S.2 MATHEMATICS HOLIDAY WORK

Attempt All questions

ITEM ONE

A certain member of your family re-wrote each digit of his 4-digit **ATM** card pin from number system ten (base ten) to another number system less than four. He did this in fear of theft. Now he is sick in the hospital, he can neither talk nor write but the money on his account is needed to finance hospital bills. Here is how he wrote the pin: 12 20 22 10. Assuming that you have been able to encrypt the ATM pin for the family and funds are available to take care of him. The hospital has a nurse who takes checks on him after every two hours and a medical doctor who checks on him after every four and half hours. Both medical personnel last checked on him together at 9:30 am. He was treated well and discharged and advised as follows. He was advised to spend three-eights of the day resting, one sixth of the day eating, two thirds of the remainder having a healthy diet and the rest of time of the day visiting the hospital for further checkup.

TASKS:

(a)   (i) Which number system do you think he used to re-write the pin and why?

(ii) Use the identified number system to help your family members to regenerate the original pin.