NAT IIP Physical Science Mathematics Hard Test

Sr	Questions	Answers Choice
1	Question Image	
2	Question Image	A. Free vector B. Null vector C. Unit vector D. None of these
3	The curves $y = x^2$, $y = x$ intersect at	A. (0,0) , (1, 1) B. (2, 4) D. (0,3), (-1, 1)
4	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
5	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
6	If ab > 0 and a < 0, which of the following is negative?	A. b B. -b C. -a D. (a - b)²
7	Question Image	
8	What is a proper rational fraction?	D. All are proper rational fractions
9	Question Image	
10	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
11	Question Image	
12	Question Image	
13	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)
14	Question Image	
15	Question Image	
16	Question Image	A. An equation B. Linear equation C. Rational fraction D. Identity
17	Question Image	D. -2-i
18	Question Image	
19	a + x is	A. A trinomial B. A binomial C. A moomial D. An equation
20	Which of the following is the subset of all sets?	B. {1, 2,3} D. {0}
21	The sum of the series 1+5+9+13+17+21+25+29 is	A. 140 B. 130

		C. 120 D. 110
22	Question Image	A. 0 B. -2 C. 1 D. 4
23	Question Image	
24	Question Image	A. Tan x B. X C. - x
25	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
26	Question Image	
27	If A = (3, 8) and B = (5, 6), then the distance between A and B is	B. 2 C. 1 D. 6
28	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
29	Question Image	A. 1 B. 2 C. 3 D. 4
30	Question Image	A. Unit matrix B. Diagonal matrix C. Nilpotent matrix D. Zero matrix
31	Question Image	A. 0 B. 1 C. -1 D. 2
32	Question Image	
33	Question Image	
34	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)
35	Question Image	A. A polynomial B. An inequality C. An identity D. A linear function
36	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
37	Question Image	D. None of these
38	If 1 + Cos x = 0, then x =	
39	Question Image	A. 30° B. 45° C. 60° D. 90°
40	The number of diagonals of a six sided figure are	A. 9 B. 6 C. 12 D. 3
41	Question Image	D. None

42	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
43	Question Image	A. 2 B. 1 C. 3 D. 4
44	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
45	Question Image	
46	Which of the vectors have opposite direction?	D. Both A and B
47	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
48	Question Image	
49	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
50	If 4 - x > 5, then	A. x > 1 B. x > -1 C. x < 1 D. x < -1
51	How many elements are in the sample space of two rolling dies	A. 6 B. 12 C. 18 D. 36
52	Question Image	A. 0 B. -25 C. 5 D. 45
53	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)
54	Question Image	
55	Cos 315°=	A. 0.707 B. 0.5 C. 1 D. 0
56	The complement of set A relative to universal set U is the set	D. A - U
57	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
58	If P(E) is the probability that can event will occur, then P(E) =	A. 1 B. 0.5 C. 2 D. 0
59	The mid point of the line joining (-1, -3) to (3, -5) is	A. (1, 1) B. (1, -1) C. (2, -8) D. (1, -4)
60	Question Image	A. 15 B. 15 i C. -15 i D. -15
61	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
62	Question Image	
63	Question Image	

64	The set {{a,b}} is	A. Infinite set B. Singleton set C. Two points set D. None
65	Period of Sin 2x =	
66	Question Image	B. -3/4 C. 1/16 D. 1/4
67	Question Image	
68	Ifα andβ be irrational roots of a quadratic equation, then	
69	A point of a solution region where two of its boundary lines intersect, is called	A. Boundary B. Inequality C. Half Plane D. Vertex
70	Question Image	
71	A fraction in which the degree of the numerator is less than the degree of the denominator is called	A. Polynomial B. Proper fraction C. Rational fraction D. Mixed fraction
72	If 2 Sin x Cos 2 x = Sin x then?	
73	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
74	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
75	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
76	The set of complex numbers forms a group under the binary operation of	A. Addition B. Multiplication C. Division D. Subtraction
77	Which is not a half plane	A. ax + by < c B. ax + by > c C. Both A and B D. None
78	Question Image	A. Nilpotent matrix B. Singular matrix C. Non singular matrix D. Diagonal matrix
79	Question Image	
80	The range of inequality x + 2 > 4 is	A. (-1, 2) B. (-2, 2) D. None
81	Complex roots of real quadratic equation occur in	A. Conjugate pair B. ordered pair C. reciprocal pair D. quadratic function
82	Question Image	D. None
83	Which is in the solution set of 4x - 3y < 2	A. (3, 0) B. (4, 1) C. (1, 3) D. None
84	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
		A. 90<b style="color: rgb(34, 34, 34);

85	An angle of one radian is equivalent to	A. 90° B. 60° C. 67° D. 57° 18[']
86	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
87	Question Image	A. A + B B. C²/AB C. A²/BC D. B²/AC
88	Question Image	
89	Question Image	
90	Question Image	
91	The associative angle of 280°is	A. 100° B. 10° C. 80° D. -80°
92	The Domain of f(x) = log x is	
93	Question Image	
94	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
95	Which of the following integrals can be evaluated	
96	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
97	Question Image	A. 15 B. 60 C. 90 D. 20
98	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
99	If x < y, 2x = A, and 2y =B, then	A. A = B B. A < B C. A < x D. B < y
100	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
101	Question Image	
102	Question Image	
103	Question Image	

104	Question Image	A. 2 B. 1 C. 0
105	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
106	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
107	Question Image	
108	Question Image	
109	The sum of the interior angles for a 16 sided polygon is	A. 4 pie B. 14 pie C. 8 pie D. 2 pie
110	A vector of magnitude zero is called	A. Position vector B. Null vector C. Free vector D. None of these
111	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
112	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
113	Question Image	
114	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
115	Question Image	
116	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
117	If n is a positive integer, then 3+6+9+ ----------+3n =	
118	Question Image	D. None
119	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
120	Which is an explicit function	D. All
121	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
122	Multiplicative inverse of "1" is	A. 0 B. <u>+</u> 1 C. 1 D. {0, 1}
123	6 is	A. A prime integer B. An irrational number C. A rational number

		D. An odd integer
124	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
125	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
126	If in isosceles right angled triangle, one side is a then hypotenuse is	C. a D. cannot be determined by given information
127	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
128	The number ways in which 5 distinct toys can be distributed among 3 children is	A. 3⁵ B. 5³ C. C₃⁵ D. P₃⁵
129	Question Image	A. A linear equation B. A cubic equation C. A quadratic equation D. An equation for circle
130	Question Image	A. 10 B. 20 C. 40 D. 26
131	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
132	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
133	0 (Zero) is	A. An irrational number B. A rational number C. A negative integer D. A positive number
134	What is the period of Cot x?	
135	The multiplicative inverse of x such that x = 0 is	A. -x B. does not exist C. 1/x D. 0
136	Question Image	
137	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
138	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
139	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
140	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
141	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
142	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
143	Question Image	D. None of these
144	Question Image	
145	The value of the polynomial $3x^3+ 4x^2- 5x + 4$ at x = -1 is	A. 12 B. 1 C. 10 D. -10
146	Question Image	A. 1 B. 2 C. 3 D. 4
147	Question Image	A. p < r B. p > r C. p + r < 0 D. p - r < 0
148	Question Image	A. 1 B. 2 C. 3 D. 4
149	The conic is a parabola if	A. e < 1 B. e > 1 C. e = 1 D. e = 0
150	Question Image	
151	The graph of a quadratic function is	A. Circle B. Ellipse C. Parabola D. Hexagon
152	The multiplicative inverse of -1 in the set {1-, 1} is	A. 1 B. -1 C. <u>+</u>1 D. 0
153	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
154	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
155	120 degrees are equal to how many radians?	
156	Question Image	A. An irrational number B. Whole number C. A positive integer D. A rational number
157	Every prime number is also	A. Rational number B. even number C. Irrational number D. multiple of two numbers
158	Question Image	D. None of these
159	Question Image	A. n = 3 only B. n <u>></u> 5 C. n <u>></u> 3 D. n < 5
160	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
161	Question Image	
162	The magnitude of a vector can never be	A. Zero B. Negative C. Positive D. Absolute
163	Question Image	D. None of these
164	The radius of the circle $(x-1)^2+ (y+3)^2= 64$ is	A. 8 C. 4

164	The radius of the circle $(x-1)^2+(y+3)^2=64$ is	C. 4 D. 64
165	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
166	3/2 is	A. An irrational number B. Whole number C. A positive integer D. A rational number
167	Question Image	A. A < G < H B. A > G > H C. A < G > H D. A > G < H
168	Question Image	A. (0, e) B. (0, 1) D. None
169	Sin x + Cos x = 1 x =	
170	The gradient of the line joining (1, 4) and (-2, 5) is	A. 3/8 B. -2 2/3 C. -1/3 D. 2
171	Question Image	A. 1 B. 0 C. -2 D. 3
172	Question Image	
173	Unit vector in the positive direction of x-axis is	D. All
174	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
175	Two natural numbers whose sum is 25 and difference is 5, are	A. 25, 20 B. 20, 10 C. 20, 5 D. 15, 10
176	Question Image	
177	The common difference of the sequence 7,4,1, ... is	A. 1 B. -3 C. 5 D. 0
178	Question Image	
179	Question Image	
180	Question Image	D. None of these
181	Question Image	A. A positive integer B. A negative integer C. A natural number D. An irrational number
182	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
183	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
184	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
185	Question Image	
186	Question Image	
187	If Z = (1,2), then Z^{-1} = ?	A. (0.2, 0.4) B. (-0.2, 0.4) C. (0.2, -0.4)

		C. (0.2 , -0.4) D. (-0.2, -0.4)
188	Question Image	A. Both A,B have the same number of columns 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
189	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
190	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
191	Question Image	
192	Question Image	
193	Question Image	
194	The direction cosines of y-axis are	A. 1,0,0 B. 0,1,0 C. 0,0,1 D. 1,1,1
195	Question Image	A. 1/2 B. 3/5 C. 4/5 D. 1
196	Question Image	