



Virtual University

About Us

MTH202
Solved Final Term Paper 2

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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 vertex of degree 1 in a tree is called a

Answer (Please select your correct option)

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Terminal vertex

☐

correct

Internal vertex

☐

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Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

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 : 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)

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 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

☐ $p \rightarrow q$ ☐ $q \rightarrow p$ ☐ None of these

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Question No : 7 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)

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☐ 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 : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

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

correct

☐ Exportation Law☐ None of these

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

If A and B are two sets then the set which contains all those elements that belong to A or B is

Answer (Please select your correct option)

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☐ $A \cup B$

correct

☐ $A \cap B$ ☐ $A - B$ ☐

None of these

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

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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☐ $9x^2 + 4$ ☐ $6x + 4$ ☐ $9x + 8$

correct

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Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

If A is a set of all integers and $R = \{(x, y) \in A \text{ iff } xy \geq 1\}$ is a relation on A then the relation R is

Answer (Please select your correct option)

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☐

Transitive

☐

Symmetric

☐

Reflexive

☐

All the given options are true

correct

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Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

The part of definition which can be expressed in terms of smaller versions of itself is called

Answer (Please select your correct option)

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☐ Base☐ Restriction☐ Recursion☐ Conclusion

correct

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Question No : 13 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)

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☐ 9☐ 10☐ 18☐ 21

correct

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Question No : 14 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 Inductive☐ Arranging and Sorting☐ None of these

correct

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Question No : 15 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

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

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Question No : 16 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 : q and then try to reach p ☐Considering p and : q are true and try to reach contradiction

correct

☐Considering p and then try to reach q ☐Considering : p and then try to reach q

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

An integer n is called a perfect square for some integer k iff

Answer (Please select your correct option)

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☐ $n = k$ ☐ $n^2 = k$ ☐ $n = k^2$

correct

☐ $n = 1$

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

An integer n is called a perfect square for some integer k iff

Answer (Please select your correct option)

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☐

$n = k$

☐

$n^2 = k$

☐

$n = k^2$

correct

☐

$n = 1$

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

An integer n is called a perfect square for some integer k iff

Answer (Please select your correct option)

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☐

$n = k$

☐

$n^2 = k$

☐

$n = k^2$

☐

$n = 1$

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Question No : 18 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

Made by: Waqar Siddhu

Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

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.

Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

The method of loop invariants is used to prove ----- with respect to certain pre and post-conditions.

Answer (Please select your correct option)

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☐

correctness of a loop

correct

☐

correctness result

☐

correctness of variables

☐

correctness of algorithm

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Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

How many different ways can three of the letters of the word BYTES be chosen if the first letter must be B ?

Answer (Please select your correct option)

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☐

$P(4,2)$

☐

$P(2,4)$

☐

$C(4,2)$

correct

☐

None of these

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Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

The value of $0!$ is

Answer (Please select your correct option)

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0

☐

correct

1

☐

undefined

☐

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Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

An arrangement of objects without the consideration of order is called

Answer (Please select your correct option)

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Permutation

☐

Combination

☐

correct

Selection

☐

None of these

☐

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Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

The value of ${}^nC_n =$

Answer (Please select your correct option)

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1

☐

0

☐

n

☐

correct

None of these

☐

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Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

If the order does not matter 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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☐ n^k ☐ $C(n+k-1, k)$

correct

☐ $P(n, k)$ ☐ $C(n, k)$

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Question No : 26 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 : 27 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)

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☐ 25

correct

☐ 125☐ 225☐ 85

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Question No : 28 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 : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

What is the smallest integer N such that $\lceil N/5 \rceil = 7$?

Answer (Please select your correct option)

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☐ 35

correct

☐ 31☐ 30☐ 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☐ -1

correct

☐ 2☐ 1

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Question No : 31 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 : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

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

correct

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Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

The probability of getting a 5 when a die is thrown will be

Answer (Please select your correct option)

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 $\frac{1}{6}$ ☐

correct

 $\frac{5}{6}$ ☐ $\frac{1}{3}$ ☐ $\frac{1}{36}$ ☐

Made by: Waqar Siddhu

Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

If a die is rolled then what is the probability that the number is greater than 4?

Answer (Please select your correct option)

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☐ $\frac{1}{3}$

correct

☐ $\frac{3}{4}$ ☐ $\frac{1}{2}$ ☐ $\frac{2}{3}$

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Question No : 35 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 : 36 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)

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☐ 14☐ 16

correct

☐ 18☐ 32

Made by: Waqar Siddhu

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

If a graph has any vertex of degree 3 then

Answer (Please select your correct option)

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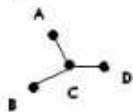
☐ It must have Euler circuit☐ It must have Hamiltonian circuit☐ It does not have Euler circuit

Made by: Waqar Siddhu

Question No : 38 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

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Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

The Common fraction for the recurring decimal $0.\overline{81}$ is

Answer (Please select your correct option)

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☐ $\frac{81}{100}$ ☐ $\frac{81}{98}$ ☐ $\frac{9}{11}$

correct

☐ $\frac{81}{1000}$

Made by: Waqar Siddhu

Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Let $A = \{1, 2, 3\}$ be a set, R and S be the following relations on it

$$R = \{(1, 2), (1, 3), (2, 3), (3, 1), (3, 3)\}$$

$$S = \{(1, 2), (1, 3), (2, 1), (3, 3)\}$$

Find $R \cap S$.

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

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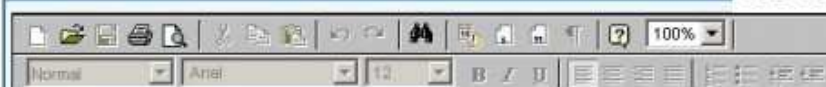
Question No : 42 of 52

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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Question No : 43 of 52

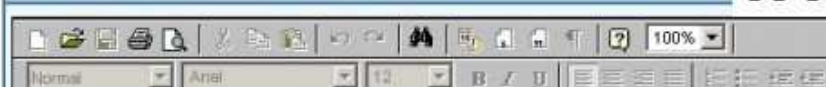
Marks: 2 (Budgeted Time 4 Min)

Find the expectation μ of the distribution given in the following table.

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

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

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Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

Let $A = \begin{bmatrix} 1 & 3 & 7 \\ 5 & 2 & 9 \end{bmatrix}$ then find A' .

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

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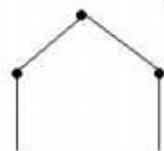
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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

Determine the chromatic number of the given graph by inspection.



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

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)



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

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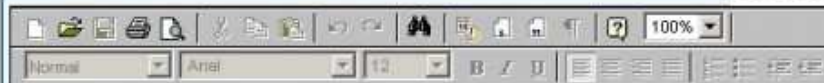
Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

let A and B are two sets then show that $B \subseteq A \cup B$

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

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Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

The members of a club are 12 boys and 8 girls. In how many ways can a committee of 3 boys and 2 girls be formed?

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 the probability of appearing an odd number when a fair die is thrown.

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

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Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

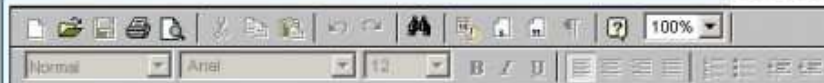
Define a binary relation R from $A = \{1, 3\}$ to $B = \{1, 2, 3\}$ as follows:

$$R = \{(a, b) \in A \times B \mid a < b\}$$

- (a) Find the ordered pairs in R.
- (b) Find the domain and range of R.
- (c) Is 1R2 and 3R3?

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)

A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?

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

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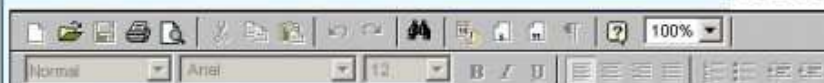
Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

Find the probability distribution of the sum of the dots when two fair dice are thrown.

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

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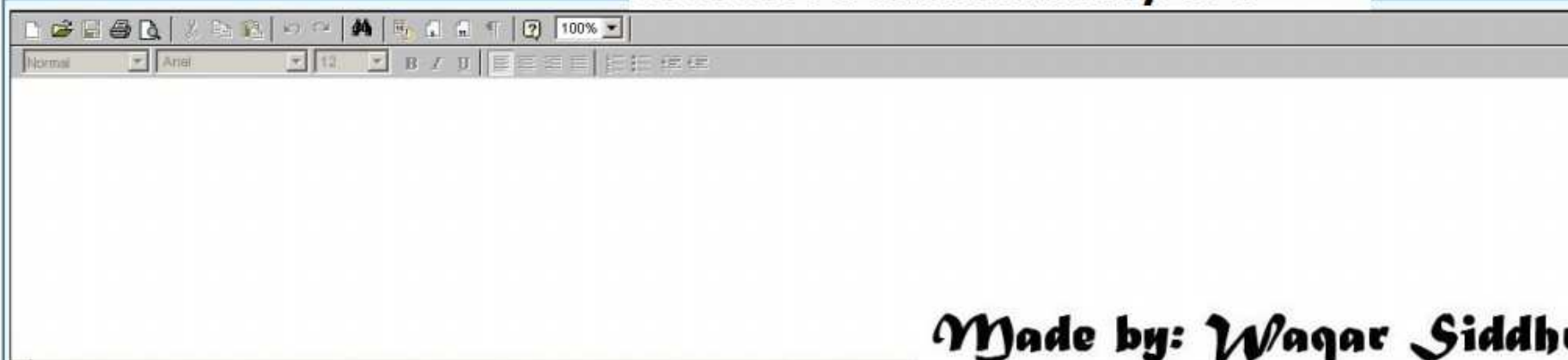
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Find the product AB and BA of the matrices (if not possible then give reason).

$$A = \begin{bmatrix} 1 & 3 \\ 2 & -1 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 2 & 0 & -4 \\ 3 & -2 & 6 \end{bmatrix}$$

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

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