If it is not listed here it is not on the syllabus.

B Paper 2010:

Q1. On Syllabus. End of part d is tricky and was not really covered, but could be deduced by a perceptive student.

Q2. On Syllabus. The [7] point part is tricky

Q3. On Syllabus.

Q4. On Syllabus, although for part b we have only discussed effective masses at the extrema of the bands.

Q5. On syllabus.

Q6. The first two parts are mostly on syllabus, although we covered them only very briefly. The final part about constructing a laser is certainly not. The students should be able to deduce the density of states of a 2d electron gas. Figuring out how the multiple states in a quantum well change this density of states would require some thinking and was not covered (but clever students might get it).

B Paper 2009.

Q1. On syllabus. This question is solved in great detail in my lecture notes (note also there is an error in the height of data point e of the plot. Discussed in my lecture notes page 136)

Q2. On syllabus.

Q3. On syllabus.

Q4. On syllabus. We did not explicitly discuss part (c) but a clever student should be able to figure it out.

Q6. As with Q6 of 2010, this is mostly on syllabus except the last part discussing lasers. The students should be able to derive the density of states in 1d. Again, figuring out how the multiple states in a quantum well change this density of states would require some thinking and was not covered (but clever students might get it).

B Paper 2008

Q1. On syllabus.

Q2. On syllabus.

Q3. On syllabus

Q4. On syllabus (this was assigned as a homework problem)

Q5. On syllabus – Except the piece about superconductors.

Q8. As with Q6 of 2010, 2009, this is mostly on syllabus except the last part discussing lasers. The students should be able to derive the density of states in 2d. Again, figuring out how the multiple states in a quantum well change this density of states would require some thinking and was not covered (but clever students might get it).

B Paper 2007

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus

Q4. On syllabus – I did not use the word "exchange interaction" in this particular sense in lecture (in fact it was used in a somewhat different sense in lecture). So this might confuse the students. However, the use of "Exchange" in this sense is discussed in the lecture notes.

Q7. See above comment on Q6 2010, Q6 2009, and Q8 2008. Clever students should be able to deduce the results for the first two parts. The last part about lasers is not on syllabus.

B Paper 2006

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus (this problem was assigned for homework)

Q4. On syllabus

Q7. Only the first part is really on syllabus. (Although there was a homework problem discussing the second part, I don't expect any but the best students would get that. The third part even fewer would get)

B Paper 2005

Q1. Part (a) is off syllabus. Part b is on syllabus. Part d and e are on syllabus. Part c –very good students might get this, but we restricted our attention to cubic structures when discussing diffraction.

Q2. On syllabus. We discussed the last part in lecture (which according to the examiner report was not successfully answered by any student).

Q3. On syllabus.

Q4. On syllabus. The first half was assigned as a homework problem. Note there is a typo in the formula given in brackets at the end.

Q5. On syllabus. Note that the problem is incorrectly phrased. $<\sigma>$ should be replaced by $<|\sigma|>$ in the formula (since it is +1 on half the sites and -1 on the other half, $<\sigma>$ is always zero).

B Paper 2004

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus

Q4. On syllabus. See above comment on Q4, 2007 regarding the use of the word "exchange interaction".

THE OLDER SYLLABUS

A4 2003

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus. Last part about electron-electron is not entirely on syllabus (but might be able to say something about it)

Q4. On syllabus

Q5. On syllabus

Q6. On syllabus, last part was only touched very very briefly in lecture. In principle it could be figured out from the information given in lecture or notes, but probably not on syllabus.

Q8. On syllabus except (e)

A4. 2002

Q1. On syllabus except last part about superconductivity.

Q2. On syllabus except in the first part we did not discuss what m and n should be. (Use 12 and 6)

Q3. On syllabus

Q4. On syllabus

Q5. On syllabus

Q6. On syllabus

A4. 2001

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus

Q4. On syllabus

Q5. On syllabus

Q6. On syllabus, except last part.

A4. 2000

Q1. On syllabus

Q2. On syllabus

Q3. Only first two parts are on syllabus (last part is superconductivity)

Q4. On syllabus.

Q5. On syllabus

Q6. Parts (b) and (e) are not on the syllabus

A4. 1999

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus

Q4. On syllabus

Q5. On syllabus

Q6. Part c is not on the syllabus

A4. 1998

Q1. Parts c and d are not on the syllabus. In part a we mainly focused on powder diffraction (although the others methods were mentioned too).

Q2. On syllabus

Q3. On syllabus

Q4. On syllabus

Q5. On syllabus

Q6. On syllabus

A4. 1997

Q1. On syllabus

Q2. On syllabus

Q4. On syllabus

Q5. Only first two parts on syllabus

Q6. On syllabus

Q7. Parts a and b on syllabus. Part c is more or less on syllabus but not emphasized.

A4. 1996

Q1. On syllabus

Q2. On syllabus

Q3. On syllabus

Q4. Last part not on syllabus

Q5. On syllabus

Q6. On syllabus

Q7. Only part d on syllabus