



# **Vu Buddy- MTH202**

1. Let  $A = \{0,1\}$  and  $B = \{1\}$ . Let  $R$  and  $S$  be two binary relations on Cartesian product of  $A$  and  $B$  such that  $R = \{(0,1)\}$  and  $S = \{(1,1)\}$ .

Then  $R \cap S =$  \_\_\_\_\_ .

- a.  $\{0,1\}$
  - b. empty
  - c.  $\{1,1\}$
  - d.  $\{(0,1)\}$
2. Let  $A = \{1, 2, 3, 4\}$  and  $R = \{(1, 1)(2, 2)(3, 3)(4, 4)\}$  then  $R$  is
- a. Transitive
  - b. Symmetric
  - c. Options a,b, and c all true
  - d. Reflexive
3. If  $A$  contains 3 elements and  $B$  contains 2 elements, then number of subsets of  $A \times B$  are \_\_\_\_\_
- a. 6
  - b. 32
  - c. 64
  - d. 12
4. Complementary Relation symbolically written as \_\_\_\_\_.
- a.  $\bar{R} = A \times B - R = \{(a,b) \in A \times B \mid (a,b) \in R\}$
  - b.  $\bar{R} = A \times B - R = \{(a,b) \in A \times B \mid (a,b) \notin R\}$
5. If a relation  $R = \{(1,2)(2,3)(3,4)(4,1)(2,2)\}$  is given then which of the following is true about this relation.
- a.  $R$  is Antisymmetric.
  - b.  $R$  is Reflexive.
  - c.  $R$  is Symmetric.
  - d.  $R$  is Transitive.

6. Let  $R$  and  $S$  be reflexive relations on a set  $A$  then  $R \cap S$  is reflexive.
- False
  - True
7. Let  $A = \{0, 1, 2\}$  and  $R = \{(0,2), (1,1), (2,0)\}$  be a relation on  $A$ . Then which of the following ordered pairs are needed to make it reflexive.
- $(0,0)$  and  $(2,2)$
  - $(2,0)$  and  $(0,2)$
  - $(0,0)$  and  $(0,2)$
  - $(2,0)$  and  $(2,2)$
8. If  $A = \{1,2,3\}$  &  $B = \{4,5,6\}$  and  $R = \{(1,4)(2,5)(3,6)(3,4)\}$  The complementary relation is .....
- $A \times B$  (intersection)  $R$
  - $A \times B$  (Union)  $R$
  - $A \times B$
  - $A \times B$  (difference or  $-$ )  $R$
9. If a relation  $R = \{(1,1)(2,1)(1,2)(2,2)\}$  is given then which of the following is not true about this relation.
- $R$  is Irreflexive.
  - $R$  is Reflexive.
  - $R$  is Transitive
  - $R$  is Symmetric.
10. The function defined from  $Z$  to  $Z$  as  $f(x) = \frac{1}{(x+2)(x-2)}$  is not well defined because.....
- Each input has two outputs.
  - Function gives imaginary values for  $x < 0$
  - Function is defined at  $x=2$  but not defined at  $x=-2$
  - Function is not defined at  $x=-2$  and  $x=2$