THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"
AIM HIGH, TOGETHER WE FLY

Date: 15/07/22 **MONTHLY TEST -02 (2022-23)** **Max marks: 20**
GRADE: XIA **MATHEMATICS [041]** **Time: 1 Hour**

General Instructions:
1) Questions 1 to 4 carries 1 mark each.
2) Questions 5 to 8 carries 2 marks each.
3) Questions 9 and 10 carries 4 marks each.

Sl.No	Questions	Marks
	SECTION A	
1	If $n(A \cup B) = 18$, $n(A - B) = 5$, $n(B - A) = 3$ then find $n(A \cap B)$ a) 8 b) 10 c) 26 d) 16	1
2	Write $\{x : x \in R, -3 \le x < 7\}$ as interval. a) (-3, 7) b) [-3 , 7] c) [-3 , 7) d) (-3, 7]	1
3	If A = {1, 2, 4}, B = {2, 4, 5}, C = {2, 5} then (A – B) × (B – C) a) {(1, 2), (1, 5), (2, 5)} ; b) {(1, 4)} c) {1, 4} ; d) None	1
4	Write in setbuilder form. $\{(1, \frac{1}{2}), (2, \frac{2}{9}), (3, \frac{3}{28}), (4, \frac{4}{65}) \ldots\ldots (10, \frac{10}{1001})\}$	1
	SECTION B	
5	Using venn diagram prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$	2
6	Verify De'Morgan's laws :- U = { 1,2,3,4,5,6,7,8,9,10 } A = { 1,3,4,5,7,9,10,} B = { 1,3,4,5,7,8,10 }	2
7	Find a and b if (a +b, 2a -b) = (8,7)	2
8	If $R = \{(x,y): x,y \in Z, x^2 + y^2 = 64\}$, then, Write R in roster form	2

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<tr><td></td><td align="center">SECTION C</td><td></td></tr>
<tr><td>9</td><td>Let A = {1,2,3,4}, B = {1,4,9,16,25} and R be a relation defined from A to B as, R = {(x, y): x ∈ A, y ∈B and y = x^2 }
(a) Depict this relation using arrow diagram.
(b) Find domain of R.
(c) Find range of R.
(d) Write co-domain of R.</td><td>4</td></tr>
<tr><td>10</td><td>There are three brands of masks available for sale in a city - brand A, brand B and brand C. In a town of 10000 families, it was found that 40% families buy brand A, 20% buy brand B and 10% buy brand C. Also 5% families buy brands A and B, 3% buy B and C and 4% buy A and C. If 2% families buy all the three brands.

Based on the above information answer the following:

(i) Number of families which buy the mask of brand A only, is
(a) 3030 (b) 3300 (c) 3003 (d) 4500

(ii) Number of families which buy the mask of exactly two brands, are
(a) 600 (b) 990 (c) 60 (d) 6000

(iii) What is the number of families which buy the mask of exactly one brand?
(a) 2500 (b) 5020 (c) 5200 (d) 2000

(iv) Number of families which buy the mask of brands A and C but not B is
(a) 20 (b) 2000 (c) 400 (d) 200</td><td>4</td></tr>
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