



Virtual University

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MTH202
Solved Final Term Paper 5

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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)

A circuit that consist of a single vertex is called

Answer (Please select your correct option)

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Tree

☐

Empty

☐

Trivial

☐

correct

Made by: Waqar Siddhu

Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

A vertex of degree 1 in a tree is called

Answer (Please select your correct option)

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☐ Internal vertex☐☐ Terminal vertex☐

correct

☐ Sibling vertex☐

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Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

Complete graph is planar if

Answer (Please select your correct option)

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☐ $n = 4$ ☐☐ $n > 4$ ☐☐ $n \leq 4$ ☐

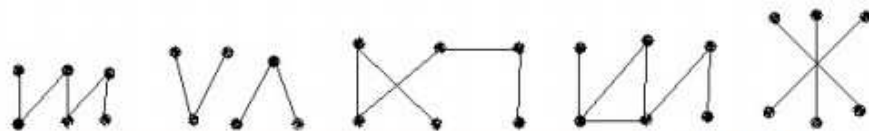
correct

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Question No : 5 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 : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

Euler formula for graphs is

Answer (Please select your correct option)

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☐ $f = e - v$

☐ $f = e + v + 2$

☐ $f = e - v - 2$

☐ $f = e - v + 2$

correct

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Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

The logical expression $p \vee q$ will be read as

Answer (Please select your correct option)

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☐ $p \text{ or } q$

correct

☐ $p \text{ and } q$

☐ $p \times q$

☐ $p - q$

Made by: Waqar Siddhu

Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

In method of proof by contradiction, we suppose the statement to be proved is false.

Answer (Please select your correct option)

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☐ True

☐ False

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

Let U be the universal set and A is its subset then $A \cap A^c$ is equal to

Answer (Please select your correct option)

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☐ A ☐ A^c ☐ ϕ

correct

☐ U

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

If A and S are two reflexive relations then $A \cap S$ will be

Answer (Please select your correct option)

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☐ Symmetric☐ Reflexive

correct

☐ Transitive

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Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

If two relations are reflexive then their composition is

Answer (Please select your correct option)

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☐ Anti-symmetric☐ Reflexive

correct

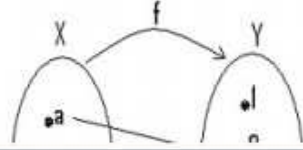
☐ Irreflexive☐ Symmetric

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

If $X = \{a, b, c\}$ and $Y = \{1, 2, 3, 4\}$. Let us define a function $f: X \rightarrow Y$ as shown in following figure then the inverse image of 1 is



Answer (Please select your correct option)

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1

☐

2

☐

1,2

☐

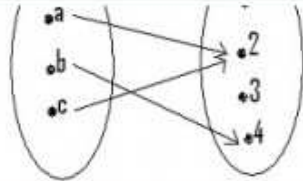
None of these

☐

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Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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1

☐

2

☐

1,2

☐

None of these

☐

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Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

Let f and g be the functions defined by $f(x) = 2x + 3$ and $g(x) = 3x + 2$ then composition of f and g is

Answer (Please select your correct option)

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 $6x + 6$ ☐ $5x + 5$ ☐ $6x + 7$ ☐

correct

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Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

The composition of two functions is _____.

Answer (Please select your correct option)

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☐ One to one☐ Bijective☐ Not commutative

correct

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

Let f is defined recursively by $f(0) = 5, f(n+1) = 4f(n) + 2$ then $f(1) =$

Answer (Please select your correct option)

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☐ 8☐ 10☐ 21☐ 22

correct

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Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

 $P(n)$ is called statement or

Answer (Please select your correct option)

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☐ sentence☐ proposition☐ inequality☐ none of these

correct

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

Let n and d be the integers and $d \neq 0$. Then n is divisible by d or d divides n iff

Answer (Please select your correct option)

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☐ $n = k.d$ for some integer k .

correct

☐ $n - k = d$ ☐ $n.d = 1$ ☐ $n.k = 0$

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Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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

correct

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

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Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

The contra positive 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 $\neg p$

correct

☐ Considering p and $\neg q$ and try to reach contradiction☐ None of these

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Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

For all positive integer values of n , $5^n - 1$ is divisible by

Answer (Please select your correct option)

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3

☐

4

☐

correct

6

☐

0

☐

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Question No : 21 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 $n = rs$ then

Answer (Please select your correct option)

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 $r = 1$ and $s = 2$ ☐ $r = 1$ and $s = 0$ ☐ $r = 2$ and $s = 3$ ☐

None of these

☐

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Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

An integer n is odd for some integer k iff

Answer (Please select your correct option)

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 $n = 2k$ ☐ $n = 2(k+1)$ ☐ $n = 2(k-1)$ ☐ $n = 2k + 1$ ☐

correct

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Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

If a and b are any positive integers with $b \neq 0$ and q and r are non negative integers such that $a = bq + r$ then

Answer (Please select your correct option)

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☐ $\gcd(a, b) = \gcd(b, r)$

☐ $\gcd(a, r) = \gcd(b, r)$

☐ $\gcd(a, q) = \gcd(q, r)$

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Question No : 24 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

correct

☐ 0☐ 1☐ None of these

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Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

How many ways are there to select a first prize winner, a second prize winner and a third prize winner from 100 different people who have entered in a contest.

Answer (Please select your correct option)

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☐ $P(97, 3)$

☐ $P(100, 3)$

☐ $P(100, 97)$

☐ None of these

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Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

If one event can occur in n_1 ways, a second event can occur in n_2 (different) ways, then the total number of ways in which exactly one of the events (i.e., first or second) can occur is

Answer (Please select your correct option)

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☐ $n_1 + n_2$ ☐ $n_1 n_2$ ☐ $2n_1 n_2$ ☐ $2^{n_1 n_2}$

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Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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☐ 0☐ $n(n-1)$ ☐ $n^2 + n$ ☐ can not be determined

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Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

If $(A \cup B) = A$ then

Answer (Please select your correct option)

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☐ $(A \cap B) = B^c$ ☐ $(A \cap B) = A$ ☐ $(A \cap B) = B$

correct

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Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

To find the number of unordered partitions, we have to count the ----- partitions and then divide it by suitable number to erase the order in partitions.

Answer (Please select your correct option)

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☐ unordered☐ ordered

correct

☐ random☐ None of these

Made by: Waqar Siddhu

Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

If A and B are finite (overlapping) sets, then which of the following must be true

Answer (Please select your correct option)

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☐ $n(A \cup B) = n(A) + n(B)$ ☐ $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

correct

☐ $n(A \cup B) = \phi$ ☐ None of these

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the smallest integer N such that $\left\lceil \frac{N}{6} \right\rceil = 9$

Answer (Please select your correct option)

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☐ 46☐ 29☐ 49☐ 64

correct

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Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

A procedure that yields a given set of possible outcomes is called

Answer (Please select your correct option)

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☐ Event

☐

☐ Outcome

☐

☐ Experiment

☐

correct

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Question No : 33 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

Made by: Waqar Siddhu

Question No : 34 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 : 35 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)

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☐ $\frac{1}{6}$

correct

☐ $\frac{1}{36}$ ☐ 1☐ $\frac{1}{2}$

Made by: Waqar Siddhu

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

If a die is thrown then the probability that the dots on the top are prime numbers or odd numbers is

Answer (Please select your correct option)

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☐ 1☐ $\frac{1}{3}$ ☐ $\frac{2}{3}$

correct

Made by: Waqar Siddhu

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

The expectation μ for the following table is

x_i	1	3
$P(x_i)$	0.4	0.1

Answer (Please select your correct option)

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☐ 0.5☐ 3.4☐ 0.3☐ 0.7

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Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

A line segment joining pair of vertices is called

Answer (Please select your correct option)

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☐ Loop☐☐ Edge☐

correct

☐ Node☐

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Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

Changing rows of a matrix into its columns is called

Answer (Please select your correct option)

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☐ symmetric matrix☐☐ transpose of matrix☐

correct

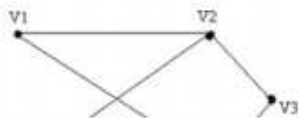
☐ adjoint of matrix☐☐ Hermitian Matrix☐

Made by: Waqar Siddhu

Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

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



Answer (Please select your correct option)

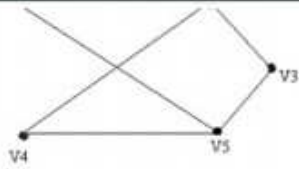
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☐ Simple☐☐ Complete☐☐ Complete Bipartite☐☐ Non-planar☐

Made by: Waqar Siddhu

Question No : 40 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 : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Suppose that a connected planar simple graph has 20 edges. If a plane drawing of this graph has 10 faces, how many vertices does this graph have?

Answer (Please click here to Add Answer)

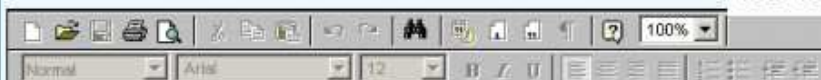
WWW.VirtualAcademyLive.com**Made by: Waqar Siddhu**

Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

Suppose $A = \{1, 2, 3, 4\}$ and $B = \{x, y, z\}$ are two sets and R is a relation from A to B as $R = \{(1, y), (1, z), (3, y), (4, x), (4, z)\}$ then determine the matrix representation of the R .

Answer (Please click here to Add Answer)

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Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

A cafeteria offers a choice of two soups, five sandwiches, three desserts and three drinks. How many different lunches, each consisting of a soup, a sandwich, a dessert and a drink are possible?

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

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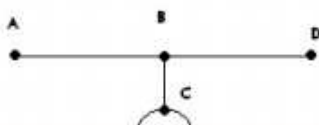


Made by: Waqar Siddhu

Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

Find the degree of each vertex in the figure (given below).



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

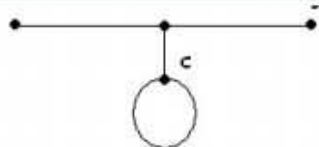
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Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)



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

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

Suppose that R and S are two reflexive relations on a set A . Prove or disprove $R \cap S$ is reflexive.

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

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Made by: Waqar Siddhu

Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

- i) Evaluate $P(5, 2)$
- ii) How many 4-permutations are there of a set of seven objects?

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

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Made by: Waqar Siddhu

Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

Two cards are drawn at random from an ordinary deck of 52 cards. Find the probability that both are spade.

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

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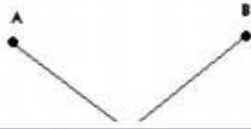


Made by: Waqar Siddhu

Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

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

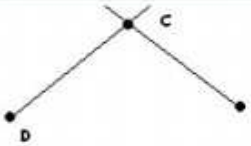
Answer ([Please click here to Add Answer](#))

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Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

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)

Draw a binary tree to represent the following expression
 $a/(b-c \cdot d)$

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

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**Made by: Waqar Siddhu**

Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = \frac{2x+1}{2x+2}$. Is f onto?

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

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Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

Find the GCD of 1075, 45 using Division Algorithm.

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

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Made by: Waqar Siddhu

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

Is it possible to have a simple graph with four vertices of degree 1, 1, 3, and 3. If no then give reason? (Justify your answer)

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

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