1. (a) Unless a project has an explicit goal of job creation, it should not be favoured just because it hires many employees. Generally, labour is a cost, an input, to be valued at the appropriate shadow wage, usually between the higher tax-inclusive and the lower tax-excluded prices. In the case of involuntary unemployment it might be even lower. The social benefit per job created = \text{the market wage} - \text{the shadow wage} \geq 0.

(b) If there exists involuntary unemployment, then market wage > shadow wage, and since labour is a cost, an input, NPV_{\text{market}} > NPV_{\text{shadow}}. Moreover, if the project is sufficiently large to raise the market wage, have to distinguish between incremental labour (valued at tax-excluded) and displaced labour (valued at tax-inclusive).

Note: use willingness to pay for displaced, not opportunity cost for incremental.

(c) Large quantities of input is not necessarily a good thing, on average. In a simple CBA, want to maximise the difference NPB - NPC which is not done if costs are higher than necessary: note: this is just EVA, Economic Value Added! NPV means improved efficiency, size of the economic "pie".

(d) The interest rate is a price: the cost of capital. Just as with other prices, we may have to...
adjust for market distortions, whose market i.r. $\neq$
shadow i.r. Again, if the capital is actually
incremental, then shadow i.r. $<$ tax-inclusive
market i.r., but if some capital is displaced,
then use tax-inclusive. Why? Opportunity cost
of capital = market interest rate, with taxes.
Willingness to pay = market interest rate plus.
No, neither private nor public projects should be
subsidised; necessarily. If gain in C.S.
> prospective loss of a private firm, then there is
a case of subsidy, to improve the social welfare.

2. (a) A Pareto Improvement (PI) gives losers the veto.
Under PPIC losers lose the veto, so long as
winners could in principle pay the losers to be
content and still be ahead themselves. So
estimate the winners' gains and the losers' losses.
If $WG > LL$, the PPIC is satisfied, and
an efficiency grounds the project should go ahead,
even if the losers lose.

(b) See (a). Compensation could still be valuable if
the project has distributional goals as well or
if political pressures, implementation etc. will be
satisfied by it.

(c) The Internal Rate of Return (IRR) is the
discount rate (not interest rate) that results
in an NPV = 0. It need not be unique.
The IRR is an attempt to determine how
profitable an investment project will be: is
the IRR > the hurdle rate? If yes, then good.
But the IRR is scale-independent: double the size of the project leaves the IRR unchanged. So it cannot be used to rank exclusive projects, and it cannot be used when there is capital rationing (a budget). In all cases we wish to choose a combination of projects that maximise NPV in aggregate. (Use NPV/Ko or NBI/R to rank projects, not IRR.)

(d) No. Although the toll (by increasing the effective price of using the highway) will increase the demand for substitutes (such as the railway) and reduce the demand for complements (such as petrol etc.), there will be changes in CS in these other markets - specifically there will be an increase in CS in the rail travel market. These changes should not be included in the CBA, in general. Occurring through the smooth operation of the market mechanism, they are Secondary External Benefits (PEEs). Only if these related markets are not competitive should changes in them be included in the CBA. Otherwise, they are winners and losers, but they cancel. In this case, with horizontal supply (constant Marginal Cost), there is no change in the rail travel price, and that market is competitive. Ignore the revenue in CS then.
4(a) Gold Market

Observed points lie on the "effective demand" curve, since a determinant of supply, the cost of goldsmiths, is affected by the world price of gold. From the second graph, the cost of goldsmiths rises from $22.50 to $27.50, and so the supply curves in the first graph are actually more elastic (sharper) than the effective demand curve.

(b) The mine owners gain $A = 50 \times 22.50 = $112,500
but lose $B = 5 \times 4500 = $22,500 in GSM

I Net = $90,000 gain = $A - $B

II The goldsmiths' gain = $B = $22,500

III Total net gain = $A - $B + $B = $A = $112,500

IV This is what Australia gains.

Assuming that (1) no externalities, (2) the supply of Australian gold is negatively influenced by the wages paid to goldsmiths.