

## NAT I Engineering Mathematics

Sr	Questions	Answers Choice
1	Derivative of strictly increasing function is always	A. Zero B. Positive C. Negative D. Both A and B
2	The gradient of the line joining (1,4) and (-2,5) is	A. 3/8 B. -2 2/3 C. -1/3 D. 2
3	If the vector $2i+4j-2k$ and $2i +6j+xk$ are perpendicular then $x=7$	A. 4 B. 8 C. 14 D. 7
4	For any set X, $X \cup X$ is	A. 15 B. $15i$ C. $-15i$ D. -15
5	In the function $v = \frac{4}{3} \pi r^3$ , $V$ is a function of	A. 3/4 B. $r$ C. $v$ D. $\pi$
6	Find the geometric mean between 4 and 16	A. 7, 8 B. 14, 4 C. 28, 2 D. 56, 1
7	If $\cos \alpha = 3/5$ , $\cos \beta = 5/13$ , then	A. $\cos(\alpha + \beta) = 33/65$ B. $\sin(\alpha + \beta) = 56/65$ C. $\sin(\alpha + \beta) = 1/65$ D. $\cos(\alpha + \beta) = 63/65$
8	Two dice are rolled The number of possible out come in which at least one die shows 2 is?	A. 5 B. 12 C. 11 D. 7
9	If $1 + \cos x = 0$ then $x =$	A. $\pi + 2n\pi$ B. $\pi + n\pi$ C. $\pi - n\pi$ D. $\pi/2$
10	How many different arrangements of the letters in the word QABABA are Possible?	A. 720 B. 40 C. 60 D. 30
11	The angle $a$ ( $0^\circ < a < 180^\circ$ ) measured counterclockwise from positive x-axis to a non-horizontal straight line $l$ is called the	A. Rotation B. Inclination C. Radian D. None
12	If $f(x) = x^2 - 4$ then which is not included in the domain of $f(x)$	A. 0 B. -2 C. 1 D. 4
13	The range of inequality $x + 2 > 4$ is	A. (-1,2) B. (-2,2) C. $(1, \infty)$ D. None
14	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
15	Which of the following is solution of $\tan^2 x = 1/3$	A. $7\pi/6$ B. $5\pi/6$ C. $\pi/6$ D. All

16	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	<p>A. Commutative law w.r.t multiplication</p> <p>B. Associative law w.r.t addition</p> <p>C. Distributive law w.r.t addition</p> <p>D. Multiplication of a scalar with the matrix</p>
17	Area of $\Delta ABC =$	<p>A. <math>ab \sin \alpha</math></p> <p>B. <math>\frac{1}{2} ab \sin \alpha</math></p> <p>C. <math>\frac{1}{2} ac \sin \gamma</math></p> <p>D. <math>\frac{1}{2} ac \sin \beta</math></p>
18	If $\alpha$ and $\beta$ be irrational roots of a quadratic equation, then	<p>A. <math>\alpha = b/a</math> and <math>\beta = ca</math></p> <p>B. <math>\alpha = a/b</math> and <math>\beta = -c/a</math></p> <p>C. <math>\alpha^2 + \beta^2 = 1</math></p> <p>D. <math>\alpha = -b/a</math> and <math>\beta = c/a</math></p>
19	$120^\circ$ degrees are equal to how many radians?	<p>A. <math>\pi/3</math> radians</p> <p>B. <math>2\pi/3</math> radians</p> <p>C. <math>\pi/4</math> radians</p> <p>D. <math>\pi/2</math> radians</p>
20	If $A = (3,8)$ and $B = (5,6)$ then the distance between A and B is	<p>A. <math>2\sqrt{2}</math></p> <p>B. 2</p> <p>C. 1</p> <p>D. 6</p>