**King Saud university First semester 1431-1432**

**Women section Department of mathematics College of science Time : 3 Hours**

**Final Exam Math 131**

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| **Student number:** | **Name:** |

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| **Bonus** | **Total** | **4** | **3** | **2** | **1** | **Question NO :** |
|  |  |  |  |  |  | **Mark** |

**Question 1**

**Choose the correct answer**

**:**

**i - ii -**

**iii- iv-Non of the previous**

**2) The following statement is true:**

**i-If A,B are nonempty sets such that A then A B=**

**ii-If is infinite then is infinite or is infinite.**

**iii-**

**iv-If**

**3**)**:**

**i- ii- iii- iv-Non of the previous**

**4) Let U be the universe and .Let be the characteristic function ofA.Thenis:**

**i-A ii-U\A iii- iv-Non of the previous**

i- ii-

iii-If A

iv).

**5 ) The following set is denumerable**

i- **- ii-**

**iii-**

**6) The**

**i-one to one and onto ii-not one to one and onto iii-not one to one and not onto iv-Non of the previous**

**7)**

**i- ii- iii- iv-Non of the previous**

**8)**

**i- ii- iii- iv-Non of the previous**

**9**)

**i-an equivalence relation ii-partially ordered and not totally ordered**

**iii-totally ordered iv-Non of the previous**

**10) The following statement is false:**

**i-**

**iii-If A is not countable then P(A) is not countable iv-**

**Question2**

**If show that if is odd then is odd. a)**

**b) By using the principle of mathematical induction show that :**

***c) If R is an equivalence relation on a set A, S is a partially ordered relation on A. Show that RS is a partially ordered relation on A.***

**Question3**

**a)**

**b)**

**i)**

**ii)**

**Question4**

**a) Let t f: ,such that :**

**and g: ,such that**

**i- Prove that f is one to one and onto.**

**ii - Find**

 **b ) If A is countable and is onto show that B is countable.**

 **c) Show that is not countable.**

**------------------------------------------------------------------------------------------------------------Bonus Question : Show that Equivalence of sets is an equivalence relation on the class of all sets.**