Republic of the Philippines
CAMARINES SUR POLYTECHNIC COLLEGES
Nabua, Camarines Sur
Telefax: (054) 288-4627
Website: www.cspc.edu.ph
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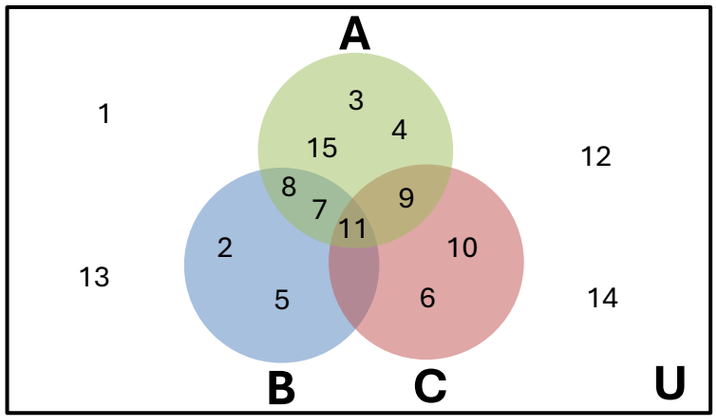
COLLEGE of COMPUTER STUDIES

Name: **JUDAH PAULO LL. VIÑAS**
Year & Section: **BSIT-2F**

SET OPERATIONS

PROBLEM:



A = {3, 4, 7, 8, 9,11, 15}
B = {2, 5, 7, 8, 11}
C = {6, 9, 10, 11}
U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15}

Find the answer of this problem :
$(\mathbf{C}^{c} \setminus \mathbf{A})^{c} \cup \mathbf{B}$

SOLUTION:

To solve this problem, we'll break it down step by step.

Step 1 : Find the complement of set C, denoted as $\mathbf{C}^{c}$

C = {6, 9, 10, 11}
U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15}

The complement of set C (C^{c}), contains all the elements in the universal set U that are not in set C.

C^{c}= {1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 15}

Step 2 : Find the set difference of the complement of set C and set A, denoted as $\mathbf{C}^{c}$ **\ A.**

A = {3, 4, 7, 8, 9, 11, 15}

The set difference of C^{c} and A is the elements in C^{c}that are not in A.

$C^{c} \setminus A$ = {1, 2, 5, 12, 13, 14}

Step 3 : Find the complement of the set difference obtained in Step 2, denoted as $(\mathbf{C}^{c} \setminus \mathbf{A})^{c}$.

The complement of the set difference $(C^{c} \setminus A)^{c}$.contains all the elements in the universal set U that are not in the set {1, 2, 5, 12, 13, 14}.

$(C^{c} \setminus A)^{c}$.= {3, 4, 6, 7, 8, 9, 10, 11, 15}

Step 4 : Find the union of the set obtained in Step 3 with set B, denoted as $(\mathbf{C}^{c} \setminus \mathbf{A})^{c} \cup \mathbf{B}$.

B = {2, 5, 7, 8, 11}

Combining the elements of set B with the set obtained in Step 3:

$(C^{c} \setminus A)^{c} \cup B$ = {2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15}

FINAL ANSWER:

Therefore, the union of $(\mathbf{C}^{c} \setminus \mathbf{A})^{c}$ and B is **{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15}**.