LOYOLA SCHOOL, BHUBANESWAR

First Class Evaluation, July- 2025

Class: XI **Subject: Mathematics** **F.M.= 20** **Time: 40 Mins**

Q1. Choose the correct answers to the questions from the given options: **[1x 6]**

(i) Which one of the following is a null set?

(a) {0} (b) {x: x>0 or x<0}

(c) {x: $x^2 = 3$ or x = 4} d) {x: $x^2 + 1 = 0$ for $x \in R$}

(ii) If A = {1, 2, 3, 5, 7, 8, 9} and B = {2, 4, 6, 7, 9}, then the number of proper subsets of A∩B are

(a) 15 (b) 16 (c) 31 (d) 32

(iii) Let A = {1, 3, 5}, B = {4, 6} and C = {5, 6, 7}. Find A×(B∩C)

(a) {(1, 4), (3, 6), (5, 6)} (b) {(1, 5), (3, 6), (5, 7)}

(c) {(1, 6), (3, 6), (5, 6)} (d) {(1, 4), (3, 5), (5, 6)}

(iv) Assertion(A) If A = {x: x∈N, x is a factor of 6}, B = {x: x∈ N, x is a factor of 8}, then A −B is {4, 6}

Reason(R) For any sets A and B, their difference (A−B) is defined as A – B = {x: x∈A and x ∉ B}

(a) Both A and R are correct; R is the correct explanation od A

(b) Both A and R are correct; R is not the correct explanation od A

(c) A is correct; R is incorrect

(d) A is incorrect; R is correct

(v) Assertion(A) If n(A) = 4, B = {3, 4, 5, 6, 8, 9} then the number of relations from A to B is 2^{20}.

Reason(R) If A and B be any two non-empty finite sets containing 'm' and 'n' elements respectively, then total number of relations from A to B is 2^{mn}.

(a) Both A and R are correct; R is the correct explanation od A

(b) Both A and R are correct; R is not the correct explanation od A

(c) A is correct; R is incorrect

(d) A is incorrect; R is correct

(vi) Let R be a relation defined by R = {(1+x, $1+x^2$): x≤5, x∈N}. Which of the following is false?

(a) R = {(2, 2), (3, 5), (4, 10), (5, 17), (6, 25)}

(b) Domain of R = {2, 3, 4, 5, 6}

(c) Range of R = {2, 5, 10, 17, 26}

(d) None of the above

Q2. Do as directed: **[2x3]**

(a) Find domain and range of the relation R = {(x, y): x + y = 8, x, y ∈ N}

(b) A = {1, 2, 3, 4, 5, 6} and B = {2, 4, 5, 6, 8, 9, 10}. Find A Δ B.

(c) If A = {1, 3, 5}, then find the number of elements of P(P(A)).

Q3. Do as directed: **[4x2]**

(a) If f(x) = $\frac{1+x}{1-x}$, then find the value of $\frac{f(x)\times f(x^2)}{1+(f(x))^2}$

(b) If ξ = {2, 3, 4, 5, 6,7,8,9,10,11}, A = {2, 4, 7}, B = {3, 5, 7, 9, 11}, C = {7, 8, 9, 10, 11} then find

(i) (BUC)' (ii) (AUB)'

(iii) C −B (iv) $\left(A \cap \xi\right) \cap (B \cup C)$

**********ALL THE BEST**********