# VII PEREODIC EXAM
# CALSS –XI
# MATHS

**TIME:1.20 HR.**                                                          **MM:20**

**Question 1:**A coin is tossed. If the out come is a head, a die is thrown. If the die shows up an even number, the die is thrown again. What is the sample space for the experiment?                              **(1)**

**Question 2:**2 boys and 2 girls are in Room X, and 1 boy and 3 girls in Room Y. Specify the sample space for the experiment in which a room is selected and then a person.                              **(1)**

**Question 3:**A box contain 100 bolts and 50 nuts.It is given that 50% bolts and 50% nuts are rusted.Two objects are selected from the box at random.Find the probability that either both are bolts are rusted.     **(3)**

**Question 4:**Two dice are tossed once. Find the probability of getting an even number on the first die or a total of 8.                              **(2)**

**Question 5:**If 4-digit numbers greater than 5,000 are randomly formed from the digits 0, 1, 3, 5, and 7, what is the probability of forming a number divisible by 5 when,
(i) the digits are repeated? (ii) the repetition of digits is not allowed?  **(3)**

**Question 6:**Let $f = \left\{ \left( x, \dfrac{x^2}{x^2 + 1} \right) : x \in R \right\}$ be a function from **R** into **R**. Determine the range of *f*.        **(1)**

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**Question 7:** Find the domain of the function $f(x) = \dfrac{x^2 + 2x + 1}{x^2 - 8x + 12}$ **(1)**

**Question 8:** (i) Write the relation R = $\{(x, x^3): x$ is a prime number less than 10$\}$ in roster form. **(3)**

(ii) Let A = $\{x, y, z\}$ and B = $\{1, 2\}$. Find the number of relations from A to B.

(iii) A = $\{1, 2, 3, 5\}$ and B = $\{4, 6, 9\}$. Define a relation R from A to B by

R = $\{(x, y):$ the difference between $x$ and $y$ is odd; $x \in$ A, $y \in$ B$\}$. Write R in roster form.

**Question 9:** A card is drawn from a deck of 52 cards. Find the probability of getting a king or a heart or a red card. **(3)**

**Question 10:** Let $A = \{x \in W : x < 2\}, B = \{x \in N : 1 \le x \le 4\}$ and $C = \{3,5\}$. Verify that: **(2)**

(i) $A \times (B \cup C) = (A \times B) \cup (A \times C)$

(ii) $A \times (B \cap C) = (A \times B) \cap (A \times C)$

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