



Virtual University

About Us

MTH202  
Solved Final Term Paper 6

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Year  
2017

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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)

A sub graph of a graph G that contains every vertex of G and is a tree is called

Answer ( Please select your correct option )

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Trivial tree

☐

empty tree

☐

Spanning tree

☐

correct

Made by: Waqar Siddhu

Question No : 2 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 )

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6

☐

7

☐

8

☐

correct

Made by: Waqar Siddhu



Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

A vertex of degree greater than 1 in a tree is called a

Answer ( Please select your correct option )

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Branch vertex

☐

correct

Terminal vertex

☐

Ancestor

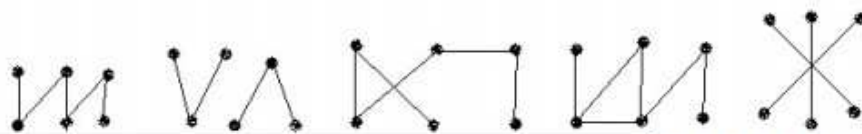
☐

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following graphs are tree?



Answer ( Please select your correct option )

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a, b, c

☐

b, c, d

☐

c, d, e

☐

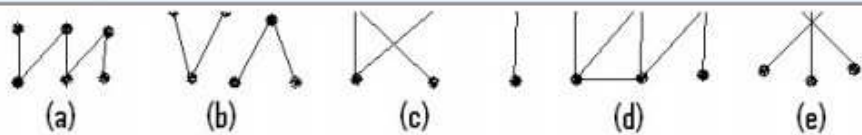
a, c, e

☐

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Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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a, b, c

☐

b, c, d

☐

c, d, e

☐

a, c, e

☐

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Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

Any two spanning trees for a graph

Answer ( Please select your correct option )

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☐

Does not contain same number of edges

☐

Have the same degree of corresponding edges

☐

contain same number of edges

correct

☐

May or may not contain same number of edges

Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $p$  &  $q$  are statements, then their disjunction is

Answer ( Please select your correct option )

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☐

$p$  or  $q$

correct

☐

$p$  and  $q$

☐

$p$  and  $q$  and  $p$

☐

None of these

Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $p$  and  $q$  are statement variables then bi-conditional of  $p$  and  $q$  is denoted by

Answer ( Please select your correct option )

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☐

$p \leftrightarrow q$

correct

☐

$\therefore p \rightarrow q$

☐

$\therefore q \rightarrow p$

☐

None of these

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Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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2

☐correct

8

☐

All multiples of two

☐

1

☐

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Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

A set which contains no element is called a

Answer ( Please select your correct option )

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Null set

☐correct

Universal set

☐

None of these

☐

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

If A and B are two sets then the set of all elements that belong to A but not B is

Answer ( Please select your correct option )

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 $A \cup B$ ☐ $A \cap B$ ☐ $A - B$ ☐correct

None of these

☐

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

Inverse of relation can be obtained by

Answer ( Please select your correct option )

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☐ changing signs of elements in order pairs.
☐
☐ changing position of elements in order pairs.
☐correctnot sure
☐ taking multiplicative inverse of elements in order pairs.
☐

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $f(x) = 2x+1$  and  $g(x) = x^2-1$  then  $g \circ f(x) =$ 

Answer ( Please select your correct option )

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☐  $x^3 - 2x^2$ 
☐
☐  $x^4 - 2x^2$ 
☐correct
☐  $x^4 + 1$ 
☐
☐  $x^4 + 2x^2$ 
☐

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $f$  and  $g$  are two one-to-one functions then their composition that is  $f \circ g$  is

Answer ( Please select your correct option )

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☐ Not One-to-One
☐
☐ On to
☐
☐ One-to-One
☐
☐ One-to-One and Onto
☐

Made by: Waqar Siddhu



Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

If the  $n$ th term of a sequence is  $a_n = 2(-3)^n + 5^n$  then the term  $a_1$  is

Answer ( Please select your correct option )

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☐ -1correct☐ 0☐ 1☐ 2

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Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

When  $5^k$  is even, then  $5^k + 5^k + 5^k$  must be

Answer ( Please select your correct option )

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☐ evencorrect☐ odd☐ negative☐ none of these

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Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

Proof of a statement by induction comprises of two basic steps:

Answer ( Please select your correct option )

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☐ Inductive and Deductive☐ Basis and Inductivecorrect☐ Arranging and Sorting☐ None of these

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

In Mathematical Induction, inductive step is

Answer ( Please select your correct option )

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☐

$\forall k, P(k) \rightarrow P(n)$

☐

$\forall k, P(k) \rightarrow P(k+1)$

correct☐

$\forall k, P(k) \rightarrow P(n+1)$

☐

$\forall k, P(k) \rightarrow P(k-1)$

Made by: Waqar Siddhu

Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

 $n^2 > n + 3$  is true for all integers

Answer ( Please select your correct option )

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☐

$n \geq 3$

correct☐

$n \geq 2$

☐

$n \leq 3$

☐

$n \geq 1$

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

For all positive integers  $n^2 + n$  is divisible by

Answer ( Please select your correct option )

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☐

3

☐

2

correct☐

7

☐

5

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Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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- ☐ Considering  $p$  and then try to reach  $q$
- ☐ Considering  $\neg q$  and then try to reach  $\neg p$
- ☐ Considering  $p$  and  $\neg q$  are true and try to reach contradiction
- ☐ None of these

correct

not totally sure

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Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

The sum of two irrational numbers must be

Answer ( Please select your correct option )

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- ☐ irrational number
- ☐ rational number
- ☐ integer
- ☐ depends on numbers which are added

correct

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Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

The greatest common divisor of 5 and 10 is

Answer ( Please select your correct option )

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- ☐ 5
- ☐ 0
- ☐ 1
- ☐ None of these

correct

Made by: Waqar Siddhu



Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $n(A_i)$  denotes the number of elements in set  $A_i$  then  $n(A_1 \cup A_2 \cup \dots \cup A_m) = n(A_1) + n(A_2) + \dots + n(A_m)$  where

Answer ( Please select your correct option )

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☐  $A_i \cup A_j = \phi$  if  $i = j$

☐  $A_i \cap A_j = \phi$  if  $i = j$

☐  $A_i \cup A_j = \phi$  if  $i \neq j$

☐  $A_i \cap A_j = \phi$  if  $i \neq j$

correct

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Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

An arrangement of objects with the consideration of order is called

Answer ( Please select your correct option )

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☐ Permutation

☐ Combination

☐ Selection

☐ None of these
correct80% sure

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Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

If the order matters and repetition is allowed then total number of ways for selecting k sample from n number of elements is

Answer ( Please select your correct option )

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☐  $C(n, k)$

☐  $n^k$

☐  $C(n+k-1, k)$

☐  $P(n, k)$

correct

Made by: Waqar Siddhu

Question No : 26 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 )

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

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

If the order does not matter 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 )

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

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Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

The same element can never appear ----- in a set.

Answer ( Please select your correct option )

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☐ twicecorrect☐ once☐ thrice

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Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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☐  $n(U) - n(A)$ correct☐  $n(U) + n(A)$ ☐  $n(A) - n(U)$ ☐ 0

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Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

Compute  $\lfloor -1.01 \rfloor$ 

Answer ( Please select your correct option )

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☐ -2☐ -1correct☐ 2☐ 1

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Question No : 31 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 )

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

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Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

The ----- of the experiment is the set of possible outcomes.

Answer ( Please select your correct option )

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event

☐

sample space

☐

correct

subset

☐

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Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $P(A \cap B) \neq P(A)P(B)$  then the events A and B are called

Answer ( Please select your correct option )

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Dependent

☐

correct

Independent

☐

Exclusive

☐

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Question No : 34 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 )

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One to one function

☐

Conditional probability

☐

Random variable

☐

correct

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Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

The expectation of  $x$  is equal to

Answer ( Please select your correct option )

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Sum of all terms

☐

Sum of all terms divided by number of terms

☐correct $\sum x f(x)$ ☐

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Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

The expectation  $\mu$  for the following table is

$x_i$	1	3
$f(x_i)$	0.4	0.1

Answer ( Please select your correct option )

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0.5

☐

3.4

☐

0.3

☐

0.7

☐

Made by: Waqar Siddhu

Question No : 37 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 )

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Isolated

☐

Incident

☐

Parallel

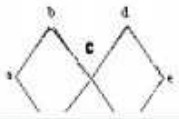
☐correct

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

The graph given below



Answer ( Please select your correct option )

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has not Euler circuit

☐

has Hamiltonian circuit

☐

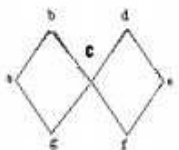
does not have Hamiltonian circuit

☐correct

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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has not Euler circuit

☐

has Hamiltonian circuit

☐

does not have Hamiltonian circuit

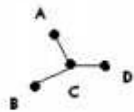
☐correct

Made by: Waqar Siddhu

Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

In the given graph, vertex "C" has degree



Answer ( Please select your correct option )

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2

☐

3

☐correct

4

☐

6

☐

Made by: Waqar Siddhu



Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

Suppose that a connected planar simple graph has 30 edges. If a plane drawing of this graph has 20 faces, how many vertices does the graph have?

Answer ( Please select your correct option )

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12

☐correct

13

☐

14

☐

8

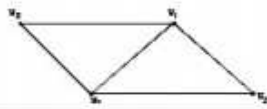
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Made by: Waqar Siddhu

Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Find a spanning tree of the graph given below.



Answer ( Please click here to Add Answer )

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Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

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

Answer ( Please click here to Add Answer )

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Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

List all 2-combinations for the set {a,b,c}.

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

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Question No : 44 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 )

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

Out of five people in an office, just 3 are to be selected to go to an exhibition. In how many ways can the three be chosen?

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

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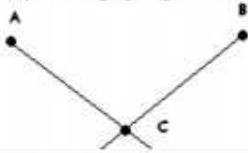
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Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

Check the regularity of the graph (given below) and Justify your answer.



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

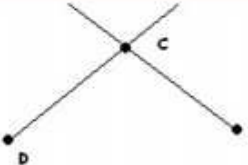
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Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)



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

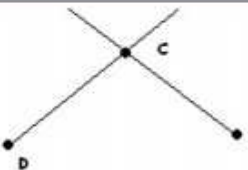
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Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)



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

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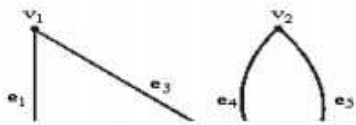
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Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

Find the adjacency matrix of the graph shown below.

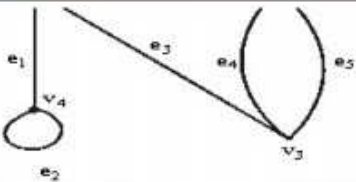
Answer ( Please [click here](#) to Add Answer )

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Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

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

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Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

Suppose that  $R$  is a symmetric relation on a set  $A$ . Prove that complementary relation  $\bar{R}$  is also symmetric.

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

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**Made by: Waqar Siddhu**



Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

Convert into logical form and then write converse, inverse and contra positive of the following statement.  
"Only if Sana studies, she will pass the test".

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

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Normal Arial 12 B I U

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Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

Find the GCD of 255561, 25 using Division Algorithm.

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

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Normal Arial 12 B I U

Made by: Waqar Siddhu

Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

A pair of fair dice is thrown. Find the probability P that the sum is 10 or greater if  
(i) 5 appear on first die.  
(ii) 5 appear on at least one die.

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

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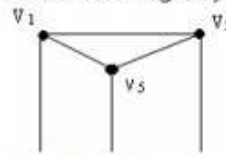
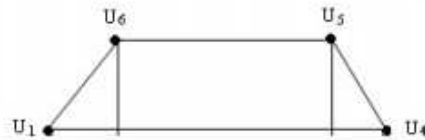
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Question No : 52 of 52

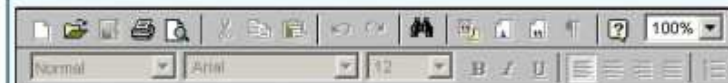
Marks: 5 (Budgeted Time 10 Min)

Determine whether the graphs given below are isomorphic. Justify your answer. Also discuss the regularity of both graphs.



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

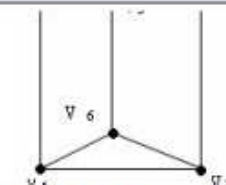
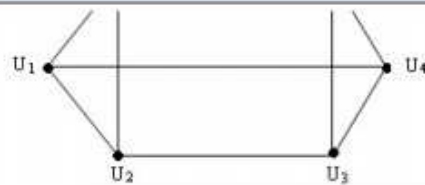
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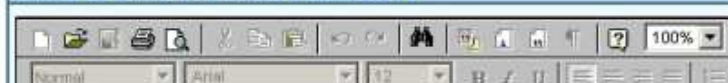
Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)



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

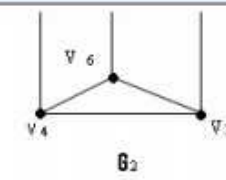
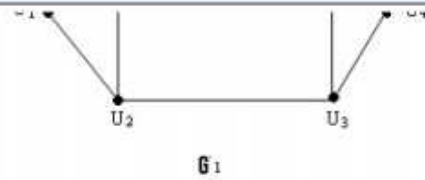
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Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)



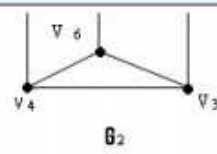
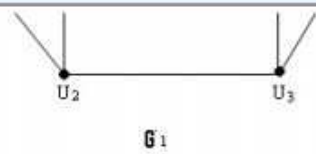
Answer ( Please [click here](#) to Add Answer )

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Answer ( Please [click here](#) to Add Answer )[WWW.VirtualAcademyLive.com](http://WWW.VirtualAcademyLive.com)**Made by: Waqar Siddhu**