FACULTY OF PHARMACEUTICAL MEDICINE
of the Royal Colleges of Physicians of the United Kingdom

EXAMINATION FOR THE DIPLOMA IN PHARMACEUTICAL MEDICINE PART 2

21 OCTOBER 2013

SHORT ANSWER QUESTIONS

INSTRUCTIONS TO CANDIDATES

1. **Two hours and 30 minutes** are allowed for answering this Section.
   Allow 15 minutes for each question.

2. **Answer all ten (10) questions** in this section.
   You do not have to answer the questions in numerical order.

3. Each **question is worth a maximum of 10 marks**.
   Where questions comprise more than one part, the number of marks available for each part is shown.

   The number of marks shown for each part should be taken as a guide to the relative extent of the answer required.

   For some questions, a full answer will require more points to be given than the number of marks available because some questions are marked in increments of 0.5 marks

4. Complete the **front cover of the answer book** with your last name, forename(s), candidate number and signature.

5. **Begin each question on a new page and write only on one side**.
   Please do not write outside the margins of the pages.

6. **On each page of your answer book**, write your candidate number, the question number and the page number:

   e.g. candidate 12 starting his second page in answer to question 5 would complete the answer book page as:

Candidate No:	*12*	Short Answer Questions	Question No:	*5*	Page No:	*2*

7. We strongly advise you to **write your answers as brief notes / bullet points**, not in the form of essays.

8. When the Invigilator announces the end of the session, please stop writing **immediately** and stay in your seat until we've collected your answer sheet.

SAQ Paper 2013

1 You have been asked to work with a statistician to determine the sample size for a phase III parallel group superiority trial in heart failure patients of a new drug "X" versus placebo. The primary endpoint will be all cause mortality after one year of treatment.

a) Apart from a type I error (statistical significance level), list 3 other critical direct assumptions/pieces of information will you need to tell your statistician so a sample size can be calculated for this study design. **(3 marks)**

b) Complete the table below to show what change in the **3** assumptions you have listed in question 1a. would result in a smaller sample size. (note: type I error is given as an example). **(1½ marks)**

Assumption from part a)	Change in assumption to achieve a smaller sample size
Type I error (e.g. p<0.01)	Increase (e.g. p<0.05)
Complete this row	
Complete this row	
Complete this row	

c) If the primary endpoint was changed to a composite of all cause mortality plus cardiovascular morbidity after one year, what would be the expected impact on the sample size? **(½ mark)**

d) In another phase III trial, a biomarker (raised protein level) was evaluated for specificity and sensitivity in predicting hospitalisations for heart failure. The results showed this biomarker to have 70% sensitivity but 95% specificity to hospitalisations for heart failure.

i. Briefly explain what is meant by a "70% sensitivity and 95% specificity for heart failure hospitalisation" **(2 marks)**

ii. How could this biomarker be used in future trials? **(3 marks)**

2 According to the ICH E6 Guideline for Good Clinical Practice (GCP) there are 13 principles of GCP. Give 10 of these. **(10 marks)**

3 a) Outline the criteria which a medicine must meet to qualify for orphan designation in the European Union (EU). **(4 marks)**

b) Outline the key advantages to the applicant of orphan designation in the EU. **(6 marks)**

4 a) What clinical laboratory criteria are considered as a potential signal for severe drug-induced liver injury (DILI) according to Hy's Law? **(1 mark)**

b) What additional information should be collected when a potential DILI case is identified? **(3 marks)**

c) How might hepatic impairment affect a drug's pharmacokinetic and pharmacodynamic effects? **(6 marks)**

5 a) Define cost effectiveness analysis (CEA) and cost utility analysis (CUA) giving an example of how each analysis is presented. **(4 marks)**

b) When would you use a cost minimisation analysis and how is the analysis presented? **(2 marks)**

c) What are health utilities? **(2 marks)**

d) What two approaches are used to assessing quality of life measures in trials? Give an example of each. **(2 marks)**

6 Individual patients show a wide variability in their response to a given dose of an oral drug. List the principal factors accounting for this inter-patient variability in response giving examples where relevant. **(10 marks)**

7 a) Product A is said to be bioequivalent to Product B. What is meant by the term bioequivalent? **(2 marks)**

b) What are the standard pharmacokinetic criteria for considering one product to be bioequivalent to another? **(1 mark)**

c) Give two examples of when bioequivalent studies may be performed. **(1 mark)**

d) Describe the key design features of a bioequivalent study. **(6 marks)**

8 a) List 5 sources of safety signals for a marketed product. **(2½ marks)**

b) What factors should be taken into consideration when evaluating a safety signal to assess whether it is drug related? **(7½ marks)**

9 List or tabulate the key difference in experimental methodology between safety studies conducted in animals and safety studies conducted in humans. **(10 marks)**

10 a) Define Joint Working between the NHS and the pharmaceutical Industry. Your answer should include the two key requirements. **(2 marks)**

b) Give 5 other important criteria that should be met when establishing a Joint Working project. Do not repeat points included in your definition. **(5 marks)**

c) According to the ABPI Code of Practice what requirements apply for the Joint Working Agreement and any materials prepared in relation to Joint Working? **(1 mark)**

d) What should be included in the briefing to sales representatives in an area where a Joint Working project is in place? **(1 mark)**

e) Give 2 examples of other non-promotional or commercial activities of a pharmaceutical company that involve the NHS and health care professionals that are not considered Joint Working. **(1 mark)**