

ASSALAM O ALAIKUM

All Dearz fellows

ALL IN ONE MTH202 Final term PAPERS &
MCQz

Created BY Farhan & Ali

BS (cs) 2nd sem

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Message by

VRSHC TEAM

FINALTERM EXAMINATION

Spring 2009

MTH202- Discrete Mathematics (Session - 2)

Time: 120 min

Marks: 80

Question No: 1 (Marks: 1) - Please choose one

The negation of "Today is Friday" is

- ▶ Today is Saturday
- ▶ **Today is not Friday**
- ▶ Today is Thursday

Question No: 2 (Marks: 1) - Please choose one

An arrangement of rows and columns that specifies the truth

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value of a compound proposition for all possible truth values of its constituent propositions is called

- ▶ **Truth Table**
- ▶ Venn diagram
- ▶ False Table
- ▶ None of these

Question No: 3 (Marks: 1) - Please choose one

The converse of the conditional statement $p \rightarrow q$ is

- ▶ **$q \rightarrow p$**
- ▶ $\sim q \rightarrow \sim p$
- ▶ $\sim p \rightarrow \sim q$
- ▶ None of these

Question No: 4 (Marks: 1) - Please choose one

Contrapositive of given statement "If it is raining, I will take an umbrella" is

▶ I will not take an umbrella if it is not raining.

▶ I will take an umbrella if it is raining.

▶ It is not raining or I will take an umbrella.

▶ None of these.

Question No: 5 (Marks: 1) - Please choose one

Let $A = \{1, 2, 3, 4\}$ and $R = \{(1, 1), (2, 2), (3, 3), (4, 4)\}$ then

▶ R is symmetric.

▶ R is anti symmetric.

▶ R is transitive.

▶ R is reflexive.

▶ All given options are true

Question No: 6 (Marks: 1) - Please choose one

A binary relation R is called Partial order relation if

▶ It is Reflexive and transitive

▶ It is symmetric and transitive

▶ It is reflexive, symmetric and transitive

▶ It is reflexive, antisymmetric and transitive

Question No: 7 (Marks: 1) - Please choose one

How many functions are there from a set with three elements to a set with two elements?

- ▶ 6
- ▶ **8**
- ▶ 12

Question No: 8 (Marks: 1) - Please choose one

$1, 10, 10^2, 10^3, 10^4, 10^5, 10^6, 10^7, \dots$ is

- ▶ **Arithmetic series**
- ▶ Geometric series
- ▶ Arithmetic sequence
- ▶ Geometric sequence

Question No: 9 (Marks: 1) - Please choose one

$[x]$ for $x = -2.01$ is

- ▶ -2.01
- ▶ -3
- ▶ **-2**
- ▶ -1.99

Question No: 10 (Marks: 1) - Please choose one

If A and B are two disjoint (mutually exclusive) events then

$$P(A \cup B) =$$

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- ▶ $P(A) + P(B) + P(A \cap B)$
- ▶ $P(A) + P(B) + P(A \cup B)$
- ▶ $P(A) + P(B) - P(A \cap B)$
- ▶ $P(A) + P(B) - P(A \cup B)$
- ▶ **$P(A) + P(B)$**

Question No: 11 (Marks: 1) - Please choose one

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

- ▶ 1
- ▶ $\frac{1}{3}$
- ▶ $\frac{2}{3}$

Question No: 12 (Marks: 1) - Please choose one

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

- ▶ Independent
- ▶ **Dependent** page 270
- ▶ Exhaustive

Question No: 13 (Marks: 1) - Please choose one

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

- ▶ One to one function
- ▶ Conditional probability
- ▶ **Random variable**

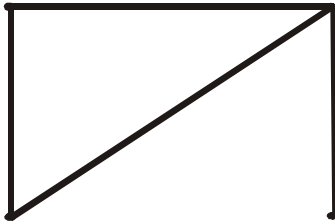
Question No: 14 (Marks: 1) - Please choose one

The expectation of x is equal to

- ▶ Sum of all terms
- ▶ Sum of all terms divided by number of terms
- ▶ $\sum xf(x)$

Question No: 15 (Marks: 1) - Please choose one

The degree sequence $\{a, b, c, d, e\}$ of the given graph is



- ▶ 2, 2, 3, 1, 1
- ▶ 2, 3, 1, 0, 1
- ▶ 0, 1, 2, 2, 0
- ▶ 2, 3, 1, 2, 0

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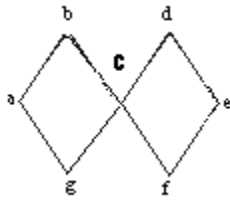
Question No: 16 (Marks: 1) - Please choose one

Which of the following graph is not possible?

- ▶ Graph with four vertices of degrees 1, 2, 3 and 4.
- ▶ **Graph with four vertices of degrees 1, 2, 3 and 5.**
- ▶ Graph with three vertices of degrees 1, 2 and 3.
- ▶ Graph with three vertices of degrees 1, 2 and 5.

Question No: 17 (Marks: 1) - Please choose one

The graph given below



- ▶ Has Euler circuit
- ▶ Has Hamiltonian circuit
- ▶ **Does not have Hamiltonian circuit**

Question No: 18 (Marks: 1) - Please choose one

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

If and only if

- ▶ **$n = k \cdot d$ for some integer k**
- ▶ $n = d$
- ▶ $n \cdot d = 1$
- ▶ none of these

Question No: 19 (Marks: 1) - Please choose one

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

- ▶ **Considering p and then try to reach q**
- ▶ Considering $\sim q$ and then try to reach $\sim p$

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- ▶ Considering p and $\sim q$ and try to reach contradiction
- ▶ None of these

Question No: 20 (Marks: 1) - Please choose one

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

- ▶ **$r = 1$ or $s = 1$.**
- ▶ $r = 1$ or $s = 0$.
- ▶ $r = 2$ or $s = 3$.
- ▶ None of these

Question No: 21 (Marks: 1) - Please choose one

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

- ▶ **True**
- ▶ False
- ▶ None of these

Question No: 22 (Marks: 1) - Please choose one

The greatest common divisor of 27 and 72 is

- ▶ 27
- ▶ **9**
- ▶ 1
- ▶ None of these

Question No: 23 (Marks: 1) - Please choose one

If a tree has 8 vertices then it has

- ▶ 6 edges
- ▶ **7 edges**
- ▶ 9 edges

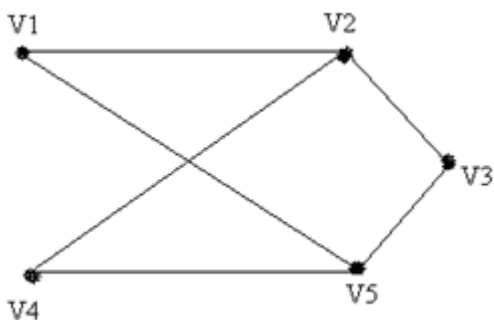
Question No: 24 (Marks: 1) - Please choose one

Complete graph is planar if

- ▶ **$n = 4$**
- ▶ $n > 4$
- ▶ $n \leq 4$

Question No: 25 (Marks: 1) - Please choose one

The given graph is



- ▶ **Simple graph**
- ▶ Complete graph
- ▶ Bipartite graph
- ▶ Both (i) and (ii)
- ▶ Both (i) and (iii)

Question No: 26 (Marks: 1) - Please choose one

The value of $0!$ Is

- ▶ 0
- ▶ **1** pg160
- ▶ Cannot be determined

Question No: 27 (Marks: 1) - Please choose one

Two matrices are said to be conformable for multiplication if

- ▶ Both have same order
- ▶ **Number of columns of 1st matrix is equal to number of rows in 2nd matrix**
- ▶ Number of rows of 1st matrix is equal to number of columns in 2nd matrix

Question No: 28 (Marks: 1) - Please choose one

The value of $(-2)!$ Is

- ▶ 0
- ▶ 1
- ▶ **Cannot be determined**

Question No: 29 (Marks: 1) - Please choose one

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

- ▶ 0
- ▶ $n(n-1)$
- ▶ $n^2 + n$
- ▶ Cannot be determined

Question No: 30 (Marks: 1) - Please choose one

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

- ▶ ${}^n C_k$ pg223
- ▶ ${}^k C_n$
- ▶ ${}^n P_k$
- ▶ ${}^k P_k$

Question No: 31 (Marks: 1) - Please choose one

If the order does not matter and repetition is allowed then total number of ways for selecting k sample from n . is

- ▶ n^k
- ▶ $C(n+k-1, k)$ page 228
- ▶ $P(n, k)$
- ▶ $C(n, k)$

Question No: 32 (Marks: 1) - Please choose one

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

- ▶ n^k
- ▶ $C(n+k-1, k)$
- ▶ $P(n, k)$ page 228
- ▶ $C(n, k)$

Question No: 33 (Marks: 1) - Please choose one

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

- ▶ **True** pg231
- ▶ False
- ▶ None of these

Question No: 34 (Marks: 1) - Please choose one

A tree diagram is a useful tool to list all the logical possibilities of a sequence of events where each event can occur in a finite number of ways.

- ▶ **True**
- ▶ False

Question No: 35 (Marks: 1) - Please choose one

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

- ▶ $n(A \dot{\cup} B) = n(A) + n(B)$
- ▶ $n(A \dot{\cup} B) = n(A) + n(B) - n(A \cap B)$
- ▶ $n(A \dot{\cup} B) = \emptyset$
- ▶ None of these

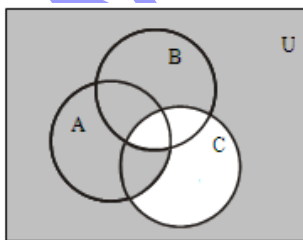
Question No: 36 (Marks: 1) - Please choose one

What is the output state of an OR gate if the inputs are 0 and 1?

- ▶ 0
- ▶ 1
- ▶ 2
- ▶ 3

Question No: 37 (Marks: 1) - Please choose one

In the given Venn diagram shaded area represents:



- ▶ $(A \cap B) \subseteq C$
- ▶ $(A \subseteq B^c) \subseteq C$
- ▶ $(A \cap B^c) \subseteq C^c$
- ▶ $(A \cap B) \subseteq C^c$

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Question No: 38 (Marks: 1) - Please choose one

Let A, B, C be the subsets of a universal set U .

Then $(A \cup B) \cup C$ is equal to:

- ▶ $A \cap (B \cup C)$
- ▶ $A \cup (B \cap C)$
- ▶ \emptyset
- ▶ $A \cup (B \cup C)$

Question No: 39 (Marks: 1) - Please choose one

$n! > 2^n$ for all integers $n \geq 4$.

- ▶ True
- ▶ **False**

Question No: 40 (Marks: 1) - Please choose one

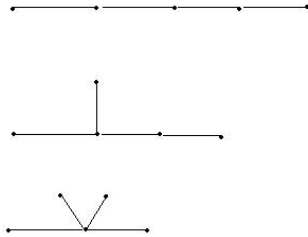
$+, -, \times, \div$ are

- ▶ Geometric expressions
- ▶ **Arithmetic expressions**
- ▶ Harmonic expressions

Question No: 41 (Marks: 2)

Find a non-isomorphic tree with five vertices.

There are three non-isomorphic trees with five vertices as shown (where every tree with five vertices has $5-1=4$ edges).



Question No: 42 (Marks: 2)

Define a predicate.

A predicate is a sentence that contains a finite number of variables and becomes a statement when specific values are substituted for the variables.

The domain of a predicate variable is the set of all values that may be substituted in place of the variable.

Let the declarative statement:

" x is greater than 3".

We denote this declarative statement by $P(x)$ where

x is the variable,

P is the predicate "is greater than 3".

The declarative statement $P(x)$ is said to be the value of the propositional function P at x .

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