ECAT Pre Engineering Entry Test

Sr	Questions	Answers Choice
1	Question Image	A. y + 1 = Ae^x B. y + 1 = Axe^x C. xe^x= C D. y + xe^x= C
2	Question Image	
3	The differential equation of all st. lines which are at a constant distance to form the origin is	
4	The differential equations of all conis whose axes coincide with the co-ordinate axis is	
5	The differential equation representing the family of curves y = A cos (x + B), where A, B are parameters, is	
6	Question Image	A. 1 B. 2 C. 3 D. 4
7	Question Image	A. 1 B. 2 C. 3 D. 4
8	Te order of the differential equation of all conics whose axes coincide with the axes of co-ordinates is	A. 2 B. 3 C. 4 D. 1
9	Question Image	A. 2, 3 B. 3, 3 C. 2, 6 D. 2, 4
10	Sand falls from a tube in such a way that it forms a cone whose height is always 4/3 times the radius of its base and radius of the base increases at the rate of 1/8 cm/sec. When this radius is 1 meter, the rate at which the amount of sand increases is	
11	Water seeps out of a conical filter at eh constant rate of 5 cm/sec. the height of the cone of water in the filter is 15 cm. the height of the filter is 20 cm and radius of the base is 10 cm. the rate at which the height of the water decreases is	
12	If y = sin (ax + b), then fourth derivative of y with respect to x =	A. a⁴cos (ax + b) B. a⁴sin (ax + b) C. -a⁴sin (ax + b) D. a⁴tan (ax + b)
13	Any point, where f is neither increasing nor decreasing and f(x) = 0 at that point, is called a	A. Minimum B. Maximum C. Stationary point D. Constant point
14	Derivative of strictly increasing function is always	A. Zero B. Positive C. Negative D. Both (A) and (B)
15	Second derivative of y = x^9+ 10x^2+ 2x - 1 at x = 0 is	A. 10 B. 20 C. 12 D. 1
16	Question Image	A. -2x cos x² B. -2x²sin x² C. -x²sin x D. -2x²sin x²
17	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 by the equation f(x)	A. f B. 1 C. C D. 0

18	The equation of motion of a stone thrown vertically up wards is $s = ut - 4.9t^2$the maximum height attained by it =	
19	If $s = 2t^3 - 3t^2 + 15t - 8$ is the equation of motion of a particle, then its initial velocity is	A. 8 B. 15 C. -6 D. None
20	The distance s of a particle in time t is given by $s = t^3 - 6t^2 - 4t - 8$. Its acceleration vanishes at t =	A. 1 B. 2 C. 3 D. 4
21	The velocity of a particle moving along a straight line is given by $v = 3t + t^2$. The acceleration of the particle after 4 seconds from the start is	A. 4 B. 11 C. 26 D. None
22	If a particle moves according to the law $s = t^3 - t^2$, then its velocity at time t = 1.5 is	A. 9/2 B. 15/4 C. 5 D. None
23	Question Image	
24	Question Image	
25	Question Image	
26	Question Image	A. xa^{x-1} B. a^x C. x in a D. a^xln a
27	Question Image	A. 2x + 2y B. 4 - x² C. -x/y D. x/y
28	The parametric equation of a curve are $x = t^2$, $y = t^3$then	
29	$F(x) = x^x$decreases in the interval	A. (0, e) B. (0, 1) C. (-∞,0) D. None
30	Question Image	A. y : x B. x : y C. -y : x D. -x : y