



Virtual University

About Us

MTH202
Solved Final Term Paper 3

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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 M

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

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Question No : 2 of 52

Marks: 1 (Budgeted Time 1 M

If a tree has 8 vertices then it has

Answer (Please select your correct option)

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6 edges

☐

7 edges

☐

correct

9 edges

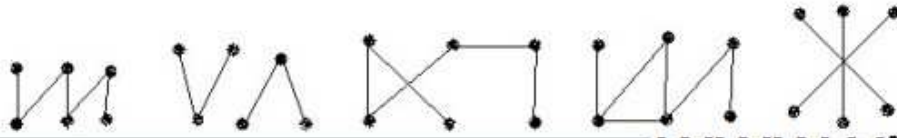
☐

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Question No : 3 of 52

Marks: 1 (Budgeted Time 1 M

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

☐

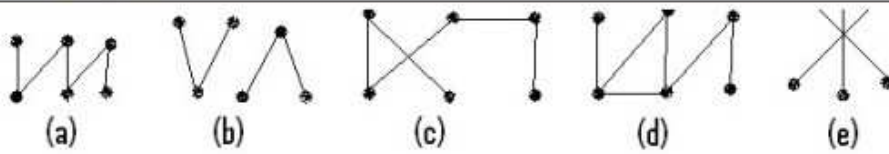
a, c, e

☐

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Question No : 3 of 52

Marks: 1 (Budgeted Time 1 M



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 M

Every connected tree

Answer (Please select your correct option)

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does not have spanning tree

☐

may or may not have spanning tree

☐

has a spanning tree

☐

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Question No : 5 of 52

Marks: 1 (Budgeted Time 1 M

Which of the following law is used to show?
 $p \leftrightarrow q = q \leftrightarrow p$

Answer (Please select your correct option)

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☐ Implication Law☐ Commutative law☐ Exportation Law☐ None of these

correct

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Question No : 6 of 52

Marks: 1 (Budgeted Time 1 M

If p = It is red,
 q = It is hot
Then "It is not red but hot" is denoted by : $p \wedge q$.

Answer (Please select your correct option)

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☐ True☐ False

correct

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Question No : 6 of 52

Marks: 1 (Budgeted Time 1 M

If p = It is red,
 q = It is hot
Then "It is not red but hot" is denoted by : $p \wedge q$.

Answer (Please select your correct option)

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☐ True☐ False

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Question No : 7 of 52

Marks: 1 (Budgeted Time 1 M

A circuit with two input signals and one output signal is called

Answer (Please select your correct option)

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☐ NOT-gate (or inverter)☐☐ AND- gate☐

correct

☐ None of these☐

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Question No : 8 of 52

Marks: 1 (Budgeted Time 1 M

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☐

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Question No : 9 of 52

Marks: 1 (Budgeted Time 1 M

If $A = \{ \{5\} \}$, then power set of A is equal to

Answer (Please select your correct option)

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☐ $\{ \{ \emptyset, \{5\} \} \}$ ☐☐ $\{ \emptyset, \{5\} \}$ ☐

correct

☐ $\{ \emptyset, \{ \{5\} \} \}$ ☐☐ $\{ \{ \emptyset \}, \{5\} \}$ ☐

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Question No : 10 of 52

Marks: 1 (Budgeted Time 1 M)

Let A be a set and R be a binary relation defined on it, if for all $t \in A, (t, t) \notin R$ then R is

Answer (Please select your correct option)

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☐ Anti-symmetric☐ Symmetric☐ Irreflexive☐ Reflexive

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Question No : 11 of 52

Marks: 1 (Budgeted Time 1 M)

Every relation _____

Answer (Please select your correct option)

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☐ may or may not be a function.☐ is a bijective mapping.☐ Cartesian product set☐ is a function.

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Question No : 12 of 52

Marks: 1 (Budgeted Time 1 M)

Let g be the function defined by $g(x) = 3x + 2$ then $g \circ g(x) =$

Answer (Please select your correct option)

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☐ $9x^2 + 4$ ☐ $6x + 4$ ☐ $9x + 8$

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Question No : 14 of 52

Marks: 1 (Budgeted Time 1 M

If $1+2+3+\dots+n = \frac{n(n+1)}{2}$ for all integers $n \geq 1$ then $P(k)$ is

Answer (Please select your correct option)

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☐ $1+2+3+\dots+k = \frac{k(k+1)}{2}$

☐ $1+2+3+\dots+n = \frac{n(n+1)}{2}$

☐ $1+2+3+\dots+(k+1) = \frac{(k+1)(k+2)}{2}$

correct

☐ $1+2+3+\dots+(k-1) = \frac{k(k-1)}{2}$

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Question No : 15 of 52

Marks: 1 (Budgeted Time 1 M

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

Answer (Please select your correct option)

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☐ $n \geq 3$

correct

☐ $n \geq 2$

☐ $n \leq 3$

☐ $n \geq 1$

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Question No : 16 of 52

Marks: 1 (Budgeted Time 1 M

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

Answer (Please select your correct option)

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☐ considering q and then try to reach p

☐ considering p and then try to reach q

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

☐ None of these

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 M

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

Answer (Please select your correct option)

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☐ $n \geq 4$ ☐ $n \leq 4$ ☐ $n \geq 3$ ☐ $n \geq 2$

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Question No : 18 of 52

Marks: 1 (Budgeted Time 1 M

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)

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☐ $r = 1$ and $s = 2$

correct

☐ $r = 1$ and $s = 0$ ☐ $r = 2$ and $s = 3$ ☐ None of these

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Question No : 19 of 52

Marks: 1 (Budgeted Time 1 M

What is the contra positive of the given statement:
If square root of every prime number is irrational then square root of 2 is irrational.

Answer (Please select your correct option)

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☐ If square root of 2 is not irrational then square root of every prime number is not irrational.

correct

☐ If square root of 2 is irrational then square root of every prime number is not irrational.☐ If square root of 2 is not irrational then square root of every prime number is irrational.☐ If square root of every prime number is not irrational then square root of 2 is not irrational.

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Question No : 20 of 52

Marks: 1 (Budgeted Time 1 M

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

Answer (Please select your correct option)

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☐ Series☐ Relation☐ Algorithm☐ Function

correct

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Question No : 21 of 52

Marks: 1 (Budgeted Time 1 M

If r is a positive integer then $\gcd(r, 0) =$

Answer (Please select your correct option)

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☐ None of these☐ r ☐ 5☐ 0

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Question No : 22 of 52

Marks: 1 (Budgeted Time 1 M

Suppose that there are eight runners in a race first will get gold medal, the second will get silver and third will get bronze. How many different ways are there to award these medals if all possible outcomes of race can occur and there is no tie.

Answer (Please select your correct option)

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☐ $P(8, 3)$ ☐ $P(100, 97)$ ☐ $P(97, 3)$ ☐ None of these

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Question No : 23 of 52

Marks: 1 (Budgeted Time 1 M

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

Answer (Please select your correct option)

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☐ 0

☐ $n(n-1)$

☐ $\frac{1}{(n^2+n)}$

☐ can not be determined

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Question No : 24 of 52

Marks: 1 (Budgeted Time 1 M

An arrangement of objects without the consideration of order is called

Answer (Please select your correct option)

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☐ Permutation

☐ Combination

☐ Selection

☐ None of these

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Question No : 25 of 52

Marks: 1 (Budgeted Time 1 M

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

Answer (Please select your correct option)

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☐ twice

☐ once

☐ thrice

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Question No : 26 of 52

Marks: 1 (Budgeted Time 1 M

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

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Question No : 27 of 52

Marks: 1 (Budgeted Time 1 M

If A and B are two disjoint sets then which of the following must be true

Answer (Please select your correct option)

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

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Question No : 28 of 52

Marks: 1 (Budgeted Time 1 M

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 : 29 of 52

Marks: 1 (Budgeted Time 1 M)

The value of $\lceil x \rceil$ for $x = -2.01$ is

Answer (Please select your correct option)

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☐ -3☐ 1☐ -2☐ 0

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Question No : 30 of 52

Marks: 1 (Budgeted Time 1 M)

If a pair of dice is thrown then the probability of getting a total of 5 or 11 is

Answer (Please select your correct option)

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☐ $\frac{1}{18}$ ☐ $\frac{1}{9}$ ☐ $\frac{1}{6}$

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Question No : 31 of 52

Marks: 1 (Budgeted Time 1 M)

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)

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☐ $\frac{2}{3}$ ☐ $\frac{1}{9}$ ☐ $\frac{1}{2}$

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Question No : 32 of 52

Marks: 1 (Budgeted Time 1 M)

If A and B are independent events then $P(A/B) =$

Answer (Please select your correct option)

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☐ $P(B)$ ☐ $P(A)$ ☐ $P(A \cap B)$ ☐ $P(A \cup B)$

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Question No : 33 of 52

Marks: 1 (Budgeted Time 1 M)

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

☐

Independent

☐

Exclusive

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Question No : 34 of 52

Marks: 1 (Budgeted Time 1 M)

If A, B and C are any three events, then $P(A \cup B \cup C)$ is equal to

Answer (Please select your correct option)

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☐ $P(A) + P(B) + P(C)$ ☐ $P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) - P(B \cap C) + P(A \cap B \cap C)$ ☐ $P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) - P(B \cap C)$ ☐ $P(A) + P(B) + P(C) + P(A \cap B \cap C)$

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Question No : 35 of 52

Marks: 1 (Budgeted Time 1 M

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

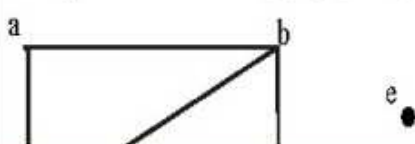
☐ $\sum xf(x)$ ☐

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Question No : 36 of 52

Marks: 1 (Budgeted Time 1 M

The degrees of the vertices a, b, c, d, e respectively, in the given graph are



Answer (Please select your correct option)

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2, 2, 3, 1, 1

☐

2, 3, 1, 0, 1

☐

0, 1, 2, 2, 0

☐

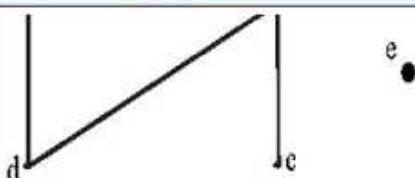
2, 3, 1, 2, 0

☐

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Question No : 36 of 52

Marks: 1 (Budgeted Time 1 M



Answer (Please select your correct option)

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2, 2, 3, 1, 1

☐

2, 3, 1, 0, 1

☐

0, 1, 2, 2, 0

☐

2, 3, 1, 2, 0

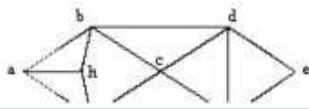
☐

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Question No : 37 of 52

Marks: 1 (Budgeted Time 1 M

The Hamiltonian circuit for the following graph is



Answer (Please select your correct option)

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☐ abcdefgh

C

☐ abefgha

C

☐ abcdefgha

C

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Question No : 38 of 52

Marks: 1 (Budgeted Time 1 M

Two matrices are said to be conformable for multiplication if number of(a)..... of 1st matrix is equal to number of(b)..... in 2nd matrix

Answer (Please select your correct option)

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☐ (a) rows, (b) columns

C

☐ (a) columns, (b) rows

C

☐ (a) columns, (b) columns

C

☐ (a) rows, (b) rows

C

Made by: Waqar Siddhu

Question No : 39 of 52

Marks: 1 (Budgeted Time 1 M

The list of the degrees of the vertices of a graph in non-increasing order is called

Answer (Please select your correct option)

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☐ Isomorphic Invariant

C

☐ Degree Sequence

C

☐ Order of Graph

C

☐ Length of Circuit

C

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Question No : 40 of 52

Marks: 1 (Budgeted Time 1 M

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

☐ 13

☐ 14

☐ 8

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Question No : 41 of 52

Marks: 2 (Budgeted Time 4 M

Find the double negation of the proposition
 p = It is cold.

Answer (Please click here to Add Answer)

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Question No : 42 of 52

Marks: 2 (Budgeted Time 4 M

How many signals can be given by 5 flags of different colors using 3 flags at a time?

Answer (Please click here to Add Answer)

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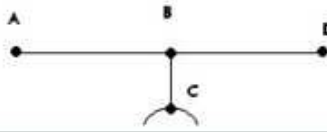


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Question No : 43 of 52

Marks: 2 (Budgeted Time 4 M

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



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

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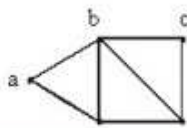


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Question No : 44 of 52

Marks: 2 (Budgeted Time 4 M

Find the degree sequence of the following graph.



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

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 M

Draw a graph with six vertices, five edges that is not a tree.

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

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Question No : 46 of 52

Marks: 3 (Budgeted Time 6 M

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

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

Find Q (14, 3).

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 M

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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Question No : 48 of 52

Marks: 3 (Budgeted Time 6 M

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

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

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

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Question No : 49 of 52

Marks: 5 (Budgeted Time 10 M

Let $A = \{3, 6, 9, 12\}$ be a set, find $A \times A$. Determine whether $R = \{(3, 3), (6, 6), (9, 9), (12, 12), (3, 6), (6, 3)\}$ is an equivalence relation on A or not?

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

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Question No : 50 of 52

Marks: 5 (Budgeted Time 10 M

There are 12 students from whom 5 are going to be chosen to represent their school at a conference. If Jack, Anna or Chris, but only one of them, must be chosen, in how many ways can the students be chosen to go to the conference?

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

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Question No : 51 of 52

Marks: 5 (Budgeted Time 10 M

Determine whether the given graph has a Hamilton circuit? If it does, find such a circuit, if it does not, give an argument to show why no such circuit exists.

(c)



(b)



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

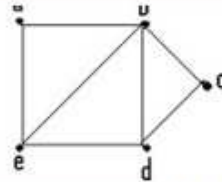
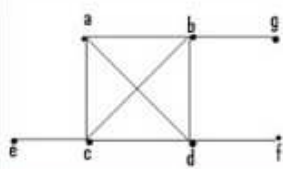
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Question No : 51 of 52

Marks: 5 (Budgeted Time 10 M



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

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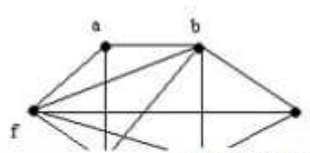
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Question No : 52 of 52

Marks: 5 (Budgeted Time 10 M

Consider the following graphs



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

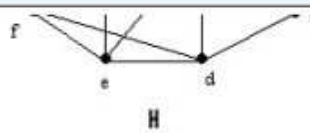
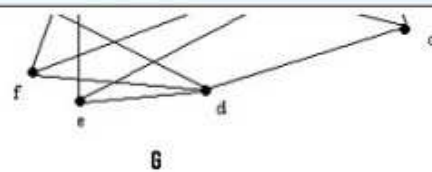
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Question No : 52 of 52

Marks: 5 (Budgeted Time 10 M



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

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0 100 200 300 400 500 600 700 800 900 1000

Are the above graphs bipartite? Justify your answer.

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

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