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Class XI   **APPLIED MATHEMATICS (241)**   05.10.2020
WORKSHEET- Types of relations

Q.1.	For real numbers x and y define xRy if and only if x-y +$\sqrt{2}$ is an irrational number. Then the relation R is						
	A	reflexive	**B**	symmetric	**C**	transitive	**D**	none of these

Q.2.	The relation R in $\boldsymbol{R}$ defined by R = $\{(a,b): a \leq b^3\}. Then$ R is						
	A	Reflexive but not symmetric	**B**	Symmetric but not symmetric	**C**	reflexive but not transitive	**D**	None of these

Q.3.	If R be the relation in the set N given by R =$\{(a,b): a = b - 2, b > 6\} then$						
	A	$(2,4)\epsilon R$	**B**	$(3,8)\epsilon R$	C	$(6,8)\epsilon R$	**D**	$(8,7)\epsilon R$

Q.4.	The number of all relations from set A = $\{1,2,3\}$ to itself is						
	A	3	**B**	9	**C**	81	**D**	512

Q.5.	Let R be a relation on N defined by x+ 2y = 8 . Domain of R is						
	A	$\{2,4,8\}$	**B**	$\{2,4,6\}$	**C**	$\{2,4,6,8\}$	**D**	$\{2,4,8,10\}$

Q.6.	If R be the relation on set A = $\{1,2,3\} given by R = \{(1,2),(2,1)\} then$ R is						
	A	only reflexive	**B**	*an equivalence relation*	**C**	only symmetric	**D**	only transitive

Q.7.	If Relation R in the set Z of all integers defined as $R = \{(x,y): x - y \text{ is an integer }\} then R is$						
	A	only a symmetric relation	**B**	Symmetric and transitive	**C**	Reflexive and transitive	**D**	an equivalence relation.

Q.8.	If R == $\{(a, b): a = b\}$, then R is							
	A	only symmetric	**B**	Reflexive and symmetric	**C**	Symmetric and transitive	**D**	an equivalence relation
Q.9.	If R == $\{(a, b): a \leq b, a, b \text{ are real numbers}\}$, then R is							
	A	reflexive and symmetric	**B**	reflexive and transitive	**C**	Symmetric and transitive	**D**	none of these
Q.10	Let T be the set of all triangles in a plane with R a relation in T given by R = $\{(T1, \ T2): T1 \text{ is isimiar to } T2\}$. Show that R is an equivalence relation.							
Q11.	Let L be the set of all lines in a plane and R be the relation in L defined as R = $\{(L1, L2): L1 \perp L2\}$. Show that R is symmetric but neither reflexive nor transitive.							
Q12	Determine whether the relation R defined on the set of **R** of all real numbers as R = $\{(a, b): a, b \in \mathbf{R} \text{ and } a - b + \sqrt{3} \text{ is the set of irrational numbers}\}$ is reflexive or symmetric or transitive. Why?							
Q13	Show that the relation R defined on set A = $\{0, 1, 2, 3, ...12\}$ R = $\{(a, b): |a - b| \text{ is diivisible by } 4; a, b \in A\}$ is an equivalence relation							

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ANSWERS									
1.	A	2.	D	3.	C	4.	D	5.	B
6.	C	7.	C	8.	D	9.	C	11.	Reflexive only