KATHMANDU UNIVERSITY
End Semester Examination
February 2023

Marks Scored:

Level : B.Pharm.
Year : I

Course : MATH 111
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date : 2023-feb-16

SECTION "A"
[10Q. × 1 = 10 marks]

Fill in the blank space(s) by most appropriate word(s) or symbol(s).

1. A function $y = f(x)$ is shifted k units right, the resulting function is .....

2. The range of a function $g(x) = 5 - \sqrt{x}$ is .....

3. The area under the curve $y = \frac{1}{1-x}$ from $x = 0$ to $x = 1$ is .....

4. If f is continuous on $[a, b]$ and $u(x)$ and $v(x)$ are differentiable functions of x whose value lie in [a,b] then $\frac{d}{dx}\int_{u(x)}^{v(x)} f(t)dt =$.....

5. Let $f(x)$ and $g(x)$ be positive functions for x sufficiently large. The function $f(x)$ grows faster than $g(x)$ as $x \to \infty$ if .....

6. The linearization $L(x)$ of $f(x) = x^3 - x$ at $x = 1$ is $L(x) =$.....

7. A consistent system with fewer equations than variables has .....

8. A linear system is ..... if it has no solution.

9. Equation of tangent to the curve $y = 4 - x^2$ at $(-1,3)$ is .....

10. If A varies jointly as B and C then A, B and C are related as .....

SECTION "B"
[10Q. × 1 = 10 marks]

Fill in the blank space(s), **DO NOT TICK**, by choosing the most appropriate answer from among the given ones.

11. If $s = -t^3 + 3t^2 - 3t$ represents the position of a body moving on a coordinate line then it's acceleration at $t = 0$ is .....
[0; -3; 6; -6]

12. If the function $f(x) = x^{2/3}$ satisfies the hypotheses of mean value theorem then the constant $c =$.....
[$\frac{1}{3}$; 8; 2; $\frac{2}{3}$]

13. $\frac{d}{dx}(3^x) =$.....

[3^{x-1}; $x3^{x-1}$; $3^x \ln 3$; 3^x]

14. The average value of $f(x) = 3x^2 - 3$ on [0,1] is .....

[-2; 2; -3; 0]

15. The absolute maximum value of the function $y = x^2$ on (0,2] is .....

[no; 1; 2; 4]

16. $\lim_{x\to 0} \frac{1-\cos x}{x+x^2} =$ .....

[0; 1; 1/2; 2]

17. $\int \frac{ydy}{\sqrt{16-y^2}} =$.....

[$\frac{1}{2\sqrt{16-y^2}} + C$; $-\frac{1}{2\sqrt{16-y^2}} + C$; $\sqrt{16-y^2} + C$; $-\sqrt{16-y^2} + C$]

18. The value of C in initial value problem $\frac{dy}{dx} = 3x^{-\frac{2}{3}}$, $y(-1) = -5$ is .....

[6; 5; 4; 3]

19. When the two quantities are so related that if one of them be changed, the other is also changed in the same ratio by .....

[direct variation; indirect variation; a constant; Joint variation]

20. A linear system is called ..... if all of the constant terms are zero.

[consistent; inconsistent; homogeneous; non homogeneous]