Q02a Let n be a positive integer greater then 1, then by the Unique Factorization Theorem, n can be expressed as:

$$n = p_1^{\alpha_1} p_2^{\alpha_2} \cdots p_k^{\alpha_k}$$

where p_1,p_2,...,p_k, $k \geq 1$ are a list distinct primes $\leq \sqrt{n}$ and a_1,a_2,...,a_k are all non-negative integers. From the DFPF, we know that all of n's divisors (known as the integer c) are of the form:

$$c = p_1^{\beta_1} p_2^{\beta_2} \cdots p_k^{\beta_k}, \text{ where } 0 \leq \beta_i \leq \alpha_i \text{ for } i = 1, 2, ..., k$$

For any given prime (p_i), we will have α_i as