2 a) $B = ADA^T$ if ADA^T is semipos, so is A^TDA

if $x^T(ADA^T)x \geq 0$ then it is semi definite positive

$(x^TA^T)D(Ax)$ $\quad y = Ax$

$\Rightarrow y^TDy \geq 0$ $\rightarrow$ since D is semi positive definite

$y^Ty \geq 0$ (inner product

$x^T(A^TDA)x > 0$ $\therefore$ A^TDA is semipositive

b) we use B if m is smaller than n significantly since B is a $m \times m$ matrix, if n is smaller than we want to work with 2 $m \times n$, nxn matrices A & D as this will be more memory efficient.