ECAT Computer Science Entry Test

Sr	Questions	Answers Choice
1	$x^2 + x - 6 = 0$ is a conditional equation and it is true for	A. 2, 3 B. 2, -3 C. -2, -3 D. -2, 3
2	$(x + 2)^2 = x^2 + 4x + 4$ is	A. A linear equation B. A cubic equation C. A quadratic equation D. None
3	Question Image	
4	Question Image	A. A = x, B = 1 B. A = 0, B = 2 C. A = -1, B = 1 D. A = x-1, B = x+1
5	Which is the proper rational function	
6	$2x = 3$ is a conditional equation it is true for	A. 2 B. 3 C. 3/2 D. 2/3
7	An open sentence formed by using the sign of equality "=" is called	A. Equation B. In equation C. True sentence D. False sentence
8	If $a(p + q)^2 + bpq + c = 0$ and $a(p + r)^2 + 2bpr + c = 0$, then qr equals	A. $p^2 + c/a$ B. $p^2 + a/c$ C. $p^2 + c/a$ D. $p^2 - c/a$
9	If $\sin\alpha$ and $\cos\alpha$ are the roots of the equation $px^2 + qx + r = 0$, then	A. $p^2 - q^2 + 2pr = 0$ B. $(p + r)^2 = q^2 - r^2$ C. $p^2 + q^2 - 2pr = 0$ D. $(p - r)^2 = q^2 + r^2$
10	Root of the equation $3^{x-1} + 3^{1-x} =$ is	A. 2 B. 1 C. 0 D. -1
11	For the equation $|x^2| + |x| - 6 = 0$, the roots are	A. One and only one real number B. Real with sum one C. Real with sum zero D. Real with product zero
12	Question Image	A. Lies between 4 and 7 B. Lies between 5 and 9 C. Has no value between 4 and 7 D. Has no value between 5 and 9
13	Question Image	
14	Question Image	A. 15 B. 9 C. 7 D. 8
15	If the roots of $ax^2 + bx + c = 0$ $(a > 0)$ be greater than unity, then	A. a + b + c = 0 B. a + b + c > 0 C. a + b + c < 0 D. None of these
16	If α, β are the roots of $ax^2 + bx + c = 0$ and $\alpha + h, \beta + h$ are the roots of $px^2 + qx + r = 0$, then h =	
17	Question Image	

18	p, q, r and s are integers. If the A.M. of the roots of $x^2 - px + q^2 = 0$ and G.M. of the roots of $x^2 - rx + s^2 = 0$ are equal, then	A. q is an odd integer B. r is an even integer C. p is an even integer D. s is an odd integer
19	If the roots of $ax^2 - bx - c = 0$ change by the same quantity, then the expression in a, b, c that does not change is	
20	Let the equation $ax^2 - bx + c = 0$ have distinct real roots both lying in the open interval (0, 1) where a, b, c are given to be positive integers. Then the value of the ordered triplet (a, b, c) can be	A. (5, 3, 1) B. (4, 3, 2) C. (5, 5, 1) D. (6, 4, 1)
21	Question Image	A. Two real roots B. Two positive roots C. Two negative roots D. One positive and one negative root
22	In a quadratic equation with leading co-efficient 1, a student reads the co-obtain the roots as - 15 and -4. The correct roots are	A. 6, 10 B. -6, -10 C. 8, 8 D. -8, -8
23	Question Image	A. (-1, 2) B. (-1, 1) C. (1, 2) D. {-1}
24	Question Image	A. 1 B. 2 C. 0 D. 4
25	If the roots of $x^2 + ax + b = 0$ are non-real, then for all real x, $x^2 + ax + b$ is	A. Negative B. Positive C. Zero D. Nothing can be said
26	The equation $(\cos p - 1)x^2 + x(\cos p) + \sin p = 0$ in the variable x, has real roots, then p can take any value in the interval	A. $(0, 2\pi)$ B. $(-\pi, -0)$ C. $(0, \pi)$ D. None of these
27	If $2x^{1/3} + 2x^{-1/3} = 5$, then x is equal to	A. 1 or -1 B. 2 or 1/2 C. 8 or 1/8 D. 4 or 1/4
28	Question Image	A. Rational B. Irrational C. Non-real D. Zero
29	Question Image	A. Only one real solution B. Exactly three real solution C. Exactly one rational solution D. Non-real roots
30	The value of k (k > 0) for which the equation $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ both will have real roots is	A. 8 B. -16 C. -64 D. 16