NAT-ICS Computer Science Mathematics Hard Test

Sr	Questions	Answers Choice
1	0 (Zero) is	A. An irrational number B. A rational number C. A negative integer D. A positive number
2	6 is	A. A prime integer B. An irrational number C. A rational number D. An odd integer
3	3/2 is	A. An irrational number B. Whole number C. A positive integer D. A rational number
4	Every prime number is also	A. Rational number B. even number C. Irrational number D. multiple of two numbers
5	Question Image	A. An irrational number B. Whole number C. A positive integer D. A rational number
6	Question Image	A. A positive integer B. A negative integer C. A natural number D. An irrational number
7	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
8	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)
9	Question Image	D. -2-i
10	Question Image	A. 15 B. 15 i C. -15 i D. -15
11	The complement of set A relative to universal set U is the set	D. A - U
12	The multiplicative inverse of x such that x = 0 is	A. -x B. does not exist C. 1/x D. 0
13	Multiplicative inverse of "1" is	A. 0 B. <u>+</u> 1 C. 1 D. {0, 1}
14	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
15	Which of the following is the subset of all sets?	B. {1, 2,3} D. {0}
16	The set {{a,b}} is	A. Infinite set B. Singleton set C. Two points set D. None
		A. Function on B

17	The set of the first elements of the ordered pairs forming a relation is called its	B. Range C. Domain D. A into B
18	The graph of a quadratic function is	A. Circle B. Ellipse C. Parabola D. Hexagon
19	The set of complex numbers forms a group under the binary operation of	A. Addition B. Multiplication C. Division D. Subtraction
20	The multiplicative inverse of -1 in the set {1-, 1} is	A. 1 B. -1 C. <u>+</u>1 D. 0
21	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
22	Question Image	A. Nilpotent matrix B. Singular matrix C. Non singular matrix D. Diagonal matrix
23	Question Image	A. Unit matrix B. Diagonal matrix C. Nilpotent matrix D. Zero matrix
24	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
25	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
26	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
27	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
28	Question Image	
29	Ifα andβ be irrational roots of a quadratic equation, then	
30	Question Image	A. 1 B. 2 C. 3 D. 4
31	Question Image	A. 1 B. 2 C. 3 D. 4
32	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
33	Question Image	
34	Complex roots of real quadratic equation occur in	A. Conjugate pair B. ordered pair C. reciprocal pair

		D. quadratic function
35	The value of the polynomial $3x^3+ 4x^2- 5x + 4$ at x = -1 is	A. 12 B. 1 C. 10 D. -10
36	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
37	Two natural numbers whose sum is 25 and difference is 5, are	A. 25, 20 B. 20, 10 C. 20, 5 D. 15, 10
38	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
39	What is a proper rational fraction?	D. All are proper rational fractions
40	Question Image	
41	Question Image	
42	Question Image	A. A linear equation B. A cubic equation C. A quadratic equation D. An equation for circle
43	Question Image	A. A polynomial B. An inequality C. An identity D. A linear function
44	Question Image	D. None
45	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
46	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
47	Question Image	D. None
48	Question Image	A. An equation B. Linear equation C. Rational fraction D. Identity
49	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
50	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
51	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
52	The sum of the series 1+5+9+13+17+21+25+29 is	A. 140 B. 130 C. 120 D. 110
53	Question Image	
54	The sum of the interior angles for a 16 sided polygon is	A. 4 pie B. 14 pie C. 8 pie D. 2 pie
55	Question Image	A. A < G < H B. A > G > H C. A < G > H

		D. A > G < H
56	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
57	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
58	The common difference of the sequence 7,4,1, ... is	A. 1 B. -3 C. 5 D. 0
59	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
60	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
61	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)
62	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
63	Question Image	A. 2 B. 1 C. 3 D. 4
64	The number of diagonals of a six sided figure are	A. 9 B. 6 C. 12 D. 3
65	The number ways in which 5 distinct toys can be distributed among 3 children is	A. 3⁵ B. 5³ C. C₃⁵ D. P₃⁵
66	If P(E) is the probability that can event will occur, then P(E) =	A. 1 B. 0.5 C. 2 D. 0
67	How many elements are in the sample space of two rolling dies	A. 6 B. 12 C. 18 D. 36
68	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
69	Question Image	
70	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
71	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
72	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
73	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
		A. 3

74	Total number of terms in the expansion of $(a + b)^5 + (a - b)^5$ after simplification are	B. 1 C. 4 D. 7
75	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
76	If n is a positive integer, then 3+6+9+ ----------+3n =	
77	Question Image	A. n = 3 only B. n <u>></u> 5 C. n <u>></u> 3 D. n < 5
78	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
79	a + x is	A. A trinomial B. A binomial C. A moomial D. An equation
80	An angle of one radian is equivalent to	A. 90° B. 60° C. 67° D. 57° 18[']
81	The associative angle of 280°is	A. 100° B. 10° C. 80° D. -80°
82	Question Image	A. 1/2 B. 3/5 C. 4/5 D. 1
83	Question Image	
84	If in isosceles right angled triangle, one side is a then hypotenuse is	C. a D. cannot be determined by given information
85	Question Image	
86	Question Image	
87	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
88	Question Image	A. 2 B. 1 C. 0
89	Question Image	A. A + B B. C²/AB C. A²/BC D. B²/AC
90	Question Image	
91	If 2 Sin x Cos 2 x = Sin x then?	

92	Question Image	B. -3/4 C. 1/16 D. 1/4
93	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
94	Question Image	
95	Cos 315°=	A. 0.707 B. 0.5 C. 1 D. 0
96	Question Image	A. 30° B. 45° C. 60° D. 90°
97	Sin x + Cos x = 1 x =	
98	If A = (3, 8) and B = (5, 6), then the distance between A and B is	B. 2 C. 1 D. 6
99	Question Image	
100	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
101	What is the period of Cot x?	
102	Period of Sin 2x =	
103	Question Image	
104	Question Image	
105	Question Image	A. Tan x B. X C. - x
106	Question Image	
107	Question Image	
108	Question Image	
109	120 degrees are equal to how many radians?	
110	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
111	Question Image	A. 10 B. 20 C. 40 D. 26
112	Question Image	
113	Question Image	
114	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
115	Question Image	
116	Question Image	A. 15 B. 60 C. 90 D. 20

		D. 20
117	Question Image	
118	Question Image	
119	Question Image	
120	Question Image	
121	Question Image	
122	Question Image	
123	Question Image	
124	Question Image	D. None of these
125	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
126	Question Image	
127	If 1 + Cos x = 0, then x =	
128	Question Image	
129	Question Image	
130	Question Image	
131	Question Image	A. 0 B. -25 C. 5 D. 45
132	Question Image	A. 0 B. -2 C. 1 D. 4
133	Question Image	A. 1 B. 2 C. 3 D. 4
134	Question Image	A. 0 B. 1 C. -1 D. 2
135	Which is an explicit function	D. All
136	Question Image	
137	The Domain of f(x) = log x is	
138	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
139	The range of inequality x + 2 > 4 is	A. (-1, 2) B. (-2, 2) D. None
140	Question Image	A. 1 B. 0 C. -2 D. 3
141	Question Image	A. (0, e) B. (0, 1) D. None
142	Question Image	D. None
143	Question Image	
144	Question Image	D. None of these
145	Question Image	

146	Question Image	
147	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
148	Question Image	
149	Question Image	D. None of these
150	Which of the following integrals can be evaluated	
151	Question Image	
152	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
153	Question Image	D. None of these
154	Question Image	
155	Question Image	
156	Question Image	
157	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
158	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)
159	The gradient of the line joining (1, 4) and (-2, 5) is	A. 3/8 B. -2 2/3 C. -1/3 D. 2
160	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
161	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
162	The curves $y = x^2$, y = x intersect at	A. (0,0) , (1, 1) B. (2, 4) D. (0,3), (-1, 1)
163	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
164	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
165	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
166	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)
167	If x < y, 2x = A, and 2y =B, then	A. A = B B. A < B C. A < x D. B < y
168	If ab > 0 and a < 0, which of the following is negative?	A. b B. -b C. -a D. (a - b)²

169	If 4 - x > 5, then	A. x > 1 B. x > -1 C. x < 1 D. x < -1
170	Which is not a half plane	A. ax + by < c B. ax + by > c C. Both A and B D. None
171	A point of a solution region where two of its boundary lines intersect, is called	A. Boundary B. Inequality C. Half Plane D. Vertex
172	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
173	Which is in the solution set of 4x - 3y < 2	A. (3, 0) B. (4, 1) C. (1, 3) D. None
174	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)
175	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
176	Question Image	A. p < r B. p > r C. p + r < 0 D. p - r < 0
177	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
178	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
179	Question Image	
180	The radius of the circle $(x-1)^2+ (y+3)^2= 64$ is	A. 8 C. 4 D. 64
181	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
182	Question Image	D. None of these
183	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
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	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

186	The conic is a parabola if	A. e < 1 B. e > 1 C. e = 1 D. e = 0
187	Question Image	A. Free vector B. Null vector C. Unit vector D. None of these
188	Unit vector in the positive direction of x-axis is	D. All
189	A vector of magnitude zero is called	A. Position vector B. Null vector C. Free vector D. None of these
190	The magnitude of a vector can never be	A. Zero B. Negative C. Positive D. Absolute
191	Question Image	
192	Which of the vectors have opposite direction?	D. Both A and B
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	
196	Question Image	