NAT II Physical Science Mathematics

Sr	Questions	Answers Choice
1	The perpendicular bisector of any chord of a circle	A. Passes through the centre of the cirle B. Does not pass through the centre of the circle C. May or may not pass through the centre of the cirlce D. None of these
2	Question Image	
3	If a cone is cut by a plane perpendicular to the axis of the cone, then the section is a	A. Parabola B. Circle C. Hyperbola D. Ellipse
4	If in isosceles right angled triangle, one side is a then hypotenuse is	C. a D. cannot be determined by given information
5	If any two rows (or any two columns) of a square matrix are inter changed, the determinant of the resultant matrix is	A. Same as the original determinant B. Additive inverse of the original determinant C. Both A and B D. Adj of the original matrix
6	Which is in the solution set of 4x - 3y < 2	A. (3, 0) B. (4, 1) C. (1, 3) D. None
7	The gradient of the line joining (1, 4) and (-2, 5) is	A. 3/8 B. -2 2/3 C. -1/3 D. 2
8	Question Image	B. -3/4 C. 1/16 D. 1/4
9	Question Image	A. A + B B. C²/AB C. A²/BC D. B²/AC
10	Question Image	D. None
11	A standard deck of 52 cards is shuffled. What is the probability of choosing the queen of the diamonds	A. 1/5 B. 1/13 C. 5/52 D. 1/52
12	A function F(x) is called even if	A. F(x) = F(-x) B. F(x) = F(-x) C. F(x) = -F(x) D. 2F(x) = 0
13	3/2 is	A. An irrational number B. Whole number C. A positive integer D. A rational number
14	Which of the following is the equation of a line with slope 0 and passing through the point (4, 3)	A. X = 4 B. X = -4 C. Y = 3 D. Y = -6
15	The common difference of the sequence 7,4,1, ... is	A. 1 B. -3 C. 5 D. 0
16	Question Image	
		A. (1, 1)

17	The mid point of the line joining (-1, -3) to (3, -5) is	B. (1, -1) C. (2, -8) D. (1, -4)
18	Which of the following integrals can be evaluated	
19	In general matrices do not satisfy	A. Commutative law w.r.t multiplication B. Associative law w.r.t addition C. Distributive law w.r.t addition D. Multiplication of a scalar with the matrix
20	Question Image	D. None of these
21	The equation of the normal to the circle $x^2+ y^2= 25$ at(4, 3) is	A. 3x - 4y = 0 B. 3x - 4y = 5 C. 4x + 3y = 5 D. 4x + 3y = 25
22	What is the domain of $y = Cot^{-1}x$?	A. Set of irrational number only B. Set of all real numbers C. Set of intergers only D. Set of complex numbers only
23	Question Image	
24	The circle $(x-2)^2+ (y+3)^2= 4$ is not concentric with the circle	A. (x-2)²+ (y+3)²= 9 B. (x+2)²+ (y-3)²= 4 C. (x-2)²+ (y+3)²= 8 D. (x-2)²+ (y+3)²= 5
25	For which of the following ordered pairs (s, t) is s + t > 2 and s - t < -3?	A. (3, 2) B. (2, 3) C. (1, 8) D. (0, 3)
26	The set {{a,b}} is	A. Infinite set B. Singleton set C. Two points set D. None
27	Question Image	A. An equation B. Linear equation C. Rational fraction D. Identity
28	If the angle of a triangle are in the ratio 2:3:7, the triangle is	A. Obtuse B. Acute C. Right angle D. Isosceles
29	If the sum of the roots of the equation $ax^2- 2x + 2a = 0$ is equal to their product, then the value of a is	A. 1 B. 2 C. 3 D. 4
30	Period of Sin 2x =	
31	The multiplicative inverse of -1 in the set {1-, 1} is	A. 1 B. -1 C. <u>+</u>1 D. 0
32	Question Image	
33	If Z = (1,2), then Z^{-1}= ?	A. (0.2, 0.4) B. (-0.2, 0.4) C. (0.2 , -0.4) D. (-0.2, -0.4)
34	Question Image	A. 0 B. -25 C. 5 D. 45
35	The associative angle of 280°is	A. 100° B. 10° C. 80<b style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size:

		16px;">° D. -80°
36	Sin(a + b) + Sin (a - b) =	A. Sin a Cos b B. Sin a Sin b C. Sin a + Cos b D. Sin a - 2 Cos b
37	Question Image	
38	The nth term in G.P 3,-6,12,..... is	A. 3(-2)ⁿ⁻¹ B. 2(-2)ⁿ⁺¹ C. 3(-2)ⁿ D. 4(-2)ⁿ⁻¹
39	The multiplicative inverse of x such that x = 0 is	A. -x B. does not exist C. 1/x D. 0
40	Question Image	
41	Question Image	D. None
42	120 degrees are equal to how many radians?	
43	a + x is	A. A trinomial B. A binomial C. A moomial D. An equation
44	Question Image	
45	If $f_1(x)$ and $f_2(x)$ are any two anti derivatives of a function F (x), then the value of $f_1(x) - f_2(x)$ =	A. A variable B. A constant C. undefined D. infinity
46	Question Image	
47	Two natural numbers whose sum is 25 and difference is 5, are	A. 25, 20 B. 20, 10 C. 20, 5 D. 15, 10
48	How many elements are in the sample space of two rolling dies	A. 6 B. 12 C. 18 D. 36
49	Question Image	A. 0 B. -2 C. 1 D. 4
50	If -1 < x < 0, which of the following statements must be true?	A. x < x²< x³ B. x < x³< x² C. x²< x³< x D. x²< x < x³
51	The radius of the circle $(x-1)^2+ (y+3)^2= 64$ is	A. 8 C. 4 D. 64
52	The number of diagonals of a six sided figure are	A. 9 B. 6 C. 12 D. 3
53	Question Image	A. 1 B. 0 C. -2 D. 3
54	6 is	A. A prime integer B. An irrational number C. A rational number D. An odd integer
		A. Both A,B have the same number of columns

55	Question Image	B. Both A and B do not have the same order C. Number of col A is same as number of rows of B D. Number of rows of A is same as number of col of B
56	If A = (3, 8) and B = (5, 6), then the distance between A and B is	B. 2 C. 1 D. 6
57	Question Image	
58	The length of rectangle is twice as much as its breadth. If the perimeter is 120 cm, the length of the rectangle is	A. 10 cm B. 20 cm C. 30 cm D. 40 cm
59	Write the first four terms of the arithmetic sequence if a_1= 5 and other three consecutive terms are 23,26,29	A. 23, 26, 29, 32 B. 5, 8, 11, 14 C. 8, 11, 14, 17 D. None of these
60	Question Image	A. (0, e) B. (0, 1) D. None
61	If A and B are matrices of same order than (,A + B)(A + B) =	A. A²+ B² B. A²+ B²+ 2AB C. A + B D. A²+ B²+ AB + BA
62	Question Image	D. None of these
63	The range of inequality x + 2 > 4 is	A. (-1, 2) B. (-2, 2) D. None
64	If ab > 0 and a < 0, which of the following is negative?	A. b B. -b C. -a D. (a - b)²
65	0 (Zero) is	A. An irrational number B. A rational number C. A negative integer D. A positive number
66	Question Image	
67	In the expansion of $(a + b)^n$ in every term the sum of the exponents of a and b is	A. n B. n + 1 C. 2n - 1 D. 2n + 1
68	Which is not a half plane	A. ax + by < c B. ax + by > c C. Both A and B D. None
69	If 1 + Cos x = 0, then x =	
70	Which of the vectors have opposite direction?	D. Both A and B
71	Question Image	A. 2 B. 1 C. 0
72	A die is thrown. What is the probability that there is a prime number on the top?	A. 1/2 B. 1/3 C. 1/6 D. 2/3
73	Question Image	
74	Question Image	
75	Question Image	A. 15 B. 15 i C. -15 i D. -15
76	Question Image	
		A. A < G < H B. A > G > H

77	Question Image	C. A < G > H D. A > G < H
78	Question Image	
79	If x < y, 2x = A, and 2y =B, then	A. A = B B. A < B C. A < x D. B < y
80	The graph of a quadratic function is	A. Circle B. Ellipse C. Parabola D. Hexagon
81	A line segment whose end points lie on a circle is called	A. The secant of the circle B. The arc of the circle C. The chord of the circle D. The circumference of the circle
82	A point of a solution region where two of its boundary lines intersect, is called	A. Boundary B. Inequality C. Half Plane D. Vertex
83	Which of the following is the subset of all sets?	B. {1, 2,3} D. {0}
84	Question Image	A. A linear equation B. A cubic equation C. A quadratic equation D. An equation for circle
85	Question Image	
86	Question Image	A. Unit matrix B. Diagonal matrix C. Nilpotent matrix D. Zero matrix
87	The value of x, and y, when $(x + iy)^2 = 5 + 4i$	A. X = 2, y = -1 B. X = -2, y = 1 C. X = 2, y = -1 D. X = 2, y = 2
88	Question Image	A. 1 B. 2 C. 3 D. 4
89	Question Image	
90	Question Image	D. None of these
91	Question Image	
92	Sin x + Cos x = 1 x =	
93	The constant distance of all points of the cirlce from its centre is called the	A. Radius of the circle B. Secant of the circle C. Chord of the circle D. Diameter of the circle
94	In which quadrant is the solution of the equation sin x - 1 = 0	A. II quadrants B. II and III quadrants C. III and IV quadrants D. I quadrant
95	Question Image	
96	Question Image	D. None of these
97	Question Image	
98	If c is a constant number and if f is the function defined by the equation f(x) = c for all values of x, then f is differentiable at every x and f is defined the equation f(x) = _____	A. f B. 1 C. C D. 0
99	The line joining (1, 3) to (a, b) has unit gradient then	A. a-b = -2 B. a+b = 0 C. a-b + 5 D. 2a+3b=1
100	Question Image	

101	Question Image	A. 15 B. 60 C. 90 D. 20
102	If a statement S(n) is true for n = 1 and the truth of S(n) for n + K implies the truth of S(n) for S(n) = K + 1, then S(n) true for all	A. All Real numbers B. All integers C. Positive integers D. All complex numbers
103	If K_1: K_2= 1 : 1 then the point P dividing the line is	A. Midpoint B. Extreme left point C. Extreme Right Point D. P lies out side k₁and k₂
104	The number of ways in which we can courier 5 packets to 10 cities is	A. 2 x 5⁰ B. 5¹⁰ C. 10⁵ D. 2¹⁰
105	Question Image	
106	Question Image	
107	What is a proper rational fraction?	D. All are proper rational fractions
108	Question Image	A. Tan x B. X C. - x
109	Question Image	
110	Question Image	
111	The center of a circle of radius 10 is on the origin. Which of the following points lies with in the circle	A. (10, 0) B. (8, 8) C. (8, 4) D. (0, 10)
112	Question Image	A. 2 B. 1 C. 3 D. 4
113	The equation of the line with gradient 1 passing through the point (h, k) is	A. Y = x + k - h B. Y = k/h x + 1 C. Y = x + h - k D. Ky = hx - 1
114	Two dice are rolled. The number of possible outcome in which at least one die shows 2 is?	A. 5 B. 12 C. 11 D. 7
115	Question Image	
116	Question Image	A. 1 B. 2 C. 3 D. 4
117	Question Image	D. None
118	Total number of terms in the expansion of $(a + b)^5$+ $(a - b)^5$after simplification are	A. 3 B. 1 C. 4 D. 7
119	A farmer possesses 100 hectometers of land and wants to grow corn and wheat. Cultivation of corn requires 3 hours per hectometer while cultivation of wheat requires 2 hours pert hectometer. Working hours cannot exceed 240. If he gets a profit of Rs. 20 per hectometer for corn and Rs. 20 per hectometer for wheat. The profit function for the farmer is	A. P(x,y) = 20x + 15y B. P(x,y) = 2x + 3y C. P(x,y) = x + y D. P(x,y) = 3x + 2y
120	The magnitude of a vector can never be	A. Zero B. Negative C. Positive D. Absolute
121	The complement of set A relative to universal set U is the set	D. A - U
122	If the 19th term of A.P is 8 and the 4th term is 20, then the first term is	A. 20.2 B. 25.5 C. 27.5 D. 37.5
		A. 0

123	Multiplicative inverse of "1" is	B. <u>+</u> 1 C. 1 D. {0, 1}
124	If 4 - x > 5, then	A. x > 1 B. x > -1 C. x < 1 D. x < -1
125	Question Image	
126	Cos 315°=	A. 0.707 B. 0.5 C. 1 D. 0
127	If 0 < n < 1, n is a rational number, the number of terms in the expansion of $(1 + X)^n$ are	A. n + 1 B. 2n C. Infinitely many D. 2n²
128	What is the period of Cot x?	
129	The set of the first elements of the ordered pairs forming a relation is called its	A. Function on B B. Range C. Domain D. A into B
130	The curves $y = x^2$, y = x intersect at	A. (0,0) , (1, 1) B. (2, 4) D. (0,3), (-1, 1)
131	The point (-5, 3) is the center of a circle and P(7, -2) lies on the circle. The radius of the circle is	A. 2 B. 13 C. 7 D. 8
132	Question Image	A. Free vector B. Null vector C. Unit vector D. None of these
133	Question Image	
134	Question Image	A. An irrational number B. Whole number C. A positive integer D. A rational number
135	The values of n such that, in the binomial expansion of $(1 - x)^n$, co-efficient of x^2, co-efficient of x^2 is 3, are	A. -2, -3 B. 2, -3 C. -2, 3 D. None of these
136	Question Image	
137	Question Image	
138	A vector of magnitude zero is called	A. Position vector B. Null vector C. Free vector D. None of these
139	Question Image	
140	If A and B are matrices such that AB=BA=I then	A. A and B are multiplicative inverse of each other B. A and B are additive inverses of each other C. . A and B are singular matrices D. A and B are equal
141	The set of complex numbers forms a group under the binary operation of	A. Addition B. Multiplication C. Division D. Subtraction
142	In 30,60,90 triangle, if the smallest side is 6 then the side opposite to the angle of 60° is	A. 12 B. 3 D. 6
143	The Domain of f(x) = log x is	
		A. 90° B. 60<b style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size:

144	An angle of one radian is equivalent to	16px;">° C. 67° D. 57° 18[']
145	If P(E) is the probability that can event will occur, then P(E) =	A. 1 B. 0.5 C. 2 D. 0
146	Question Image	A. 1/2 B. 3/5 C. 4/5 D. 1
147	Question Image	
148	If 2 Sin x Cos 2 x = Sin x then?	
149	Question Image	
150	The number ways in which 5 distinct toys can be distributed among 3 children is	A. 3⁵ B. 5³ C. C₃⁵ D. P₃⁵
151	Question Image	
152	Question Image	
153	In a school, there are 150 students. Out of these 80 students enrolled for mathematics class, 50 enrolled for English class, and 60 enrolled for Physics class. The student enrolled for English cannot attend any other class, but the students of mathematics and Physics can take two courses at a time. Find the number of students who have taken both physics and mathematics	A. 40 B. 30 C. 50 D. 20
154	Question Image	A. n = 3 only B. n <u>></u> 5 C. n <u>></u> 3 D. n < 5
155	The value of the polynomial $3x^3+ 4x^2- 5x + 4$ at x = -1 is	A. 12 B. 1 C. 10 D. -10
156	The sum of the interior angles for a 16 sided polygon is	A. 4 pie B. 14 pie C. 8 pie D. 2 pie
157	Question Image	A. p < r B. p > r C. p + r < 0 D. p - r < 0
158	Question Image	A. 1 B. 2 C. 3 D. 4
159	Question Image	A. A positive integer B. A negative integer C. A natural number D. An irrational number
160	Question Image	
161	If the sum of the roots of $(a + 1)x^2+ (2a + 3)x +(3a+4) = 0$ is -1, then product of the roots is	A. 1 B. 2 C. -2 D. -1
162	Question Image	
163	Question Image	A. Nilpotent matrix B. Singular matrix C. Non singular matrix D. Diagonal matrix
	A fraction in which the degree of the numerator is less than the degree of the denominator is	A. Polynomial B. Proper fraction

164	A fraction in which the degree of the numerator is less than the degree of the denominator is called	B. Proper fraction C. Rational fraction D. Mixed fraction
165	Question Image	
166	In the expansion of $(a + b)^n$ in every term the sum of the exponents of a and b is	A. n B. n + 1 C. 2n - 1 D. 2n + 1
167	In Binomial Expansion the coefficients of the terms equidistant from beginning and end of the expansion are	A. Zero B. Same C. Equal to preceding term D. Equal to following term
168	Which is an explicit function	D. All
169	Question Image	A. 30° B. 45° C. 60° D. 90°
170	The sum of the series 1+5+9+13+17+21+25+29 is	A. 140 B. 130 C. 120 D. 110
171	Question Image	D. None of these
172	Question Image	
173	If you are looking a high point from the ground, then the angle formed is	A. Angle of elevation B. Angle of depression C. Right angle D. Horizon
174	If the diagonal of a square has coordinates (1, 2) and (5,6) the length of a side is	A. 3 B. 4 C. 1 D. 5
175	Question Image	
176	Question Image	
177	Question Image	
178	The difference of two consecutive terms of an A.P. is called	A. Constant of series B. Common ratio C. Common difference D. General term
179	Unit vector in the positive direction of x-axis is	D. All
180	Question Image	A. A polynomial B. An inequality C. An identity D. A linear function
181	A relation in which the equality is true only for some values of the unknown variable is called	A. An identity B. An equation C. A polynomial D. Inverse function
182	The direction cosines of y-axis are	A. 1,0,0 B. 0,1,0 C. 0,0,1 D. 1,1,1
183	Question Image	
184	Question Image	
185	Every prime number is also	A. Rational number B. even number C. Irrational number D. multiple of two numbers
186	Question Image	

186	Question Image	
187	Question Image	D. -2-i
188	Ifα andβ be irrational roots of a quadratic equation, then	
189	Question Image	A. 0 B. 1 C. -1 D. 2
190	Complex roots of real quadratic equation occur in	A. Conjugate pair B. ordered pair C. reciprocal pair D. quadratic function
191	If n is a positive integer, then 3+6+9+ ----------+3n =	
192	If A and B are two events, then P(AUB) = ? (when A and B are disjoint)	A. P(A) - P(B) B. P(A) x P(B) C. P(A)+P(B)
193	Question Image	
194	The nth term of of A.P:1,5,9,15,..... is given by	A. 4n - 3 B. 4n + 1 C. 3n - 4 D. 4n + 3
195	The conic is a parabola if	A. e < 1 B. e > 1 C. e = 1 D. e = 0
196	Question Image	A. 10 B. 20 C. 40 D. 26