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	FINALTERM EXAMINATION SPRING 2006 MTH202 - DISCRETE MATHEMATICS (Session - 3)	Marks: 60 Time: 120min

StudentID/LoginID: _____

Student Name: _____

Center Name/Code: vustudypastpapers.com _____

Exam Date: Tuesday, August 22, 2006

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions. Marks are written adjacent to each question.

2. Do not ask any questions about the contents of this examination from anyone.

     a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.

     b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.

     c. Write all steps, missing steps may lead to deduction of marks.

3. This examination is closed book, closed notes, closed neighbors.

4. Calculator is allowed.

5. Symbols by using math type should be pasted on the paper direct from the math type not from the word document otherwise it would not be visible.

6. In order to get full marks do all necessary steps.

**WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.

For Teacher's use only											
Question	1	2	3	4	5	6	7	8	9	10	Total
Marks											
Question	11	12									
Marks											

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

If $p \ \& \ q$ are two propositions, p is true and q is false, then $p \rightarrow q$ is

▶ True

▶ False

▶ Tautology

▶ Contradiction.

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

If $A = \{x, y, z\} \ \& \ B = \{1, 2, 3\}$ then constant function from A to B is

▶ {(x,1),(y,2)}

▶ {(y,2),(z,3)}

▶ {(x,1),(x,2)}

▶ None of these.

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

In a bag there are 3 red balls and 5 black balls. What is the probability of drawing black balls?

▶ 5/8

▶ 3/8

▶ 5/3

▶ None of these.

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

Using the Euclidean's algorithm $\gcd(330,156)$

▶ 6

▶ 3

▶ 11

▶ None of these.

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

If $p:1>7 \& q:5<2$ then the disjunction $p \vee q$ is

▶ True

▶ False

▶ None of these.

Question No: 6   (Marks: 5)

.Prove that $(A \cap B)^c = A^c \cup B^c$ (Not using venn diagram)

Question No: 7   (Marks: 5)

If 5th term of an Arithmetic progression is 16 and 20th term is 46 then what is its 12th term?

Question No: 8   (Marks: 10)

A box contains 4 red, 4 white and 5 green balls. Three balls are drawn from the box together. Find the probability that may be:
(a) All are of different colours.
(b) All are of same colours.
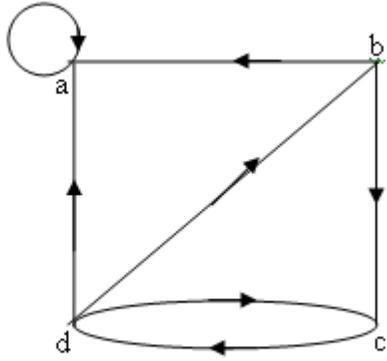
Question No: 9   (Marks: 10)

Show that the following statement $\square q \wedge (p \rightarrow q) \rightarrow \square p$ is a tautology. By using truth table.

Question No: 10   (Marks: 10)

(a) What is the expectation of the number of heads, when three fair coins are tossed?
(b) How many signals can be given by 6 flags of different colours, using 3 flags at a time?

Question No: 11   (Marks: 10)

(a) Determine the number of vertices, edges and find the degree of each vertex for the given directed graph.

(b) Using the Euclidean algorithm to find the $\gcd(440,120)$.

Question No: 12   (Marks: 5)

Prove that if n is an odd integer, then $n^3 + n$ is even.