

Course No: SWEN 2308
Course Title: Descartes Mathematics

Date: Saturday 21 / 04 / 2018
No. of Questions: (7)
Time: 1 Hour
Total Grade: (15) Marks

University of Palestine



Second Midterm Exam
2nd Semester 2017/2018

Dr. Naji Shukri Alzaza
Department Software Engineering
Faculty of Applied Engineering &
Urban Planning

Student Name: _____
Student No.: _____

ANSWER ALL QUESTIONS

QUESTION 1: State whether of the following statements is true or false: (4 Marks)

1. $2 \in \{1, 2, 3, 4, 5\}$

2. $\{2\} \in \{1, 2, 3, 4, 5\}$

3. $2 \subseteq \{1, 2, 3, 4, 5\}$

4. $\{2\} \subseteq \{1, 2, 3, 4, 5\}$

5. $\emptyset \subseteq \{\emptyset, \{\emptyset\}\}$

6. $\{\emptyset\} \subseteq \{\emptyset, \{\emptyset\}\}$

7. $|\emptyset| = 0$

8. $\{1, 2, 3, 4, 5\} = \{5, 4, 3, 2, 1\}$

QUESTION 2: Use Direct Proof to prove that, for every integer n, if n is even, then n^2 is even. (2 Marks)

QUESTION 3: Prove that, if n and m are integers and 3 is a factor of both n and m, then 3 is a factor of any number of the form $nx + my$ where x and y are integers. (2 Marks)

QUESTION 4: Show that $\{x : 2x^2 + 5x - 3 = 0\} \subseteq \{x : 2x^2 + 7x + 2 = 3/x\}$. (2 Marks)

QUESTION 5: Let the universal set is $U = \{a, b, c, d, e, f, g\}$ and let $A = \{a, c, e, g\}$ and $B = \{d, e, f, g\}$. Find $A \cup B$, $A \cap B$, and $B - A$. (3 Marks)

QUESTION 6: What is Duality Principle? Give an example. (2 Marks).

===== BEST WISHES =====