Q1

a) Logical Address = 3000 = IP

Logical Page No. = 3000/512 = 5

Offset = 3000 % 512 = 440

Location of Page Table Entry = PTBR + 2 × Logical Page No.

$$= 29696 + 2 \times 5$$

$$= 29706$$

Physical Page No. = [29706]

b) [29714] = 100 = Physical Page No.

Physical Page Address = Physical Page No. × 512 + Offset

$$= 100 \times 512 + 440$$

$$= 51200 + 440$$

$$= 51640$$

c) IP will be updated as 3080

d) MOV R0, [4096]

Logical Address = 4096
Logical Page No. = 4096/512 = 8
Offset = 4096 % 512 = 0

Location of Page Table Entry = PTBR + 2 × Logical Page No.
$$= 29696 + 2 \times 8$$
$$= 29712$$

~~Page~~ Physical Page No. = ⌊29712⌋ = 75

Physical Page Address = 75 × 512 + Offset.
$$= 38400$$

e) Exception Error
— can vary from 0 to 512 × PTLR - 1 : 0 to 5119

MOV R0, [7000]
Logical Address = 7000
Logical Page No. = 7000/512 = 13
PTLR = 10
Not Possible.