NAT-ICS Computer Science Mathematics Hard Test

Sr	Questions	Answers Choice
1	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
2	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
3	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
4	Question Image	
5	Question Image	A. 2 B. 1 C. 3 D. 4
6	Question Image	
7	An angle of one radian is equivalent to	A. 90° B. 60° C. 67° D. 57° 18[']
8	Question Image	A. 1 B. 2 C. 3 D. 4
9	The magnitude of a vector can never be	A. Zero B. Negative C. Positive D. Absolute
10	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
11	Question Image	D. None of these
12	Question Image	
13	If in isosceles right angled triangle, one side is a then hypotenuse is	C. a D. cannot be determined by given information
14	Question Image	
15	In 30,60,90 triangle, if the smallest side is 6 then the side opposite to the angle of $60^{\circ}$is	A. 12 B. 3 D. 6
16	Question Image	D. None

17	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
18	Question Image	A. 1 B. 2 C. 3 D. 4
19	Question Image	
20	Question Image	A. 0 B. -25 C. 5 D. 45
21	Question Image	
22	Question Image	
23	Question Image	A. (0, e) B. (0, 1) D. None
24	Question Image	
25	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
26	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
27	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
28	Sin x + Cos x = 1 x =	
29	Question Image	A. A polynomial B. An inequality C. An identity D. A linear function
30	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)
31	Question Image	
32	Question Image	
33	A vector of magnitude zero is called	A. Position vector B. Null vector C. Free vector D. None of these
34	Which of the following integrals can be evaluated	
35	Question Image	A. An equation B. Linear equation C. Rational fraction D. Identity
36	The set of complex numbers forms a group under the binary operation of	A. Addition B. Multiplication C. Division D. Subtraction
37	Question Image	D. -2-i
38	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
39	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	A. 40 B. 30 C. 50

	take two courses at a time. Find the number of students who have taken both physics and mathematics	D. 20
40	Question Image	D. None of these
41	Question Image	A. 15 B. 15 i C. -15 i D. -15
42	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
43	Question Image	
44	Question Image	
45	Question Image	
46	0 (Zero) is	A. An irrational number B. A rational number C. A negative integer D. A positive number
47	The curves $y = x^2$, $y = x$ intersect at	A. (0,0) , (1, 1) B. (2, 4) D. (0,3), (-1, 1)
48	Question Image	A. p < r B. p > r C. p + r < 0 D. p - r < 0
49	How many elements are in the sample space of two rolling dies	A. 6 B. 12 C. 18 D. 36
50	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
51	The number ways in which 5 distinct toys can be distributed among 3 children is	A. 3⁵ B. 5³ C. C₃⁵ D. P₃⁵
52	The multiplicative inverse of -1 in the set {1-, 1} is	A. 1 B. -1 C. <u>+</u>1 D. 0
53	6 is	A. A prime integer B. An irrational number C. A rational number D. An odd integer
54	Question Image	
55	Question Image	A. 1 B. 2 C. 3 D. 4
56	Question Image	
57	The associative angle of 280°is	A. 100° B. 10° C. 80° D. -80°
	In Binomial Expansion the coefficients of the terms equidistant from beginning and end of the	A. Zero B. Same

58	In Binomial Expansion the coefficients of the terms equidistant from beginning and end of the expansion are	B. Same C. Equal to preceding term D. Equal to following term
59	What is a proper rational fraction?	D. All are proper rational fractions
60	The sum of the interior angles for a 16 sided polygon is	A. 4 pie B. 14 pie C. 8 pie D. 2 pie
61	Question Image	A. Tan x B. X C. - x
62	3/2 is	A. An irrational number B. Whole number C. A positive integer D. A rational number
63	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
64	Question Image	
65	If x < y, 2x = A, and 2y =B, then	A. A = B B. A < B C. A < x D. B < y
66	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
67	Question Image	
68	What is the period of Cot x?	
69	Question Image	A. 2 B. 1 C. 0
70	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)
71	The range of inequality x + 2 > 4 is	A. (-1, 2) B. (-2, 2) D. None
72	Question Image	D. None of these
73	Which is in the solution set of 4x - 3y < 2	A. (3, 0) B. (4, 1) C. (1, 3) D. None
74	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
75	Question Image	A. A < G < H B. A > G > H C. A < G > H D. A > G < H
76	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
77	The value of the polynomial $3x^3 + 4x^2 - 5x + 4$ at x = -1 is	A. 12 B. 1 C. 10 D. -10
78	Question Image	
		A. Conjugate pair

79	Complex roots of real quadratic equation occur in	B. ordered pair C. reciprocal pair D. quadratic function
80	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
81	Question Image	A. 0 B. -2 C. 1 D. 4
82	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
83	Question Image	D. None of these
84	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
85	Multiplicative inverse of "1" is	A. 0 B. <u>+</u> 1 C. 1 D. {0, 1}
86	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
87	Which of the following is the subset of all sets?	B. {1, 2,3} D. {0}
88	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
89	Period of Sin 2x =	
90	If n is a positive integer, then 3+6+9+ ----------+3n =	
91	A point of a solution region where two of its boundary lines intersect, is called	A. Boundary B. Inequality C. Half Plane D. Vertex
92	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
93	Question Image	
94	Question Image	
95	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
96	Question Image	
97	Ifα andβ be irrational roots of a quadratic equation, then	
98	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
99	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
100	Question Image	
		A. 3x - 4y = 0 B. 3x - 4y = 5

101	The equation of the normal to the circle $x^2 + y^2 = 25$ at(4, 3) is	C. 4x + 3y = 5 D. 4x + 3y = 25
102	Question Image	
103	Question Image	A. Free vector B. Null vector C. Unit vector D. None of these
104	The conic is a parabola if	A. e < 1 B. e > 1 C. e = 1 D. e = 0
105	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
106	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
107	Question Image	A. Unit matrix B. Diagonal matrix C. Nilpotent matrix D. Zero matrix
108	The number of diagonals of a six sided figure are	A. 9 B. 6 C. 12 D. 3
109	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)
110	Question Image	A. 15 B. 60 C. 90 D. 20
111	Which is not a half plane	A. ax + by < c B. ax + by > c C. Both A and B D. None
112	If 1 + Cos x = 0, then x =	
113	Question Image	
114	Question Image	D. None of these
115	Question Image	
116	Question Image	
117	Question Image	A. 30° B. 45° C. 60° D. 90°
118	Question Image	A. A linear equation B. A cubic equation C. A quadratic equation D. An equation for circle
119	Question Image	
120	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
		A. x > 1 B. x > -1

121	If 4 - x > 5, then	C. x < 1 D. x < -1
122	Question Image	A. Nilpotent matrix B. Singular matrix C. Non singular matrix D. Diagonal matrix
123	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)
124	Question Image	
125	If ab > 0 and a < 0, which of the following is negative?	A. b B. -b C. -a D. (a - b)²
126	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
127	Question Image	
128	The sum of the series 1+5+9+13+17+21+25+29 is	A. 140 B. 130 C. 120 D. 110
129	Question Image	A. 10 B. 20 C. 40 D. 26
130	Question Image	
131	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
132	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
133	The radius of the circle $(x-1)^2+ (y+3)^2= 64$ is	A. 8 C. 4 D. 64
134	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
135	Question Image	
136	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
137	The gradient of the line joining (1, 4) and (-2, 5) is	A. 3/8 B. -2 2/3 C. -1/3 D. 2
138	Which is an explicit function	D. All
139	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
140	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)
141	Question Image	
142	The complement of set A relative to universal set U is the set	D. A - U
143	Question Image	

143	Question Image	
144	Which of the vectors have opposite direction?	D. Both A and B
145	a + x is	A. A trinomial B. A binomial C. A moomial D. An equation
146	Cos 315°=	A. 0.707 B. 0.5 C. 1 D. 0
147	Question Image	A. A positive integer B. A negative integer C. A natural number D. An irrational number
148	Question Image	
149	Question Image	A. 1 B. 0 C. -2 D. 3
150	Question Image	A. 1/2 B. 3/5 C. 4/5 D. 1
151	Question Image	
152	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
153	If 2 Sin x Cos 2 x = Sin x then?	
154	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
155	Question Image	A. An irrational number B. Whole number C. A positive integer D. A rational number
156	Question Image	
157	The Domain of f(x) = log x is	
158	Question Image	
159	Question Image	
160	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
161	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
162	The graph of a quadratic function is	A. Circle B. Ellipse C. Parabola D. Hexagon
163	Every prime number is also	A. Rational number B. even number C. Irrational number D. multiple of two numbers
164	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
165	If P(E) is the probability that can event will occur, then P(E) =	A. 1 B. 0.5 C. 2 D. 0

166	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
167	Two natural numbers whose sum is 25 and difference is 5, are	A. 25, 20 B. 20, 10 C. 20, 5 D. 15, 10
168	Unit vector in the positive direction of x-axis is	D. All
169	Question Image	D. None
170	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
171	Question Image	
172	Question Image	A. A + B B. C²/AB C. A²/BC D. B²/AC
173	Question Image	
174	The multiplicative inverse of x such that x = 0 is	A. -x B. does not exist C. 1/x D. 0
175	Question Image	
176	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
177	If A = (3, 8) and B = (5, 6), then the distance between A and B is	B. 2 C. 1 D. 6
178	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
179	120 degrees are equal to how many radians?	
180	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
181	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
182	The common difference of the sequence 7,4,1, ... is	A. 1 B. -3 C. 5 D. 0
183	Question Image	D. None
184	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
185	Question Image	B. -3/4 C. 1/16 D. 1/4
186	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

187	Question Image	
188	Question Image	
189	Question Image	
190	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
191	Question Image	A. n = 3 only B. n <u>></u> 5 C. n <u>></u> 3 D. n < 5
192	Question Image	
193	The direction cosines of y-axis are	A. 1,0,0 B. 0,1,0 C. 0,0,1 D. 1,1,1
194	The set {{a,b}} is	A. Infinite set B. Singleton set C. Two points set D. None
195	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
196	Question Image	A. 0 B. 1 C. -1 D. 2