Question 2: **(6 Marks) (Time 10 minutes)**

Write a logical expression corresponding to the expression given below using only the predicates, logical conjunctions, disjunction and nothing else. Assume the domain of x,y,z = {1,2,3}

2.1. $\neg\forall x\ \neg\forall y\ \neg\exists z\ P(x,y,z)$
2.2. $\neg\exists x\ \neg\forall y\ \neg\forall z\ P(x,y,z)$
2.3. $\neg\exists x\ \exists y\ \neg\forall z\ \ P(x,y,z)$
2.4 $\neg\exists x\ \neg\exists y\ \neg\forall z\ P(x,y,z)$
2.5. $\neg\exists x\ \neg\exists y\ \forall z\ \ P(x,y,z)$

Please note: You will do the solution in two steps.

Step 1: Write an expression that does not have negation attached with quantifier. You will first solve the inner most negation and then the going outwards stepwise. The negation if exist in the final expression will only be with the predicate.

Step 2: Based on the solved expression in Step 1, write an expression which only contains predicates, logical conjunctions, disjunction and brackets.

Your Answer will have the following form
Step 1: Your Answer

Step 2: Your Answer