



Medical Sciences at a Glance

PRACTICE WORKBOOK

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WILEY Blackwell

Medical Sciences at a Glance: Practice Workbook

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Medical Sciences at a Glance: Practice Workbook

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Preface

Examinations often have an overexposed role in our learning process. Preclinical medical examinations are no different: the sheer volume of detail in a range of subjects that covers seemingly theoretical and dry concepts makes many students wonder why they chose to read medicine.

At that stage the syllabus appears vast. Textbooks go into too much detail for the revision. Past examination papers may be available without answers. Increasingly, universities have question databases that they protect from students and their ability to share them instantaneously. Currently available published study materials are focused on membership examinations and finals, and few go into any depth explaining answers.

In this book we wanted to address these points. We know from experience that ultimately a core of facts, concepts and misunderstandings gets tested over and over again as you progress through your medical career. We have included as many of these 'pearls' as possible and provided each with a detailed answer, which will explain both the correct choice and the common pitfalls.

We strongly believe that the basic sciences are not just a group of facts to pass and to forget, but that they have real clinical applications. Although knowledge of clinical medicine and history taking is not required for this book, we have included small vignettes to

bring concepts to life and to stimulate thought about the clinical relevance of each question.

When writing this book, we were aware that medical sciences are taught in very different styles across the UK and elsewhere. We could not create a book that would be ideal for everyone and chose a subdivision by subject. We included a mix of question types to cater for different approaches and to provide variety to better test your knowledge. Questions are arranged in exam-like chapters each containing 15 multiple-choice questions, five extended matching questions, five true/false questions and five short answer questions.

We hope that you find this book stimulating and rewarding in your revision for your examinations and beyond.

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We thank the entire editorial team at Wiley-Blackwell, especially Elizabeth Johnston, Laura Murphy, Helen Harvey and Katrina Rimmer, for their unwavering support for this project.

JS would like to thank his wife Agnieszka for her encouragement and patience for many months. JS is also grateful to Dr John Goodfellow for his support. Without him this book would not have taken off.

Introduction: an approach to answering questions

The most important advice that can be repeated again and again is of course to read the question thoroughly first and then read the answer. This obvious point is the most common reason for getting answers wrong: it means what it says so don't skip to the end of the question because you get bored and don't read the answer first – you will fall for the traps. The question may sometimes seem irrelevant but more often than not it contains important clues that are either essential or very helpful in answering the question.

Multiple-choice questions (MCQ)

Multiple-choice questions remain one of the most commonly used examination tools. They are relatively easy to write and allow for computerised marking and analysis of replies using a variety of statistical methods. Most nationwide examination schemes such as a number of Royal College membership examinations and the US medical licensing examinations (USMLEs) use these.

Downsides of this question type are that they can be geared towards testing of facts rather than concepts, and can sometimes invite students to guess the answer which seems most sensible. Examiners try to overcome this by creating questions that will require you to integrate multiple facts and by inserting distractors (obvious mistakes).

Classical MCQs (closed questions)

These questions ask a specific point of information; they are closed. If you know the answer you can answer the question even without knowing the five options, and should try and do this during exam conditions. It allows you to bypass answers that have been put in to distract you. If you struggle to do this, look at the answers and try to eliminate the obvious false answers and pick from the remaining ones.

Best-of-five questions (open questions)

You will be presented with an open-ended question, such as 'what is a difference between A and B?' or 'what is the most likely cause for this?'. Reading the question thoroughly remains key when answering these questions; you should have a fair idea about what potential answers you are looking for. You will then have to look at each answer in turn and decide individually if (a), (b), (c), etc. are true and then pick from the ones you have decided to be the most likely answers (hopefully only one).

A special type of open-ended MCQ is that written like a 'true/false' question, with multiple statements. They are becoming less popular and are the only MCQs where it is permissible to read the answers before reading the questions. Because they are still in use, we have included a few of these examples which will be preceded by a statement like 'Which *one* of the following statements is true?'

True/False questions

These are supposed to be the easiest questions to write and are often sentences that could be taken out of a textbook, some of

which have been modified to incorporate common mistakes in understanding by students.

Because they can be regarded as easy on their own, examiners will try to increase their difficulty. For example, two or more pieces of information can be included in each statement, of which only one is false. Sometimes negative marking is used to increase the perceived difficulty (see below).

True/False questions are obviously centred around the statements – and these have to be read carefully. True/False questions are the only questions where you may choose to start the question by reading these statements, but do not discard the question stem entirely as it may contain vital clues which may help you in judging whether the statements are true or not.

Extended matching questions (EMQs)

An increasingly popular way to ask questions that overcomes some of the predictability of MCQs. For a given set of answers, there are usually a number of direct questions, five in the case of this book.

Again, the best way is to think of the answer to the question first and then find it on the list. If you know the answer, you will find it or an answer that is closely related. The list will usually be sufficiently long and the timing of the question sufficiently brief to not allow analysing every answer to find the best one for the particular question.

If you cannot find the answer after a quick scroll through the ones available, you may wish to mark the question as unfinished and move on. The worst mistake you can make with EMQs is to ponder over the options available while time for your remaining questions is passing.

Short answer questions (SAQs)

A very good question style that used to allow for a variety of question types such as: lists, fill in the gaps, analyse the data, etc. However, it has fallen out of favour since the advent of electronic marking: SAQs still have to be marked by hand. This question style also allows some interpretation of the questions by both examinee and examiner and thus introduces an element of subjectivity.

The key to answering these questions is to know how many points can be gained from the question. It's usually five in our book so aim to list five facts or to make five key points. Trying to list more or write more will usually irritate the examiner who will have to pick the five relevant ones. You may be marked down for superfluous information or, worse, for the mistakes you have made in the additional information provided.

Positive and negative marking

We believe that this issue usually creates unnecessary anxiety amongst students. Positive marking is standard currently – you get a mark for a correct answer and no points for either a wrong or an absent answer. What follows from this is that an absent answer is a wasted opportunity. Because you do not get punished for guessing,

you should never leave a single question blank even if you have no clue: you get a 50% chance of scoring in True/False questions, 20% in MCQs and usually <10% in EMQs.

Negative marking introduces a negative mark for a wrong answer. Because your results are usually analysed against your peers, this means that the pass mark usually falls drastically when this marking scheme is introduced. However, don't be tempted to leave too many questions blank – you don't score for blank questions. The approach to negative marking depends on the question type.

- **True/False:** these questions are more likely to be marked negatively. Using positive marking, even a monkey trained for the task will score 50% on these questions and a score of 70% means that you actually only got 40% right and guessed the rest. A score of 50% on negative marking means that you probably knew about half the syllabus with certainty. If you do a True/False paper with negative marking, the key question is what to do with statements where you don't know or aren't sure. You can either leave them blank or answer them, risking a negative mark. How you deal with this will be individual: some people do very well by guessing, while others will fall for the hidden traps time and time again. If you are a person who second guesses and analyses questions a lot, you will probably find yourself in the group of people who don't guess well. The best way to find out, however, is to do a number of past papers yourself using negative marking and see which strategy gives you more points (statistically both should be equally effective).

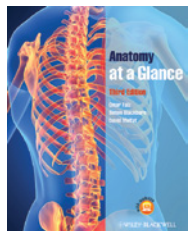
- **MCQs and EMQs:** rarely negatively marked. Guessing these questions with negative marking makes absolutely no statistical sense unless you can exclude all but two answers. Even then, not answering the question is probably better, but again try the method suggested in the previous point.
- **SAQs:** these questions have always been negatively marked in a way as false information results in a penalty, though overall the lowest mark is usually 0.

Using hints other than knowledge to answer questions

This is not an uncommon trick advised by some students and found on the internet. We would recommend you avoid these techniques, which are known to people who write questions. A non-exhaustive list of such bad advice includes the following.

- 'Questions that contain always/never are generally false.' (Unfortunately we still see some use of these questions which can be misleading and invite second guessing of the meaning of the question.)
- Using grammar or syntax to guess the answer, e.g. picking the only past tense answer for a past tense question.
- Analysing answers and deducing the most common combination, e.g. in a two-word answer, picking the answer which has the most common first word and the most common second word.

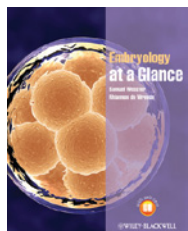
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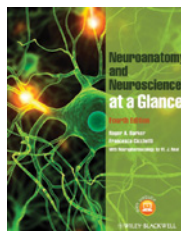
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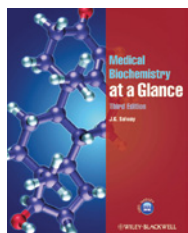
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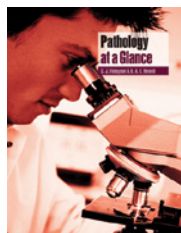
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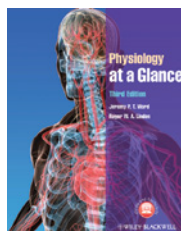
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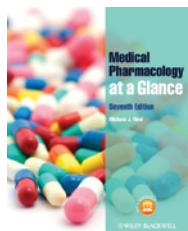
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How to use your textbook

Features contained within your textbook

This textbook contains 12 separate examinations divided by 6 subject areas. Each exam contains 15 multiple-choice questions (MCQs), five extended matching questions (EMQs), five True/False questions and five short answer questions (SAQs). The answers appear at the end of each exam.

Each chapter can be done as a timed examination and should not take longer than 60–90 minutes.

If you would like to score your examination we suggest the following weighting:

- MCQs: 2 points per question
- EMQs: 5 points per question
- True/False: 5 points per question
- SAQ: points suggested in question (usually 5 points).

The best time to use this book is towards the end of lecture courses but early in your revision – you will benefit most if you study the questions together with the answers; this includes both wrong answers and answers you were not sure about.

The image displays a collage of overlapping pages from a textbook, illustrating the layout of exam questions and answers. The pages are arranged in a descending staircase pattern, showing different sections of the book.

- Top page (Anatomy, histology and embryology exam 1):** Features a red header with the exam title. Below it, a 'Questions' section includes 'Question 1: True/False' with a list of statements about the knee joint and arteries. A vertical red bar on the right side is labeled 'Exam 1 questions'.
- Middle page (Biochemistry and genetics exam 1):** Features a blue header with the exam title. Below it, a 'Questions' section includes 'Question 1: MCQ' and 'Question 6: EMQ'. A vertical blue bar on the right side is labeled 'Exam 1 questions'.
- Bottom page (Physiology exam 1):** Features a green header with the exam title. Below it, a 'Questions' section includes 'Question 1: MCQ' and 'Question 4: MCQ'. A vertical green bar on the right side is labeled 'Exam 1 questions'.

Each page also includes an 'Answers to Exam 1' section at the bottom, providing detailed explanations and references to textbook chapters for each question.

Text not available in this digital edition.