1.

a.) all correct

b.) D.

c.) iv. (posterior must be proper)

d.) iii (point mass @ mean)

e.) $\theta \mid x_1, ..., x_n \sim \text{Normal}(M, L^{-1})$

$$M = \frac{\lambda_0 \mu_0 + \lambda \sum_{i=1}^{n} x_i}{\lambda_0 + n\lambda} \quad, \quad L = \lambda_0 + n\lambda$$

f. It is reasonable to assume the model in
e in applications when the variance is known
in practice. Otherwise, it would be approp. to
place a prior on the variance/precision.
Ex: ht ex versus IQ score ex.
I would place a Gamma (a, b) prior on λ
as it leads to $(\mu, \lambda) \mid x_{1:n} \sim$ Normal Gamma
dist^n. (Another valid soln is stating that
$\lambda \sim$ Gamma(a, b) leads to a semi-conjugate
update).

g.) I. + II.