



StudentID/LoginID

Name

PVC Name/Code

Date

Maximum Time Allowed: (2 Hour)

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions. Marks are written adjacent to each question.
2. Do not ask any questions about the contents of this examination from anyone.
 - a.* If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.
 - b.* If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.
 - c.* Write all steps, missing steps may lead to deduction of marks.
3. You should copy the data directly from MATHTYPE into the exam software copying MATHTYPE images from MICROSOFT WORD to the exam application may cause some problem of visibility.
4. The duration of this examination is 120 minutes.
5. This examination is closed book, closed notes, closed neighbors.
6. Calculator is allowed

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

Question No: 1

Marks=2

$$2^{m+1} = \dots$$

- $m = 3$
- a- 100
 - b- 112
 - c- 120
 - d- 140

Question No: 2

Marks=2

If $\int_0^{15} (2x + 1) dx = 1$

Then $\int_0^5 f(x) dx =$

- a- -1
- b- -3
- c- 3
- d- -2

Question
Marks=2

No:

Let $F(x) = \int_1^x \frac{dt}{t}$, the point where the graph of $F(x)$ crosses the x-axis is

- a- 0
- b- 1
- c- -1
- d- None of the above.

The series

$$5 + \frac{5}{4} + \frac{5}{4^2} + \frac{5}{4^3} + \dots + \frac{5}{4^k} + \dots$$

- a- Convergent Series
- b- Divergent Series.
- c- Cannot be determined.
- d- None of the above.

Question
Marks=5

No:

Find a non zero value for the constant k so that

$$\tan kx, \quad x < 0$$

$$f(x) = \frac{x}{\sqrt{3}k}, \quad x > 0$$

will be continuous at x=0.

Note: In order to get maximum marks do all necessary steps.

Question
Marks=10

No:

Find $\frac{dy}{dx}$ if

$$2y^3 + \sin^{-1} y = \cos t, \quad \frac{dt}{dx} = 1$$

Note: In order to get maximum marks do all necessary steps.

Question
Marks=5

No:

Prove (by substitution); If m and n are positive integers, then

$$\int_0^1 x^m (1-x)^n dx = \frac{m! n!}{(m+n)!}$$

Note: In order to get maximum marks do all necessary steps.

Question
Marks=7

No:

Find the volume of the solid that results when the region enclosed

by the curves $x = \csc y$, $y = \frac{3}{4}$, $x = 0$

is revolved about the y-axis.

Note: In order to get maximum marks do all necessary steps. www.vu786.com

Question
Marks=8

No:

Find the arc length in the second quadrant of the curve

$x^{2/3}$ from the point $x = -a$ to $x = -$ ($a > 0$). $\frac{1}{8}$

Note: In order to get maximum marks do all necessary steps.

Question
Marks=10

No:

Find limit

$$\lim_{x \rightarrow 8} \frac{\ln x}{x+1} = \frac{0}{-1}$$

Note: In order to get maximum marks do all necessary steps.

Question
Marks=7

No:

Determine whether the series converges or diverges

$$\sum_{k=1}^{\infty} \frac{2k-1}{5^k}$$

Note: In order to get maximum marks do all necessary steps.