Question 1

Code point to binary : U+1F974

$0 \times 1 = 0001$

$F \quad = 1111$

$9 \quad = 1001$

$7 \quad = 0111$

$4 \quad = 0100$

$\rightarrow$ 0001 1111 1001 0111 0100

∴ 1 1111 1001 0111 0100

Since U+1F974 > 0x10000, it uses 4 bytes (UTF-8 pattern)

Pattern : 11110 xxx   10 xxxxxx   10 xxxxxx   10 xxxxxx

To make it to 21 bits, add 4 zeros in front:

$\rightarrow$ 0000 1111110 0101110 100

Group to 3, 6, 6, 6 bits format:

$\rightarrow$ 000   011111   100101   110100

Final conversion

Byte 1 : 11110 000 $\rightarrow$ 0×F0

Byte 2 : 10 011111 $\rightarrow$ 0×9F

Byte 3 : 10 100101 $\rightarrow$ 0×A5

Byte 4 : 10 110100 $\rightarrow$ 0×B4

∴ F0 9F A5 B4