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20220BTECS00037
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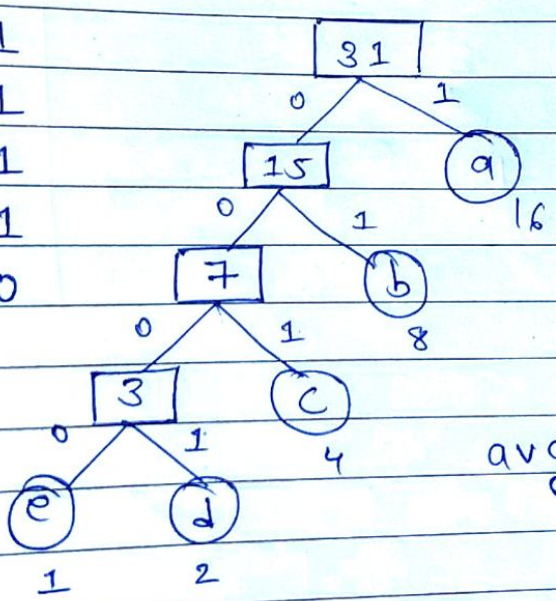
DAA ISE Question 22/10/22.

Let,
total characters are 32

a = 16 ∵ (P(a) = 1/2)
b = 8 ∵ (P(b) = 1/4)
c = 4 ∵ (P(c) = 1/8)
d = 2 ∵ (P(d) = 1/16)
e = 1 ∵ (P(e) = 1/32).

Q1.

a = 1
b = 0 1
c = 0 0 1
d = 0 0 0 1
e = 0 0 0 0



avg = total bits / unique character

Q2. $avg = 1 \times \frac{1}{2} + 2 \times \frac{1}{4} + 3 \times \frac{1}{8} + 4 \times \frac{1}{16} + 4 \times \frac{1}{32}$

$= 1.75$

avg. length of bits required for encoding each letter is 1.75