

# Multiple Choice Questions in Medicine

for the MRCP Examination (Part 1)

P. Bell MRCP

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with a Foreword by  
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## *Foreword*

by J. VALLANCE-OWEN

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Well constructed multiple choice questions are now recognised internationally as an efficient means for the assessment of knowledge, and are used for this purpose by many examining bodies. Although many people have a really excellent knowledge of medicine and its associated subjects, they often are not able to answer satisfactorily MCQ's and there is, undoubtedly, a technique for doing so.

The questions in this volume have been prepared primarily for use by those who are preparing for an examination such as MRCP (UK). They include not only questions relating to General (Internal) Medicine but also its various specialties and allied basic sciences, the latter having now become part of the re-constructed MRCP (UK). In the answering key there is not only the answer itself but often some further information about the point.

To use these questions to the best advantage is to do them on a strictly timed basis, for two of the greatest mistakes in answering MCQ's are either to run out of time i.e. to be left with ten questions to answer in three minutes, which is impossible, or to go too fast and have an hour left, having done the questions to the best of your ability. This latter situation is even worse than the former as, so often, your second thoughts, as you go through the questions again, are wrong.

I have encouraged Dr. Patrick Bell in this idea and he has produced a wide range of questions designed to test knowledge and skill in many aspects of medical practice and associated basic sciences. Anyone preparing for MRCP (UK) cannot familiarise themselves too much with the type of questions which are asked and which are put down in this book.

## *Introduction*

This book is designed for those taking the first part of the examination for membership of the Royal College of Physicians. It may also be of use to Final MB and other postgraduate students.

MRCP Part 1 is a 2½-hour examination consisting of 60 multiple choice questions each with 5 parts. It covers in detail a wide range of topics in internal medicine and will increasingly test knowledge of basic sciences. To pass you must not only acquire sufficient knowledge, but also master the technique of doing multiple choice questions.

### **Acquiring the Knowledge**

#### *1. Plan your reading*

Extensive reading is required, but remember that your time is limited. Your reading must be organised. Some candidates choose one of the large comprehensive textbooks of medicine and read it from cover to cover. Certainly most of the information is there, but it can be tedious. Others choose smaller monographs on the various topics. This is more interesting, but can mean using many different and expensive books.

Both these, as well as other, methods have been successfully used. Whatever method you decide upon, a little time spent planning your approach will be repaid.

#### *2. Read widely*

An examination consisting of sixty multiple choice questions can cover a wide range of subjects. Therefore you must read widely. Big subjects such as neurology and cardiology should be covered in depth. But other fringe subjects like tropical medicine and statistics also need some time spent on them. When all the questions from the fringe subjects are added together they form a significant percentage of the total paper.

#### *3. Know the basics*

There is a widespread belief that MRCP Part 1 concentrates on the small print. While multiple choice questions lend themselves to testing fine detail, the extent of this is overestimated in the case of MRCP. The rare disorders do come up, but the bulk of the questions are about common conditions. If one has time to read the small print it is better to know the rare manifestations of common conditions rather than the common manifestations of rare disorders.

While it is important to use modern text-books, the examination does not test up-to-the-minute research developments. Stick to established and currently held dogma. But do not get so lost in learning facts that you forget underlying principles. A little time on applied physiology will be well spent.

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### **Mastering the Technique**

#### *1. The scoring system*

Each question contains a single statement followed by five possible completions. Any, none, or all of the completed statements may be true. You can respond 'true', 'false' or 'don't know'. Each correct response receives one mark, and each incorrect response loses one mark. You receive a zero mark for each 'don't know'.

#### *2. The marking system*

You should study the instructions on marking the answer sheet issued by the colleges in their examination regulations.

The questions most people ask are 'What mark is needed to pass?', and 'On how many questions should I commit myself to a definite "true" or "false" when there is a risk of losing marks for wrong answers?'

No definite answer can be given to either question, but in general it is felt that a mark of above 60 per cent (or 180 out of 300) is needed to pass, remembering that the exact pass mark varies on each occasion that the examination takes place. There are two broad approaches used to achieve success.

The first approach is the cautious one and suggests that you mark 'true' or 'false' only those questions about which you are sure or nearly sure, and leave the rest as 'don't know'. Allowing for a few mistakes, if you commit yourself on about 210 parts, you would feel hopeful of passing, but remember you have virtually no chance if you answer less than 180 parts.

The more aggressive approach is based on the fact that guessing 'true' or 'false' gives a 50 per cent chance of being correct: an informed guess should have a better chance. Therefore it is claimed that by answering nearly all the questions, including those you are unsure about, you should do better than by being cautious. It is odd, though, how often informed guesses are incorrect!

Candidates have passed using either approach, and many probably fall between the two extremes. Much depends on your temperament. Try to work out which way is best for you while doing practice questions.

#### *3. Practice*

You must get practice with multiple choice questions. One selection is that released in book form by the colleges. All these questions have come up in previous papers and could come up again. Other questions available through correspondence courses vary in quality.

In doing practice questions you will see that certain subjects lend themselves to the multiple choice format. Try in your reading to focus on those pieces of information, which could be easily included.

#### *4. Ambiguous questions*

Candidates constantly complain that certain questions are ambiguous, and of course in badly set papers this can be true. There is nothing

## *Introduction*

more annoying than knowing the details of a particular question, but being unable to answer because of confused wording. In general things are improving and the MRCP Part 1 questions are of a high standard. Genuine ambiguity is rare. Remember that a fairly obvious answer is usually required. You can get into trouble by thinking too deeply!

### **Using this Book**

The questions in this book are designed to be like those that you will see in the examination. I hope they will be helpful in revising the basic knowledge required, and in practising and developing the answering technique.

You are best to do them under examination conditions. Set yourself a given number of questions in the appropriate space of time. Do not look at the answers until you have finished those questions.

The question format in this book is identical with that in the membership examination. The distribution of questions amongst the various subjects is roughly comparable. However, the colleges have indicated that there will be an increasing number of questions on the basic sciences. In the past there have usually been questions on anatomy, physiology, immunology and statistics. Biochemistry, microbiology and pathology are now to be covered. It is hard to assess in advance the range and difficulty of the questions in these new subjects. However, I have included some questions, which I hope will at least stimulate interest and relevant reading.

I hope the comments in the answer section will cope with some of the points that may arise. There is not enough space to deal with everything fully, but I would hope that certain points are highlighted which, though important, are not given much space in the textbooks.

It is important that you realise why you have gone wrong in a particular question. Was it carelessness, a definite lack of factual knowledge or ignorance of basic principles? If you can answer these questions and go on to correct the deficiency, then this book may be of some help.

Finally, if there are answers with which after consideration you still disagree, I would like to hear from you. Then I may learn something as well!

## *Acknowledgements*

While writing this book I have received help from many people and I thank them sincerely.

Professor J. Vallance-Owen has been a source of encouragement and advice, and has kindly written the foreword.

Dr. D. R. Taylor gave generously of his time while reading my rough drafts and providing much helpful criticism. Dr. J. R. Hayes and Dr. H. Taggart gave advice in a number of areas. Others have helped with certain specific sections and these include Dr. B. Craig (Paediatrics), Dr. S. Creswell (Dermatology), Dr. J. Douglas (Renal Medicine), Dr. C. Humphries (Haematology), Dr. J. P. Jamison (Physiology), Dr. M. Lewis (Biochemistry), Dr J. K. McMullan (Endocrinology), Dr. J. D. Merrett (Statistics), Dr. K. Porter (Immunology) and Dr. N. Scott (Psychiatry). The questions have also been read and used by candidates preparing for M.R.C.P. Part I. Their comments and reactions have been especially valuable.

However, multiple choice questions inevitably generate some controversy and the final responsibility for the answers in this book is my own.

To my wife who put up with true and false answers at the breakfast table, more than thanks are due.



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# Anatomy

1. **Of nerves leaving the skull—**
  - a. The optic nerve goes through the superior orbital fissure
  - b. The mandibular nerve goes through the foramen ovale
  - c. The glossopharyngeal nerve goes through the jugular foramen
  - d. The 12th nerve goes through the foramen lacerum
  - e. The 7th nerve goes through the foramen rotundum
2. **The median nerve supplies—**
  - a. Brachioradialis
  - b. Adductor pollicis
  - c. Flexor carpi ulnaris
  - d. Flexor pollicis brevis
  - e. Palmar interossei
3. **The superior mesenteric artery—**
  - a. Arises at the level of the fourth lumbar vertebra
  - b. Lies behind the pancreas at its origin
  - c. Passes above the third part of the duodenum
  - d. Supplies large intestine as far as the sigmoid colon
  - e. Supplies the liver
4. **Structures situated in the pons include the—**
  - a. Fourth nerve nucleus
  - b. Vestibular nuclei
  - c. Nucleus ambiguus
  - d. Reticular formation
  - e. Olivary nucleus

*Answers overleaf*

1.
  - a. False It goes through the optic canal
  - b. True
  - c. True Along with the jugular vein, the vagus nerve and the accessory nerve
  - d. False It goes through the hypoglossal canal
  - e. False It goes through the internal auditory meatus
  
2.
  - a. False It is supplied by the radial nerve
  - b. False It is supplied by the ulnar nerve
  - c. False This and part of flexor digitorum profundus are the only flexors of the forearm supplied by the ulnar nerve. The median supplies the others
  - d. True Flexor pollicis brevis, abductor pollicis brevis, opponens pollicis and the lateral two lumbricals are the only muscles of the hand supplied by the median nerve
  - e. False
  
3.
  - a. False It arises at the level of the first lumbar vertebra
  - b. True
  - c. False It passes below
  - d. False It supplies as far as the splenic flexure
  - e. False The liver is supplied by the right and left hepatic arteries, which are branches of the coeliac artery
  
4.
  - a. False It is in the midbrain
  - b. True
  - c. False It is in the medulla
  - d. True
  - e. False It is in the medulla

**5. In the foetal circulation—**

- a. The liver receives its blood supply from the ductus venosus
- b. Most of the blood from the superior vena cava goes through the atrial septal defect
- c. The head and heart receive better oxygenated blood than the lower parts of the body
- d. The superior vena cava is derived from the right common cardinal vein
- e. The ductus arteriosus usually joins the aorta just distal to the origin of the left subclavian artery

5. a. False The ductus venosus bypasses the liver to bring placental blood to the heart
- b. False That from the inferior vena cava is directed through the septum to supply oxygenated blood to the left side of the heart
- c. True Blood going to the lower parts is mixed with poorly oxygenated blood from the ductus arteriosus
- d. True
- e. True

# Biochemistry

## 1. Galactose—

- a. Has the same molecular weight as glucose
- b. Is directly converted to glucose by the enzyme galactose oxidase
- c. Is formed when lactose is hydrolysed
- d. From the diet is stored in the liver as galactose-1-phosphate
- e. In the urine gives a positive test with Clinitest tablets

## 2. Glycogen—

- a. Is composed of a mixture of different hexoses
- b. Is broken down and synthesised using the same enzymes
- c. In muscle can be broken down and released into the blood-stream as glucose in response to hypoglycaemia
- d. Breakdown is increased by glucagon
- e. Is abnormal in structure in von Gierke's disease

## 3. The tricarboxylic acid cycle (Krebs cycle)—

- a. Is regulated by the concentration of oxaloacetate
- b. Takes place within the mitochondria
- c. Produces relatively more energy than does glycolysis for the equivalent amount of substrate
- d. Produces lactic acid as an important byproduct
- e. Provides substrates for amino acid synthesis

## 4. Substances that can be classified as steroids include—

- a. Chenodeoxycholic acid
- b. Prolactin
- c. Glucocerebroside
- d.  $\beta$ -carotene
- e. Testosterone

*Answers overleaf*

1.
  - a. True The only difference is the configuration of the radicals about one of the carbon atoms, i.e. they are epimers
  - b. False Galactose first is converted to galactose-1-phosphate by galactokinase and then to glucose-1-phosphate by another enzyme
  - c. True Glucose is the other product formed
  - d. False It is converted to glucose-6-phosphate and can then be stored as glycogen. Galactose-1-phosphate builds up in galactosaemia and causes liver damage
  - c. True It is a reducing sugar
  
2.
  - a. False It is composed of glucose only
  - b. False Different enzymes are involved
  - c. False Muscles lack the enzyme glucose-6-phosphatase, which is necessary to liberate free glucose. The liver is primarily responsible for maintaining blood glucose homeostasis
  - d. True
  - e. False Glucose-6-phosphatase is deficient in von Gierke's and liberation of free glucose is the problem. Glycogen structure is abnormal in some of the other glycogen storage diseases
  
3.
  - a. True
  - b. True Whereas glycolysis takes place outside the mitochondria
  - c. True Breakdown to very simple molecules (carbon dioxide and water) causes a great release of energy
  - d. False This is a byproduct of glycolysis
  - e. True For example  $\alpha$ -ketoglutarate and succinate
  
4.
  - a. True A bile salt
  - b. False A polypeptide
  - c. False Glucocerebroside is a combination of glucose with a ceramide
  - d. False
  - e. True

5. **Insulin—**

- a. Is a glycoprotein
- b. Has a half-life in the circulation of 4 hours after intravenous injection
- c. Increases protein synthesis from amino acids in muscle
- d. Increases glucose uptake by the brain
- e. Increases the activity of glycogen phosphorylase

*Answers overleaf*



5. a. False It is a polypeptide  
b. False It is less than 20 minutes  
c. True  
d. False Insulin causes glucose uptake in muscle and adipose tissue  
e. False Insulin increases the activity of the enzymes of glycogen synthesis