelogram
D. vertices of an equilateral triangle

Q33) If 1, ω, ω^2 are the cube roots of unity, then the roots of the equation $(z + 1)^3 - 8 = 0$ are

A. $-1, -1 + 2\omega, -1 + 2\omega^2$
B. $-1, -1 - 2\omega, -1 - 2\omega^2$
C. $1, -1 + 2\omega, -1 + 2\omega^2$
D. $1, -1 - 2\omega, -1 - 2\omega^2$

Q34) If $z \in \boldsymbol{C}$, where $\boldsymbol{C}$ is the set of complex numbers, then the minimum value of $|z| + |z - 1|$ is attained at

A. exactly one point
B. exactly two points
C. infinite number of points
D. none of these

Q35) The equation $z^2 = \bar{z}$, where $\bar{z}$ denotes the conjugate of complex number z, has

A. no solution
B. two solutions
C. four solutions
D. infinite number of solutions

Q36) Let α, β be the roots of the equation $(x - a)(x - b) = c$ with $c \neq 0$ Then the roots of the equation $(x - \alpha)(x - \beta) + c = 0$ are

A. a, b
B. a, c
C. b, c
D. $a + c, b + c$

Q37) If the roots of the equation $x^2 + bx + c = 0$ two consecutive integers, then $b^2 - 4c$ equals

A. 2
B. – 2
C. – 1
D. 1

Q38) If α, β are the roots of the equation $x^2 + bx + c = 0$ where $c < 0 < b$ and $\alpha < \beta$, then

A. $0 < \alpha < \beta$
B. $\alpha < 0 < \beta$
C. $\beta < 0 < \alpha$
D. $\alpha < \beta < 0$

Q39) If p and q are non-zero distinct roots of $x^2 + px + q = 0$ then the least value of $x^2 + px + q$ is

A. 1/3
B. 9/4
C. – 9/4
D. 2

Q40) If $\vec{a} = 2\hat{i} + \hat{j} + 3\hat{k}$, $\vec{b} = 2\hat{i} + \hat{j} - 3\hat{k}$ and $\vec{c} = 2\hat{i} + \hat{j}$, then the value of λ for which $\vec{a} + \lambda\vec{b}$ is perpendicular to $\vec{c}$ is

A. 5
B. – 1
C. 3
D. 2

Q41) If the vectors $\overrightarrow{\boldsymbol{PQ}} = \boldsymbol{4\hat{\imath} + 2\hat{\jmath} - \hat{k}}$ and $\overrightarrow{\boldsymbol{QR}} = \boldsymbol{2\hat{\imath} - 2\hat{\jmath} - 5\hat{k}}$ are the sides of a triangle PQR. Then the length of the median through P is

A. $\sqrt{18}$
B. $\sqrt{24}$
C. $6\sqrt{2}$
D. $\sqrt{19}$

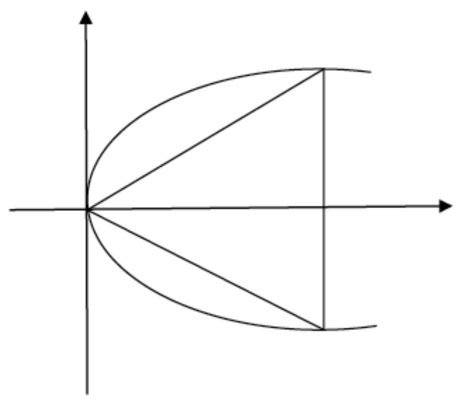
Q42) For any vector $\vec{a}$, the value of $(\vec{a}\times\hat{i})^2+(\vec{a}\times\hat{j})^2+(\vec{a}\times\hat{k})^2$ is

A. $3a^2$
B. $2a^2$
C. a^2
D. $4a^2$

Q43) The equation $\sqrt{(x-1)^2+y^2}+\sqrt{(x+1)^2+y^2}=4$ represents

A. an ellipse
B. a hyperbola
C. a parabola
D. a circle

Q44) An equilateral triangle is inscribed in the parabola $y^2 = 4x$, one of whose vertices is at the vertex of the parabola. Then the length of each side of the triangle is



A. $\frac{\sqrt{3}}{2}$
B. $\frac{4\sqrt{3}}{2}$
C. $\frac{8\sqrt{3}}{2}$
D. $8\sqrt{3}$

Q45) A six faced die is so biased that it is twice likely to show an even number as compared to an odd number when thrown. If the die is thrown twice the probability that the sum of the numbers is even is

A. 1/3
B. 2/3
C. 4/9
D. 5/9

Q46) If A and B are two events such that $P(A) > 0$ and $P(B) \neq 0$, then $P(A \mid \bar{B})$ is equal to

A. $1 - P(\bar{A} \mid B)$
B. $1 - P(A \mid B)$
C. $\frac{P(\bar{A})}{P(B)}$
D. $1 - P(\bar{A} \mid \bar{B})$

Q47) If n is a natural number such that $n \leq 6$, then the probability that the quadratic equation $x^2 + nx + \frac{n}{2} + \frac{1}{2} = 0$ has real roots is

A. 1/2
B. 1/6
C. 5/6
D. 2/3

Q48) A letter is taken at random from the letters of the word 'STATISTICS' and another letter is taken at random from the letters of the word 'ASSISTANT'. The probability that they are the same letter is

A. 1/45
B. 13/90
C. 19/90
D. 5/18

Q49) If var(A) is the variance of 10 observations 1,2,…,10 and var(B) is the variance of another 10 observations 16,17,…,25, then $\frac{\text{var}(A)}{\text{var}(B)}$ is

A. 1
B. 5.5/20.5
C. 2/9
D. 10

Q50) The probability that at least one of A and B occurs is 0.7. If A and B occur simultaneously with probability 0.2, then $P(\bar{A})+P(\bar{B})$ is

A. 0.9
B. 1.15
C. 1.1
D. 1.2

Q51) One hundred identical but biased coins, each with probability *p* of showing up heads, are tossed once. If $0 < p < 1$ and the probability of getting 50 heads is equal to that of getting 51 heads, then the value of *p* is

A. 1/2
B. 49/101
C. 51/101
D. 50/100

Q52) If z_1, z_2, z_3 are complex numbers such that $|z_1| = |z_2| = |z_3| = \left|\frac{1}{z_1} + \frac{1}{z_2} + \frac{1}{z_3}\right| = 1$, then $|z_1 + z_2 + z_3|$ is

A. equal to 1
B. less than 1
C. greater than 3
D. equal to 3

Q53) If *A* and *B* are symmetric matrices then $AB - BA$ is a

A. symmetric matrix
B. skew symmetric matrix
C. diagonal matrix
D. null matrix

Q54) In the model of a bridge, it is shown that the arch is semi-elliptical with the major axis horizontal. If the length of the base is 8 m and the highest part of the bridge is 2 m from the horizontal; the best approximation of the height of the arch, 2 m from the centre of the base is

A. 1 m
B. $\sqrt{3}$ m
C. $\sqrt{2}$ m
D. 2 m

55) The value of a for which $\dfrac{\sin 2x + a\sin x}{x^3}$ tends to a finite limit as $x \to 0$ is

A. 1
B. – 2
C. – 3
D. – 1

Q56) If $f'(3) = 2$ then $\lim_{h\to 0} \dfrac{f(3+h^2) - f(3-h^2)}{h^2}$ is equal to

A. 1
B. 2
C. 3
D. 4

Q57) If $I = \int \dfrac{dx}{\sin^2 x \cos^2 x}$, then I is equal to

A. $-\dfrac{1}{2}\cot 2x + C$
B. $-2\cot 2x + C$
C. $\tan x + \cot x + C$
D. $\tan x - \cot x + C$

Q58) 10 men and 15 women are to be seated in a row so that no two men sit together. The number of ways in which they can be seated is

A. $15! \times {}^{16}P_{10}$
B. $15! \times 10!$
C. $15! \times {}^{15}P_{10}$
D. $10! \times {}^{25}P_{15}$

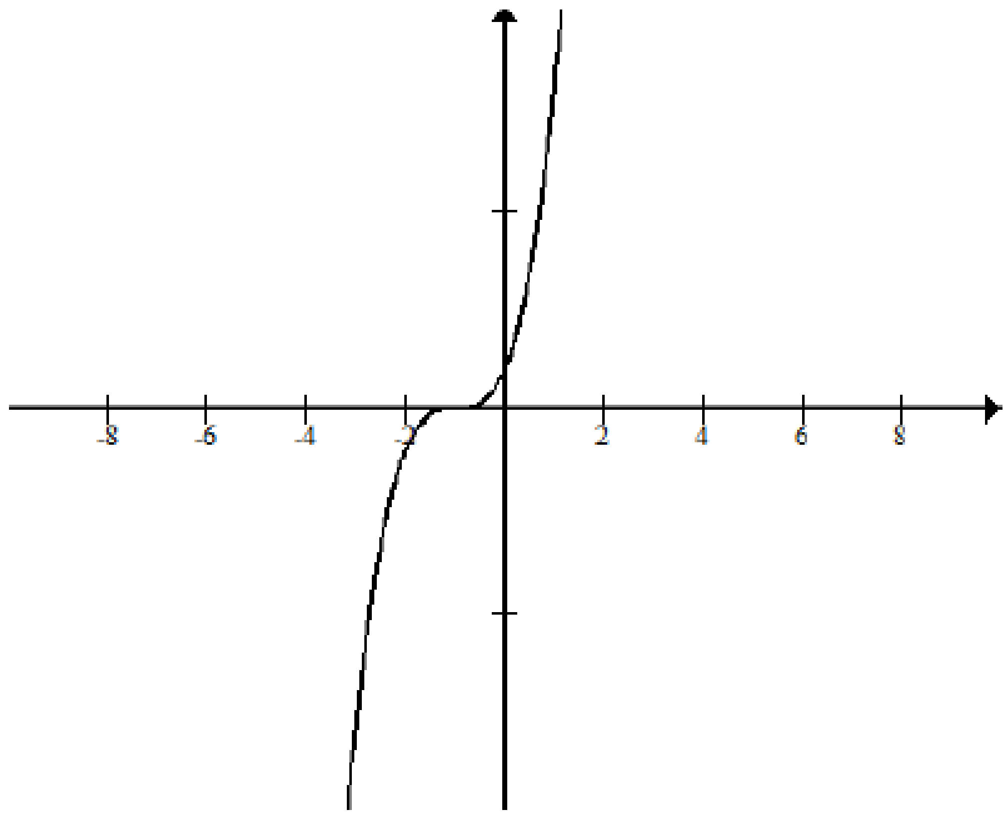
Q59) If **W** is the set of whole numbers, **N** is the set of natural numbers, S = {25n : n ∈ **W**} and T = {$6^n - 5n - 1$: n ∈ **N**}, then

A. $S \subseteq T$
B. $T = S$
C. $T \subset S$
D. $S \subset T$

Q60) If **C** is a set of complex numbers, X = {x: $x^2 = 1$ and x ∈ **C**} and Y = {y: $y^4 = 1$ and y ∈ **C**}, then $(X - Y) \cup (Y - X)$ is

A. φ
B. { i, - i}
C. {1, - 1}
D. { i, - i, 1, - 1}

Q61) Which of the following functions depict the graph shown below?

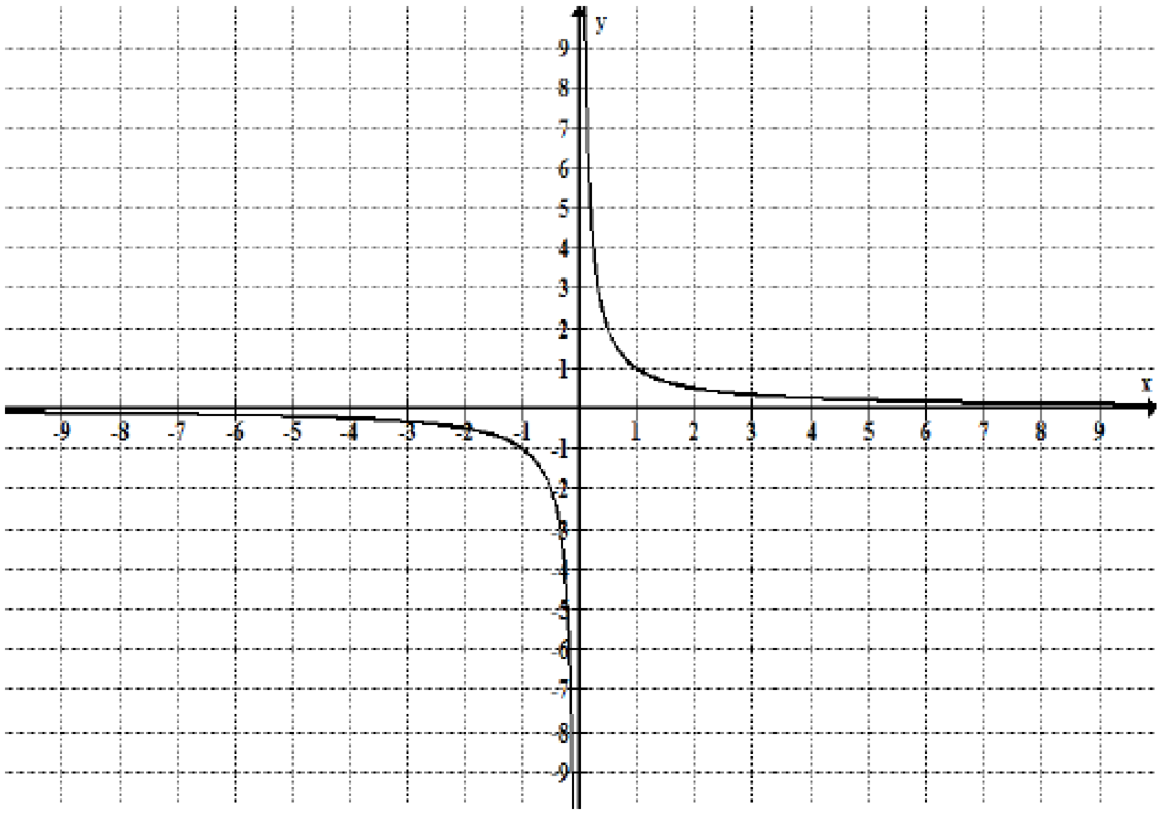


A. f (x) = x^3
B. f (x) =
C. f (x) = $(x + 1)^3$
D. f (x) = $(x - 1)^3$

Q62) Let R be a relation defined on the set A of human beings in a village at a particular time given by R = {(x, y): x is at least 7 cm taller than y}. Then which of the following statements is true.

A. R is neither reflexive, nor symmetric,but transitive
B. R is reflexive but neither symmetric nor transitive
C. R is symmetric and transitive but not reflexive
D. R is reflexive and transitive but not symmetric

Q63) The domain and range of the function depicted by the following graph is



A. Domain = R^+; Range = R
B. Domain = R – {0}; Range = R^-
C. Domain = R – {0}; Range = R – {0}
D. None of these

Q64) Let f: [0, 1] → [0, 1] be defined by $f(x) = \begin{cases} x, & \text{if } x \text{ is rational} \\ 1 - x, & \text{if } x \text{ is irrational} \end{cases}$.

Then (f o f) x is

A. x
B. $1 - x$
C. $f(x)$
D. $1 - f(x)$

Q65) Which of the following indicate the graph of the function $y = \cos(x + \pi/2) - 2$, $0 \leq x \leq 2\pi$.

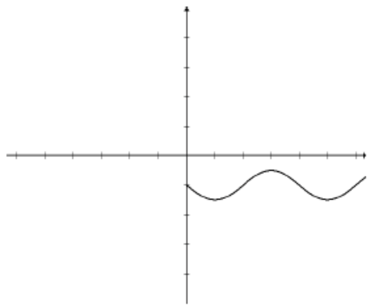


Figure I

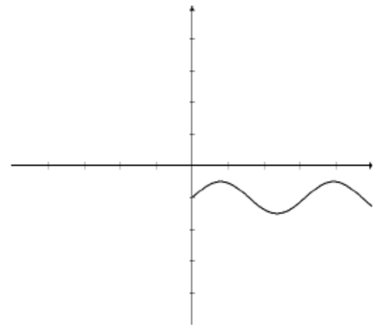


Figure II

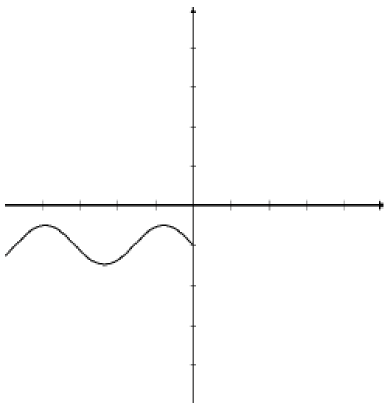


Figure III

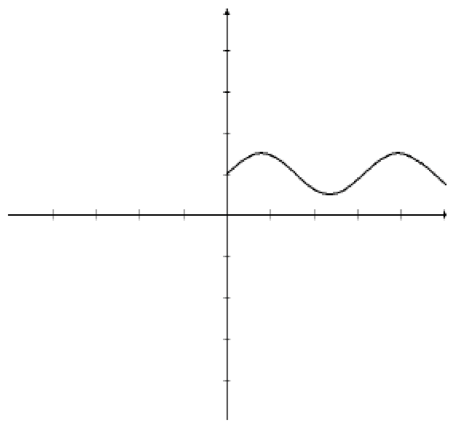


Figure IV

A. Figure I
B. Figure II
C. Figure III
D. Figure IV

Q66) If A is an invertible matrix of order n, then which of the following statements is incorrect?

A. $(A^t)^{-1} = (A^{-1})^t$
B. $\text{adj}(\text{adj } A) = |A|^{n-2}A$
C. $|A^{-1}| = |A|^{-1}$
D. if A is symmetric, then A^{-1} is non-symmetric.

Q67) If $\boldsymbol{Z}$ is the set of integers, then the general solution of the equation $\sqrt{2}\sec\theta + \tan\theta = 1$ is

A. $2n\pi - \frac{\pi}{4}, n \in \mathbf{Z}$

B. $2n\pi \pm \frac{\pi}{4}, n \in \mathbf{Z}$

C. $2n\pi + \frac{\pi}{4}, n \in \mathbf{Z}$

D. $n\pi - \frac{\pi}{4}, n \in \mathbf{Z}$

Q68) If $A = \begin{bmatrix} a & b & c \\ b & 1 & 0 \\ c & 0 & 1 \end{bmatrix}$ and $A = A^{-1}$, then the values of a, b and c are

A. $a = 1$, $b = c = 0$
B. $a = -1$, $b = c = 0$
C. $a = 1$ or $a = -1$ with arbitrary values of b and c
D. $a = 1$ or $a = -1$ with $b = c = 0$

Q69) If $\tan^{-1}\frac{x-1}{x+1} + \tan^{-1}\frac{x}{x-1} = \tan^{-1} 8$, then the value of x is

A. $-3/2$
B. 3 or 3/2
C. -3
D. all of these

Q70) Let S be the set of 8-digit number each starting with 1 and rest of the digits are either 0 or 1 and T be another set of 8-digit numbers each ending with 00 and rest of the digits are either 0 or 1. Then the number of elements in the set $S \cup T$ is

A. 64
B. 32
C. 128
D. 160

Q71) The graph that is correctly labeled is

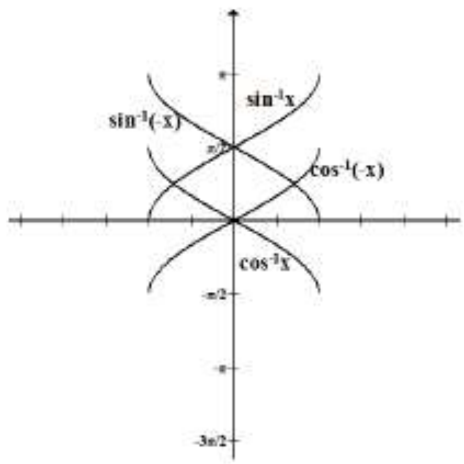


Figure I

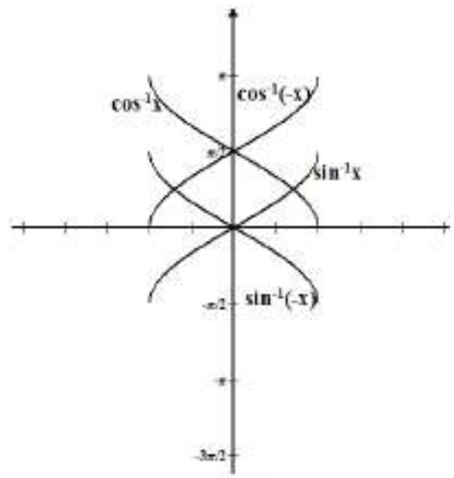


Figure II

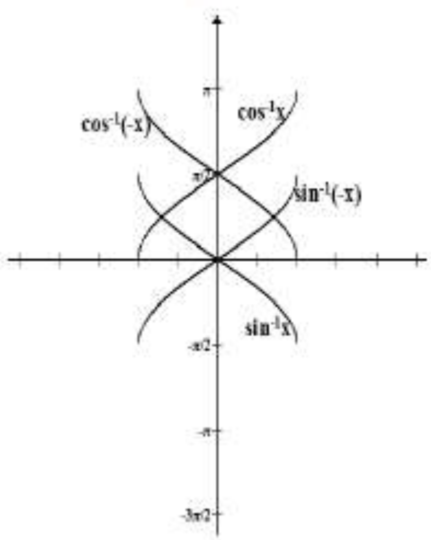


Figure III

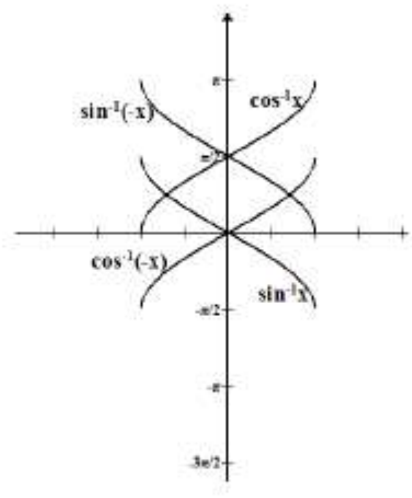


Figure IV

A. Figure I
B. Figure II
C. Figure III
D. Figure IV

Q72) Let S be a set having n elements. Then which of the following statements is always true for the power set of S, denoted by P(S)?

A. P(P(S)) = P(S)
B. P(S) ∩ S = S
C. S ∈ P(S)
D. |P(P(S))| = 2^n

Q73) If a, b, c are non-zero real numbers, then the system of equations $(a-1)\,x = y + z$, $(b-1)\,y = z + x$, $(c-1)\,z = x + y$ has a non-trivial solution if

A. $a = b = c = 1$
B. $a + b + c = 0$
C. $a + b + c = abc$
D. $ab + bc + ca = abc$

Q74) The matrix equation $A^2 - B^2 = (A - B)(A + B)$ holds true if

A. $A = B$
B. $A = -B$
C. $AB = BA$
D. Always

Q75) Let the function f: R → R be defined by $f = \begin{cases} 1 & , \ x > 0 \\ 0 & , \ x = 0 \\ -1 & , \ x < 0 \end{cases}$

then f is

A. one – one
B. onto
C. bijective
D. neither one – one nor onto

Q76) If A, B, C and D are the angles of a cyclic quadrilateral, then cos $(A+C)$ + cos $(B+D)$ is equal to

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

Q77) If A is a matrix such that $A^2 = I$, then $(A - I)^3 + (A + I)^3 - 7A$ is equal to

A. I – A
B. A
C. I + A
D. 3A

Q78) The principal value branch of $y = \sec^{-1} x$ is

A. $[0, \pi]$, $y \neq \pi/2$
B. $[0, \pi]$
C. $[-\pi/2, \pi/2]$
D. $(0, \pi)$

Q79) Let * be a binary operation defined on R by a*b = 1 + ab, ∀ a, b ∈ R.

Then the operation * is

A. Associative but not commutative
B. Commutative and associative both
C. Commutative but not associative
D. Neither commutative nor associative

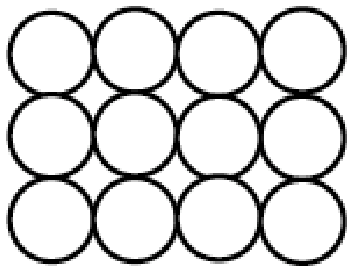
Q80) If $I = \int \frac{dx}{1+\sin x}$, then I is equal to

A. $\sec x - \tan x + C$
B. $C - \sec x - \tan x$
C. $\tan x + \sec x + C$
D. $\tan x - \sec x + C$

Q 81) In the last week of season sale, prices are reduced first by 50%, then further again by 40%. What is the final sale price of a trouser whose original cost was Rs. 2000?

A. Rs.600
B. Rs.200
C. Rs.1400
D. Rs.1200

Q82) Find the number of all possible squares that can be drawn by joining the centers of the circles in the diagram given below:



A. 12
B. 10
C. 06
D. 08

Q83) Find the missing number in the square by identifying the rule.

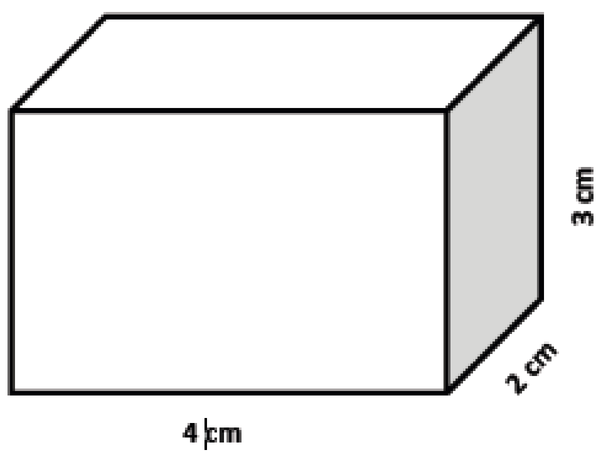
4	**9**	**25**
10	**25**	**125**
15	**10**	**?**

A. 225
B. 240
C. 235
D. 275

Q 84) Sailja's merit rank is 17th in her class. Nisha is three ranks lower than Sailja in a class of 50 students. What is Nisha's rank from the last?

A. 32nd
B. 30th
C. 31st
D. 29th

Q 85) Here is a water tank. When it is half full, the tank contains 16000 L of water. 8000 L of more water is added to the tank. How high will the water level rise?



A. 0.25 cm
B. 0.50 cm
C. 0.75 cm
D. 0.100 cm

Q 86) Complete the series: 3, 24, 81, 192, 375, ______

A. 400
B. 625
C. 648
D. 725

Directions for questions 87 - 88: Five people M, N, O, P and Q ride a bicycle. The one who ride first gives it to O. The one who rides last had taken from M. Q was not the first or last to ride. There were two riders between M and N.

Q87) O passed the bicycle to whom?

A. M
B. N
C. P
D. Q

Q 88) Who was the first one to ride the bicycle?

A. M
B. N
C. O
D. Q

Q 89) For a science project, six students in a group got the following marks:

Student	I	II	III	IV	V	VI
Marks(out of 25)	12	15		23	24	19

Marks of student III is not visible in the table.

When compared with the marks of other students, the marks of student III differ by 1,5,6,3 and 6, but not necessarily in that order.

What are the marks of student III?

A. 17
B. 18
C. 13
D. 15

Q 90) In the word ZEBRA, Z stands for 53, E stands for 11, B for 5, R for 37, A for 3. Find out the word which stands for the following number series: **15 31 25 09**

A. GAIN
B. GOLD
C. GLAD
D. GOAT

Directions for questions 91-94: Eight children E, F, G, H, I, J, K and L are seated around a square table, two on each side.

In the group, there are three girls and they are not sitting next to each other.

J, a girl is between F and L

H, a boy is 3rd to the left of J

E. a girl is opposite to F

G is between F and I

I, a girl is opposite to J

Q 91) Who are the five boys in the group?

A. E, F, G, H, K
B. F, G, H, K, L
C. F, G, H, I, K
D. G, H, I, J, K

Q 92) What is true about G?

A. G, a boy is third to the left of L
B. G is a girl
C. G is opposite to E
D. I is between G and F

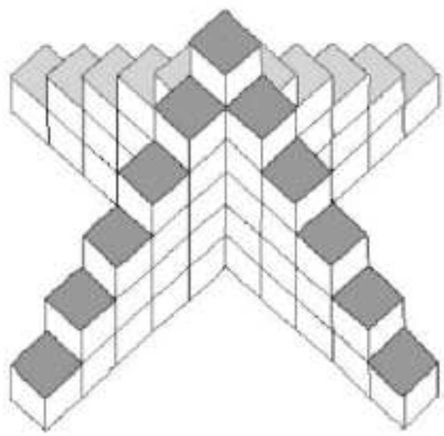
Q 93) If J and I exchanged their positions then who will be sitting between J and H?

A. K
B. G
C. F
D. E

Q 94) How many students are sitting between K and J?

A. 4
B. 3
C. 2
D. 1

Q 95) How many blocks are needed to build the tower shown below?



A. 60
B. 61
C. 66
D. 72