Microeconomics 1999 (First year exam)
Part B, 11 OR
'As a mechanism for allocating resources, auctions are efficient and fair.'
Discuss.

Ideas that might form part of an answer. These are unofficial, and are certainly not necessary, and may be not sufficient for a good answer; in this case I neither set nor marked this question.

- A Japanese auction will be efficient under very broad conditions (though it's possible for it not to be; the last 2 players do not see the other's information).

- Less structured ascending/English or second price auctions reveal less information so will not necessarily be efficient in common-value settings, though they will be in private-value settings (in which 'truth-telling' is a dominant strategy).

- First price/Dutch auction will in general be efficient if and only if bidders are symmetric (i.e. value/signals are all drawn from the same distribution, identical risk aversion, etc.).

- Here efficient means highest-value, in money rather than utility terms, so ignores different deservingnesses. (And you should talk more about this in discussing ideas of fairness and efficiency---your answer should probably start by saying something about what is meant by efficiency and fairness in resource allocation in general and in the context of auctions.)

- Auctions also ignore externalities to non-players. In particular, firms bid based on expected profits, so consumer surplus will be ignored. So also will government surplus; this is important since raising government funds by an alternative method (taxation) generates social costs.

- You could contrast auctions with the main alternatives,
  -- 'beauty contests' (at least dominated by a beauty contest augmented to allow money to be bid as well; more generally how effective at extracting information are beauty contests?, and why should the government give up revenue?)
  -- lotteries (probably inefficient, in spite of Cramton, Gibbons, Klemperer Econometrica 1987)
  -- first-come-first-served

- There's lots more (e.g. multi-unit auctions), but the above is all within the context of the first year course.

Pdk418

Solution to question 13 - from the Oxford 2nd Year Economic Theory 1997 exam paper

Question 13

See Chapters 1 and 4 of Klemperer *Auctions: Theory and Practice.* A good answer might address the issue “better” for whom? (The answer will be different for buyers, sellers, and society.)

Solution to question 14 - from the Oxford 2nd Year Economic Theory 1996 exam paper

Question 14

See Chapter 1 of Klemperer *Auctions: Theory and Practice*.

1999

Solution to question 15 - from the Oxford 2nd Year Economic Theory 1999 exam paper

Some notes for auctions essay question.

(these ideas are neither necessary to a good answer, nor exhaustive)

- revenue equivalence applies in both cases under similar assumptions
  (but assumptions arguably implausible for common values)

- common values auctions have winner's curse effects

  e.g. - bidders bid less as number of bidders increases in 2nd price, and sometimes in 1st price, auctions.
  - indeed, expected prices are not necessarily monotonic in number of bidders (e.g. Bulow-Klemperer (99 Working Paper) and cites therein)
  - asymmetries may matter a lot (e.g. Klemperer (EER98))

- *any* symmetric affiliated values auction is observationally equivalent to a symmetric affiliated private values auction see e.g. Laffont and Vuong (AER 96).

- multiple equilibria with pure common values and ascending.

- in common values 2nd price auctions no bids should be observed just above a reserve price (and a corresponding result about the density of bids above the reserve price can be derived in a 1st price auction) see Milgrom and Weber (Ecta 82).

- Constructing an optimal auction is harder with common values (setting optimal reservation price is harder even in "standard" symmetric "downward sloping" MR case (so seller's behaviour differs). Likewise the socially efficient mechanism may be very different with entry.

- in practice, do people sometimes behave in common value auctions as if they're private values?

Pdk/306

Some notes for auctions essay question (2000).

(These ideas are neither necessary for a good answer, nor exhaustive.)

(i) The revenue equivalence results comparing standard auctions depend on independence. Milgorm and Weber (Ecta 1982) provide some results that apply when independence is relaxed.

(ii) The theory of optimal auctions is critically sensitive to the independence assumption. See Myerson (Maths of O R 1981) Cremer and McLean (Ecta 1985) and subsequent literature.

(iii) The assumption is generally not a good *representation* of the world. It may be an OK approximation for the pure private-values case but is much more strained for plausible common-value cases (although stories can be made).

(iv) However, the assumption may offer a good *model*. It provides simplicity and tractability, and it's failure is often either quantitatively unimportant (? c.f. point (i)), or not relevant to the issue of concern (e.g. Klemperer (EER 1998)), or irrelevant in practice (it would be worth discussing this point as it probably applies to (ii).)

pdk/exam/1

Solution to question 17 - from the Oxford 2nd Year Economic Theory 2003 exam paper

Question 17

The standard view is that affiliation makes it desirable for the auctioneer to release any information he has to the bidders, and means ascending auctions are more profitable than second-price auctions which are more profitable than first price or sealed-bid auctions.

Both these statements can be made more precise; the relationship between affiliation and correlation should also be explained. See Milgrom and Weber (*Econometrica*, 1982) and the discussion in Klemperer (*Journal of Economic Surveys*, 1999[1]).

However, it seems that these effects are generally small, and typically relatively unimportant, compared with others issues in auction design see, especially, Klemperer (sec. 2 of *Journal of the European Economic Association*, 2003[2]).

One might also mention Cremer and McLean's (*Econometrica*, 1985) result that with correlated signals, an optimal auction can extract all bidders' rents, and discuss the empirical (ir)relevance of this, see Klemperer (*Journal of Economic Surveys*, 1999[3]).

[1] Chap 1 of Klemperer *Auctions: Theory and Practice*.
[2] Chap 4 of Klemperer *Auctions: Theory and Practice.*
[3] Chap 1 of Klemperer *Auctions: Theory and Practice*.

2001 Economic Theory Essay Question : Answer

The Revenue Equivalence Theorem extends to multiple units, if bidders are permitted to win at most one object each (and under the usual assumptions of risk-neutrality and independence of signals).

It is not hard to see that under these assumptions, the price path from any standard repeated auction should be a martingale. See Klemperer (JE Surveys, 1999) Section 10.3 for this argument, and how the result is changed when the RE assumptions are violated. Further references are also given there. Beggs and Graddy (1997) is a recent contribution.

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Q2 Auction Essay Answer

[some very sketchy thoughts: there are probably much better answers]

— it is true that most auction theory has been developed in a single unit context, but probably most auctions of interest are for multiple objects

— if bidders want a single unit only, results extend quite well to many units
e.g. revenue equivalence theorem,
(and the ways it fails when its assumptions are varied)
marginal revenue analysis in optimal auctions,
and efficiency of simple auctions

single-unit results also extend trivially when bidders' utility is linear in number of objects and no budget constraints etc

(a good answer would probably explain why all these results go through)

— but when bidders may want multiple units each, then all of this can fail
e.g. • demand reduction in ascending auctions
(& inefficiency of simple ascending auctions)
• entry deterrence is much harder since entrant can come in and demand small share
• collusion easier
• linkage principle fails, etc. etc.

(28)

& some results such as implicitly collusive equilibrium don't arise without multiple units

— mistakes have been made based on naive translation of single unit results to multi unit contexts
i.e. failure to recognise demand reduction incentives
and resulting inefficiency of ascending/uniform price auctions
(as Milton Friedman etc. did in debates about treasury auctions)

— with sufficiently many units, auctions look more like standard oligopoly, and intuitions from i.o. seem useful
(e.g. about demand reduction)

— but there's clearly a lot we don't understand about multi-unit auctions, and this does matter

Solution to question 20 - from the Oxford 2nd Year Economic Theory 1998 exam paper

Question 20

See Part C of Klemperer *Auctions: Theory and Practice*.