



Virtual University

About Us

MTH202
Solved Final Term Paper 4

Waqar.siddhu@gmail.com

Year
2017

For More Plz Visit


WWW.VirtualAcademyLive.com

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

Paper Pattern

MCQS 40 each 1 mark
Short 4 each 2 marks
Short 4 each 3 marks
long 4 each 5 marks

Question No : 1 of 52		Marks: 1 (Budgeted Time 1 Min)
How many non-isomorphic spanning trees does the following simple graph has?		
		
Answer (Please select your correct option)		WWW.VirtualAcademyLive.com
<input type="radio"/>	6	
<input type="radio"/>	7	
<input type="radio"/>	8	correct
		Made by: Waqar Siddhu

Question No : 2 of 52		Marks: 1 (Budgeted Time 1 Min)
What is the output state of an AND gate if the inputs are 0 and 1?		
Answer (Please select your correct option)		WWW.VirtualAcademyLive.com
<input type="radio"/>	0	correct
<input type="radio"/>	1	
<input type="radio"/>	2	
<input type="radio"/>	3	
		Made by: Waqar Siddhu

Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

Every connected tree

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

does not have spanning tree

☐

may or may not have spanning tree

☐

has a spanning tree

☐

correct

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

The following directed graph can be represented in form of matrix as



Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $\begin{pmatrix} 1 & 0 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

☐ $\begin{pmatrix} 2 & 0 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

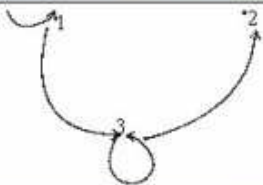
☐ $\begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

☐ $\begin{pmatrix} 1 & 0 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $\begin{pmatrix} 1 & 0 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

☐ $\begin{pmatrix} 2 & 0 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

☐ $\begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

☐ $\begin{pmatrix} 1 & 0 & 1 \\ 1 & 0 & 0 \\ \sim & \sim & \sim \end{pmatrix}$

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \end{bmatrix}$

☐ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 2 \end{bmatrix}$

☐ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 2 \end{bmatrix}$

☐ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

Made by: Waqar Siddhu

Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

Rephrase the following statement in bi-conditional form
 "If you get up early in the morning, you will be healthy"

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ You will be healthy if and only if you get up early in the morning

correct

☐ If you will be healthy then you will get up early in the morning

☐ If you will get up early in the morning then you will be healthy

☐ None of these

Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

An argument is _____ if the conclusion is true when all the premises are true.

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ Invalid

☐ False

☐ Valid

correct

☐ None of these

Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

How many input signals are required for an OR-gate?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

2

correct

☐

8

☐

All multiples of two

☐

1

Made by: Waqar Siddhu

Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

What will be the output of an OR-gate if it has inputs 0 and 1?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

0

☐

1

correct

☐

2

☐

3

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

Let f is defined recursively by $f(0) = 3, f(n+1) = 2f(n) + 3$ then $f(1) =$

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

9

correct

☐

10

☐

18

☐

21

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

Let a and b be integers. Suppose a function Q is defined recursively as follows:

$$Q(a,b) = \begin{cases} 5 & \text{if } a < b \\ Q(a-b, b+2) + a & \text{if } b \leq a \end{cases}$$

Then $Q(2,7) =$

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

7

☐

2

☐

5

☐

0

☐

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

$P(x)$ is called statement or

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

sentence

☐

proposition

☐

correct

inequality

☐

none of these

☐

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

The direct proof of a statement $p \rightarrow q$ involves

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

considering q and then try to reach p

☐

correct

considering p and then try to reach q

☐considering p and $\sim q$ and try to reach contradiction☐

None of these

☐

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

The indirect proof of a statement $p \rightarrow q$ involves

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

Considering $\neg q$ and then try to reach p

☐

Considering p and $\neg q$ are true and try to reach contradiction

☒

Considering p and then try to reach q

correct

☐

Considering $\neg p$ and then try to reach q

Made by: Waqar Siddhu

Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

The contradiction proof of a statement $p \rightarrow q$ involves

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

Considering p and then try to reach q

☐

Considering $\neg q$ and then try to reach $\neg p$

correct

☐

Considering p and $\neg q$ are true and try to reach contradiction

☐

None of these

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

$n! > 2^n$ is true for all integers

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

$n \geq 4$

☐

$n \leq 4$

☐

$n \geq 3$

☐

$n \geq 2$

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

An integer n is prime if and only if $n > 1$ and for all positive integers r and s , if $n = r \cdot s$ then

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

$r = 1$ and $s = 2$

correct

☐

$r = 1$ and $s = 0$

☐

$r = 2$ and $s = 3$

☐

None of these

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

The word ----- refers to a step-by-step method for performing some action.

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

Series

☐

Relation

☐

Algorithm

correct

☐

Function

Made by: Waqar Siddhu

Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

$\gcd(4, 12) =$

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

2

☐

3

☐

4

correct

☐

12

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

How many ways are there to select five players from a 10 members tennis team to arrange a match with another school?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $C(10,5)$

correct

☐ $C(5,10)$ ☐ $P(10,5)$ ☐

None of these

Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

The value of $\frac{n!}{(n-1)!}$ is

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ n

correct

☐ $n-1$ ☐

0

☐

can not be determined

Made by: Waqar Siddhu

Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

The number of k -combinations that can be chosen from a set of n elements can be written as

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ nC_k ☐ kC_n ☐ nP_k ☐ kP_n

Made by: Waqar Siddhu

Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

If the order matters and repetition is not allowed then total number of ways for selecting k sample from n number of elements is

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ n^k ☐ $C(n+k-1, k)$ ☐ $P(n, k)$ ☐ $C(n, k)$

Made by: Waqar Siddhu

Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

When $A \subseteq B$, then B is called a ----- of A.

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ superset

correct

☐ subset☐ power set☐ none of these

Made by: Waqar Siddhu

Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

Null set is denoted by

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ ϕ or $\{ \}$

correct

☐ A☐ N

Made by: Waqar Siddhu

Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

Among 200 people, 150 either play tennis or snooker or both. If 85 play tennis and 60 play tennis and snooker, how many play snooker?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ 125☐ 225☐ 85☐ 25

correct

Made by: Waqar Siddhu

Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

If A is a finite set then $n(A^c) =$

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $n(U) - n(A)$

correct

☐ $n(U) + n(A)$ ☐ $n(A) - n(U)$ ☐ 0

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

The value of $[x]$ for $x = -3.01$ is

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ -3.01☐ -3

correct

☐ -2☐ -1.99

Made by: Waqar Siddhu

Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the probability of getting a number greater than 4 when a die is thrown?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $\frac{1}{2}$ ☐ $\frac{3}{2}$ ☒ $\frac{1}{3}$

correct

☐ 1

Made by: Waqar Siddhu

Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

If two fair dice are thrown, what is the probability of getting a double six?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $\frac{1}{6}$ ☒ $\frac{1}{36}$

correct

☐ 1☐ $\frac{1}{2}$

Made by: Waqar Siddhu

Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

A die is thrown twice. What is the probability that the sum of the number of dots shown is 3 or 11?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ $\frac{2}{3}$ ☒ $\frac{1}{9}$

correct

☐ $\frac{1}{2}$

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

A rule that assigns a numerical value to each outcome in a sample space is called

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ One to one function☐☐ Conditional probability☐☐ Random variable☐

correct

Made by: Waqar Siddhu

Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

The expectation μ for the following table is

x_i	1	3
$f(x_i)$	0.4	0.1

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ 0.5☐☐ 3.4☐☐ 0.3☐☐ 0.7☐

Made by: Waqar Siddhu

Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

How many vertices will the graph have if it contain 16 edges and all vertices of degree 2?

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ 14☐☐ 16☐☐ 18☐☐ 32☐

correct

Made by: Waqar Siddhu

Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

Two distinct edges with the same set of end points are called

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ Isolated☐☐ Incident☐☐ Parallel☐

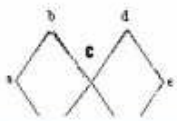
correct

Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph given below



Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

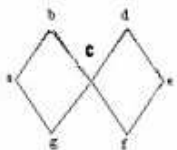
☐ has not Euler circuit☐☐ has Hamiltonian circuit☐☐ does not have Hamiltonian circuit☐

correct

Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ has not Euler circuit☐☐ has Hamiltonian circuit☐☐ does not have Hamiltonian circuit☐

Made by: Waqar Siddhu

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

Changing rows of a matrix into its columns is called

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ symmetric matrix☐ transpose of matrix

correct

☐ adjoint of matrix☐ Hermitian Matrix

Made by: Waqar Siddhu

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

If the transpose of any square matrix is equal to the matrix itself then it is called

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐ Additive Inverse☐ Hermitian Matrix☐ Symmetric Matrix☐ Singular Matrix

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

The given graph is called a ----- graph.



Answer (Please select your correct option)

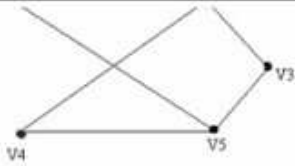
WWW.VirtualAcademyLive.com

☐ Simple☐ Complete☐ Complete Bipartite☐ Non-planar

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

Simple

☐

Complete

☐

Complete Bipartite

☐

Non-planar

Made by: Waqar Siddhu

Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

In a planar graph, the number of crossing edges are

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

0

☐

1

☐

2

☐

3

Made by: Waqar Siddhu

Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

If T is a full binary tree and has 5 internal vertices then the total vertices of T are

Answer (Please select your correct option)

WWW.VirtualAcademyLive.com

☐

11

☐

12

☐

13

☐

10

Made by: Waqar Siddhu

Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

How many ordered selections of two elements can be made from the set of four elements?

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

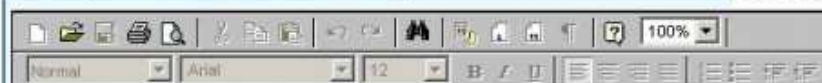
Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

Suppose that f is defined recursively by $f(0) = 1, f(n+1) = 3f(n) + 1$ then find $f(2)$.

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 43 of 52

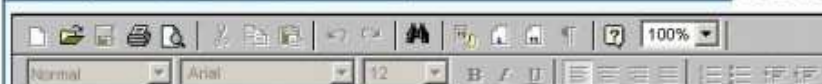
Marks: 2 (Budgeted Time 4 Min)

Find $P(A|B)$ where

$$P(A) = \frac{1}{2}, P(B) = \frac{1}{3} \text{ and } P(A \cap B) = \frac{1}{4}$$

Answer ([Please click here to Add Answer](#))

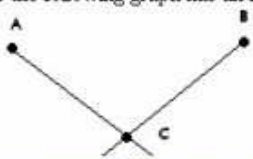
WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

Check whether the following graph has an Euler circuit, justify your answer.



Answer ([Please click here to Add Answer](#)) WWW.VirtualAcademyLive.com

Normal Arial 12 B I U 100%

Made by: Waqar Siddhu

Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Suppose that p and q are statements so that $q \rightarrow p$ is false. Find the truth values of each of the following:

1. $\sim q \rightarrow p$
2. $p \vee q$
3. $p \leftrightarrow q$

Answer ([Please click here to Add Answer](#)) WWW.VirtualAcademyLive.com

Normal Arial 12 B I U 100%

Made by: Waqar Siddhu

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

How many distinguishable ways can the letter of the word HULLABALOO be arranged.

Answer ([Please click here to Add Answer](#)) WWW.VirtualAcademyLive.com

Normal Arial 12 B I U 100%

Made by: Waqar Siddhu

Question No : 47 of 52

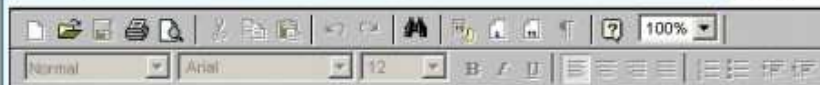
Marks: 3 (Budgeted Time 6 Min)

Find the variance σ^2 of the distribution given in the following table.

x_i	1	3	4	5
$f(x_i)$	0.4	0.1	0.2	0.3

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 47 of 52

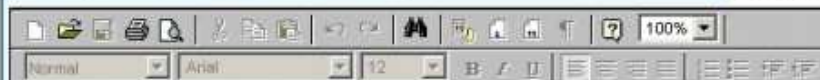
Marks: 3 (Budgeted Time 6 Min)

Find the variance σ^2 of the distribution given in the following table.

x_i	1	3	4	5
$f(x_i)$	0.4	0.1	0.2	0.3

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

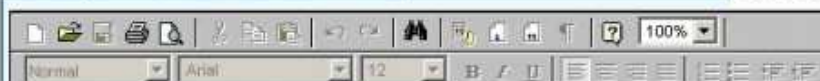
Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

Determine whether the following graph has Hamiltonian circuit, justify your answer.

Answer ([Please click here to Add Answer](#))

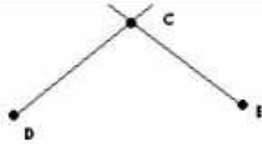
WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

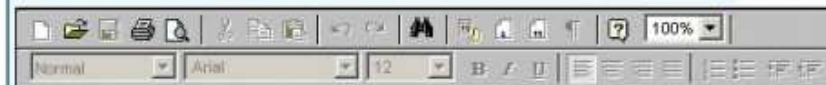
Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)



Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

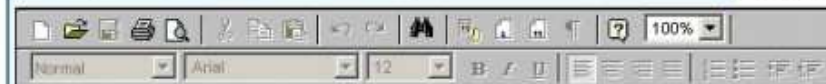
Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

Use Kruskal's Algorithm to draw the minimal spanning tree for the graph below. Indicate the order in which edges are added to form a tree.

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

The fifth term of an arithmetic sequence is 17 and ninth term is 37 find the first four terms of this sequence.

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

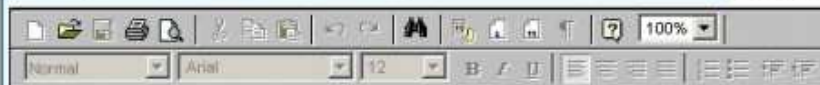
Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

Find the M number of ways that ten chocolates can be divided among three children if the youngest child is to receive four chocolates and each of the others three chocolates.

Answer ([Please click here to Add Answer](#))

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 52 of 52

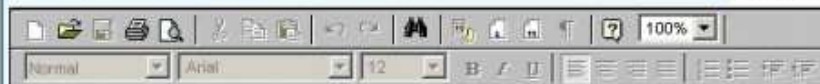
Marks: 5 (Budgeted Time 10 Min)

Find all edges which are incident on v_1 , all vertices that are adjacent to v_1 , all loops, all parallel edges and all isolated vertices.



Answer ([Please click here to Add Answer](#))

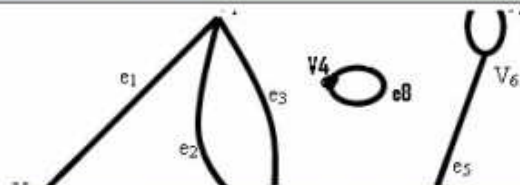
WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)



Answer ([Please click here to Add Answer](#))

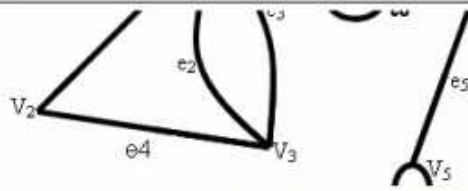
WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)



Answer (Please [click here](#) to Add Answer)

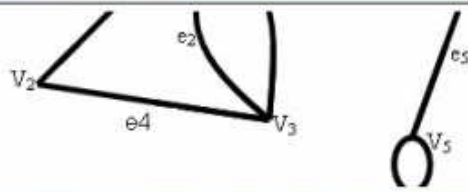
WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)



Answer (Please [click here](#) to Add Answer)

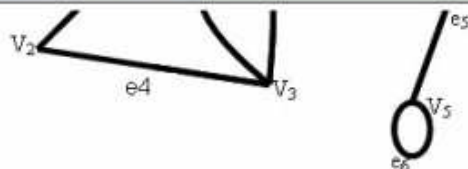
WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu

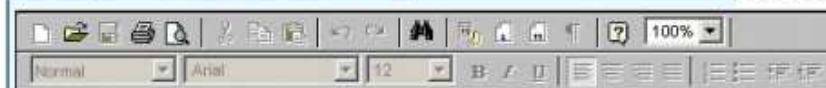
Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)



Answer (Please [click here](#) to Add Answer)

WWW.VirtualAcademyLive.com



Made by: Waqar Siddhu