

KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

Level : B.E./B.Sc./B. Tech.
Year : I

Course : MATH 101
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date : JUL 07 2017

SECTION "A"
[10Q × 1 = 10 marks]

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

1. The column of a square matrix U are linearly independent if -----
2. The standard basis vector $\vec{e}_1 = (1,0,0)$, $\vec{e}_2 = (0,1,0)$ and $\vec{e}_3 = (0,0,1)$ in \mathcal{R}^3 are -----
3. The Eigen value(s) of matrix $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is (are) -----
4. Suppose that $\sum a_n$ be a series of positive terms and $\lim_{n \rightarrow \infty} \frac{a_{n+1}}{a_n} > 1$ then the series is -----series.
5. The function whose value at any number x is the greatest integer less than or equal to x is called the -----.
6. Function f(x) is continuous at a right end point $x = a$ of its domain if -----
7. The solution of differential equation $\frac{dy}{dx} = \frac{1}{1+x^2}$ at $y(0) = 1$ is $y =$ -----
8. The function $f(x) = |-x|$ defined on the set of real number is ----- function.
9. The function $y = f(x)$ has a jump discontinuity at $x = a$ if it satisfies -----condition.
10. If $\int_0^2 |1-x| dx =$ -----.

SECTION "B"
[10 Q. × 1 = 10 marks]

11. The linear approximation of the function $f(x) = \sqrt{1+x}$ at $x = 0$ is -----
 $\left[1 + \frac{x}{2} \quad 1 - \frac{x}{2} \quad 2 + \frac{x}{2} \quad \frac{x}{2}\right]$
12. The function $f(x) = \frac{\log x}{x}$ is increasing in the interval -----
 $[(1, 2e) \quad (0, e) \quad (2, 2e) \quad (\frac{1}{e}, 2e)]$
13. If $y = a \sin x + b \cos x$, then $y^2 + \left(\frac{dy}{dx}\right)^2$ is a -----

[function of x	function of y
function of x and y	constant function]

