The following choices will be used in this multiple choice problem:

(a) $\Theta(1)$
(b) $\Theta(\log n)$
(c) $\Theta(\sqrt{n})$
(d) $\Theta(n)$
(e) $\Theta(n \log n)$
(f) $\Theta(n^2)$
(g) $\Theta(n^3)$
(h) $\Theta(2^n)$

For each of the questions below, choose one of the above possible answers. Please write letter of your chosen answer to the left of the question.

(a) Number of subsets of n elements *Solution:* $\Theta(2^n)$

(b) Maximum number of edges in an undirected graph over n nodes *Solution:* $\Theta(n^2)$

(c) Number of edges in a tree with n nodes *Solution:* $\Theta(n)$

(d) Fastest time to solve the single source shortest paths problem on a clique over n n with all positive edge weights *Solution:* $\Theta(n^2)$

(e) Fastest time to solve the single source shortest paths problem on a clique over n n with some negative edge weights *Solution:* $\Theta(n^3)$

(f) Total space required to represent a graph with n nodes and $\Theta(n)$ edges using the a cency matrix representation *Solution:* $\Theta(n^2)$

(g) Total space required to represent a graph with n nodes and $\Theta(n)$ edges using the a cency list representation *Solution:* $\Theta(n)$

(h) Solution to the recurrence $T(1) = 1, T(n) = 2T(n/2) + n$ *Solution:* $\Theta(n \log n)$

(i) Solution to the recurrence $T(1) = 1, T(n) = 2T(n/2) + n^2$ *Solution:* $\Theta(n^2)$

(j) Solution to the recurrence $T(1) = 1, T(n) = 2T(n/2) + \log n$ *Solution:* $\Theta(n)$