

# BMAT

## BioMedical Admissions Test

### WHAT IS THE BMAT?

#### BioMedical Admissions Test (BMAT)

2 hours (60 minutes for section 1 and 30 minutes for each section 2 & 3)

The paper has 3 sections:

- Section 1: Thinking Skills
- Section 2: Scientific Knowledge and Applications
- Section 3: Writing Task

### SECTION BREAKDOWN

#### 1 Thinking Skills

This section is designed to test one's reasoning – both verbal and numerical reasoning. The section consists of 32 multiple choice questions. These questions include 16 critical thinking questions and 16 problem solving questions. No prior knowledge is required for this section however, it is a good idea to be familiar with the common question types.

#### 2 Writing Task

This section tests Biology, Chemistry, Physics and Maths. The section consists of 27 multiple choice questions (7 questions for each biology, chemistry and physics and 6 questions for maths). This section only tests GCSE level knowledge for each of the subjects, but students may not have covered all of the examinable topics before (depending on exam boards). However, all required content is outlined in the official BMAT test specification, and the content can be revised using the official section 2 study guide (links given below).

#### 3 Scientific Knowledge and Applications

This section tests one's ability to organise their ideas in a concise, logical manner. In this section students are given 3 essay options to choose, each of which are followed by a prompt (usually asking the student to explain the statement, argue for or against the statement and to give their opinion).

Typically, one essay option will be medicine/medical ethics based, (e.g., 'There are now many different kinds of internet sites and apps offering medical advice, but they all share one thing in common: they do more harm than good'), one option will be science related (e.g., 'Science and art once collaborated as equals to further human knowledge about the world. Today, science is far too advanced and specialised to work together with the arts for this purpose') and one essay title will be a philosophical/historical quote (e.g., 'A little learning is a dangerous thing' - Alexander Pope). There is no set required knowledge for this section, but the medicine/medical ethics option is most frequently selected as the four pillars of medical ethics (beneficence, non-maleficence, justice and autonomy) can almost always be applied to the statement to help construct a balanced argument.

## SECTION 1

### Critical Thinking Questions

These questions will often require you to identify: conclusions, assumptions, flaws, strengthening or weakening arguments in regards to a small passage. For these questions it is helpful to read the question before the passage so that you have an idea of what to look for in the passage.

- **Identifying conclusions**
  - The conclusion will be the summary of the passage – it can also be thought of as the main point
  - Often it is explicitly stated within the passage (not necessarily at the end of the passage)
  - The conclusion is sometimes followed by words such as: thus, therefore and hence
- **Identifying assumptions**
  - Assumptions can be inferred from the passage – they have not been explicitly stated in the passage
  - To identify which of the given options is an assumption, first ensure that it is not explicitly stated in the passage
  - Then ask yourself if the passage would still make sense if this assumption was false – if the passage does not, this option must be an assumption
- **Identifying flaws**
  - A flaw is something stated within the passage that is inconsistent with the point made by the rest of the passage
  - Flaws are not always explicitly mentioned in the passage, they may also be assumptions
  - The easiest way to answer this type of question, if the answer is not obvious from reading the passage, is by the process of elimination
  - Go through the given options and check whether or not it counteracts the overall meaning of the passage
- **Strengthening/weakening arguments**
  - These types of questions ask you to identify the option that most strengthens/weakens the argument presented in the passage
  - Strengthening arguments will usually be evidence/facts/a premise that supports the argument, or disagrees/disproves any counter arguments
  - Weakening arguments undermines/decreases evidence supporting the argument, or provides evidence strengthening the counter argument
  - Once reading the passage and getting an idea of the general argument, it can be helpful to go through the options, marking them with a tick or 'X' to indicate whether the strengthen/weaken the argument.

### Problem Solving Questions

The official BMAT guide for section 1 ([link given below](#)) divides the problem solving questions into to 3 categories: Relevant Selection, Finding Procedures, and Identifying Similarity.

- **Relevant Selection** questions give you a lot of data (usually in the form of diagrams, tables and charts), and from this you are required to pick out and use the information needed to work out an answer.
- **Finding the Procedure** questions requires you to work out what to do with the relevant information to work out the answer (unlike in Relevant Selection questions where the method of working out the answer should be obvious after selecting the relevant information).
- **Identifying Similarity** questions will provide data in 2 or more different forms, you are required to understand relationships between the data, in order to manipulate it to work out the answer.

Unlike the Critical Thinking questions, there is no generalised step-by-step of how to answer these problem solving questions as they vary so much (that is why it is very helpful to practice as many of these problem solving questions as possible). However, generally students find that constructing diagrams (such as Venn diagrams), tables or equations help answer these questions (to some extent, these questions resemble the types of questions found in the junior/senior maths challenges).

## SECTION 2

### Biology

The biology questions tend to be the most straightforward and quick to answer in Section 2. These questions mainly just require you to recall information, for example questions often start with 'which of the following options is correct regarding...'. Thus, for these questions you either know the answer, or you don't. In the case you don't know the answer just take an educated guess. However, ideally skim over the Section 2 specification and revise any unfamiliar topics, to avoid this.

### Chemistry

The chemistry questions also tend to have some straightforward recall questions, for instance 'which of the following is the definition of an isotope?', but commonly there are questions which require calculations or balancing equations. These questions are not really that difficult at all, especially considering that prospective medical students study chemistry at A-level (or equivalent), but since Section 2 is quite time pressured it would be a good idea to practise balancing equation and common calculation questions (for example, working out the number of mols using atomic mass and mass) under timed conditions.

### Physics

The majority of the physics questions will require you to do some type of calculation – thus, it is essential that you know the 'suvat' equations, force equations, electrical equations, power equations and energy equations (all of the equations necessary are covered in the official BMAT Section 2 specification and revision guide). Apart from these calculations, other commonly examined topics are electrical circuits and radioactivity/radio magnetic spectrum – these questions tend to be more straightforward recall questions. You will not be allowed to use a calculator for the BMAT, and as this section is time pressured, it is important to get comfortable with estimating values for the calculations to save on time.

### Maths

Similar to the rest of the Section 2 questions, the maths questions are not actually that difficult to answer. However, the maths questions tend to be the most time-draining - hence, it is important to estimate values where possible (this is also important as you are not allowed to use a calculator). Commonly questions will require you to use algebra (completing the square, quadratic formula, simultaneous equations etc.).

## SECTION 3

You should start by skimming over the 3 essay options provided, and then select the option that you are both most comfortable with, and have the most knowledge of to write an essay on.

Although, there is no set 'required knowledge' for this section, you will need to have some degree of knowledge regarding the option you pick. For example, for the philosophical option it would be helpful to have different philosopher's opinions on a topic to help construct arguments.

Once you have selected your option, you should then briefly plan what you want to include in your essay. This step is often overlooked as you only have 30 minutes for this section, but planning can definitely help you get a better score. When planning, start by jotting down any ideas you have for both for and against arguments. Afterwards pick the most important points of these (2 points for and 2 points against), and then work out how you would like to order these points.

You should then spend the rest of the time writing your essay (this should be the main bulk of your time so about 20-25 minutes). Ensure that you have a clear introduction, a balanced argument presented in the main body of your essay, and clear conclusion at the end.

Additionally, ensure that your spelling, punctuation and grammar are all correct as these are also taken into account – some people may plan to leave a few minutes at the end to do so, however as this section is also quite tight on time, it would be beneficial to check as you go.

# TOP TIPS AND ADVICE

- Practice! Practice! Practice! The best way to prepare for the BMAT is to practice questions from all of the sections – ideally doing the past papers under timed conditions.
- When using the past papers keep in mind that before 2020, Section 1 consisted of 35 multiple choice questions (as opposed to the current 32) and these included data analysis questions – this is no longer examined on the BMAT.
- If you have friends/know anyone who is also going to sit the BMAT, it can be helpful to send any questions you are unsure about – this way you can learn from/teach each other as there is usually more than one way of approaching a question.
- Start early – the actual exam date may seem very far away but honestly the earlier you start the better. For example, you could start out with spending 15 minutes answering question on each section in the first week or so, to help ease you in to your exam preparation, and then closer to the exam you could start doing full past papers in timed conditions.
- When doing past papers if you get a question wrong, or if you get a question right but you completely guessed the answer, make sure you go back and work out why the correct answer is the answer. Start by trying to do the question again yourself – if you still get the wrong answer, you could check the worked solutions (the official BMAT website only has worked solutions for a few papers, but there is a link below to another website which has the worked solutions to most papers), or ask a friend – whatever you do, make sure you understand why the right answer is correct.
- When doing past papers if you get a question wrong, or if you get a question right but you completely guessed the answer, make sure you go back and work out why the correct answer is the answer. Start by trying to do the question again yourself – if you still get the wrong answer, you could check the worked solutions (the official BMAT website only has worked solutions for a few papers, but there is a link below to another website which has the worked solutions to most papers), or ask a friend – whatever you do, make sure you understand why the right answer is correct.
- It is helpful to keep track of which questions you got wrong in your first run through the past papers – you could keep a running list of the paper date, section number and question number as a spreadsheet. After a while (like a week or so) try these questions again to see if you can answer them – if you still get the incorrect answer look back at the explanation and try again in a few days.
- It would also be helpful to keep track of your score as you do these past papers – the scoring key is attached to the answer key (from the official BMAT website). Doing so can help you identify your weakest section, allowing you to spend more time preparing for that section.
- When doing past papers avoid using the November 2020 (the most recent available paper) until closer to your exam date (two days before) – this way, you can use this paper as a mock exam.

## SECTION 1

- This section tends to be less time pressured as you get almost 2 minutes per question, but the problem solving questions tend to take more time than the critical thinking ones. Therefore, it is beneficial if you get comfortable with how to answer all the different critical thinking questions quickly, saving some time for the problem solving questions.
- The problem solving questions are probably one of the harder parts of this exam to prepare for as there's no set 'step-by-step' so the best thing to do is just practice as many of these questions as possible. Start by doing these questions untimed until you are consistently getting the correct answer – then move on to doing them under timed conditions.
- You can flag questions as you go so if you are unsure about a question or if you think a question is taking too long to answer, take an educated guess, flag the question and move on – if you have time at the end, you can come back to the question then.

## SECTION 2

- The best thing to do to prepare for this section is timed practice. The questions themselves are not that difficult but it is the time pressure that makes this section difficult.
- Get comfortable with estimating values and answers, especially for the maths and physics sections – this will help save on time.
- Similar to Section 1, if a question is taking too long take an educated guess, flag the question and move on and come back to it later if you can
- Make sure you look at the Section 2 specification and go over the revision guide if there are any unfamiliar topics.
- A lot of students are worried about the physics questions (as the majority of prospective medical students study biology, chemistry and maths at A-level), so definitely make sure to skim over the physics revision guide. However, the best thing to do to prepare for the physics questions is to learn all the relevant equations.

## SECTION 3

- Before you attempt a past paper of Section 3 make sure you have read the Section 3 marking criteria (link below).
- Most students dread preparing for this section the most, especially considering the majority of prospective medical students don't take any essay subjects at A-level (or equivalent), but try to think of this section as a series of long-answer questions (with each line of the prompt being a question), as opposed to an essay.
- During your preparation it is a good idea to type your answer in full, in timed conditions at least 3 or 4 times. Once you get the hang of typing out the short essays, you could look at more questions from past papers and plan the essays in detail – this will give you a good idea of the types of essay options to expect.
- Make sure you address all parts of the prompt.
- Ensure you take some time to plan your answer before you start writing – even if you only take a minute or two to jot down your key points.
- Generally, most students find that the medicine/medical ethics question is the easiest to answer since you can almost always apply the 4 pillars of medical ethics (beneficence, non-maleficence, justice and autonomy) to the statement to develop for/against arguments to use.
- If possible, have your friends or family mark the essays you write in full, using the essay criteria, and give you feedback. Otherwise, mark your own essays and make note of anything you need to improve on.
- It is also very helpful to read example essays (some are available on the official website, but there is a link below for more example essays and essay plans).

# RECOMMENDED RESOURCES

## Official BMAT website

<https://www.admissionstesting.org/for-test-takers/bmat/>

## Official BMAT preparation page

<https://www.admissionstesting.org/for-test-takers/bmat/preparing-for-bmat/>

This page links you to the majority of the linked pages below, in addition to a few other useful materials such as video guides.

## Official Practice Papers and answer keys

<https://www.admissionstesting.org/for-test-takers/bmat/preparing-for-bmat/practice-papers/>

## Official Section 1 guide

<https://www.admissionstesting.org/Images/324081-bmat-section-1-question-guide.pdf>

This guide covers the different types of questions that can come up in Section 1 in detail, with worked examples of each question type.

## Official Section 2 specification

<https://www.admissionstesting.org/Images/47829-bmat-test-specification.pdf>

This document outlines the required knowledge in each of the subjects, needed for Section 2 of the exam

## Official Section 2 revision guide

<https://www.admissionstesting.org/for-test-takers/bmat/preparing-for-bmat/section-2-preparation/>

This page links you to a revision guide that covers all the material that could possibly be examined in Section 2. Click the black button that says 'Access the guide' and this will prompt you to a page, where you need to sign in. To access the guide, you will need to make an account (completely free)

## Official Section 3 marking criteria

<https://www.admissionstesting.org/Images/20757-section-3-marking-criteria.pdf>

## BMAT Ninja

<https://bmat.ninja>

This is not an official website associated with Cambridge Assessment Admissions Testing. However, this website allows you to practice questions (from the official past papers), and to practice the past papers online, under timed conditions – this is especially useful as the BMAT will be sat online. Although this website has different paid memberships, the basic FREE membership is sufficient to let you practice the questions and papers. The paid membership gives you access to worked solutions (which can also be found for free in the next link), and it gives you access to revision materials for the content covered in Section 2 (but the official BMAT study guide for Section 2 is definitely sufficient)

## Worked solutions to Section 1 and 2

<https://crackbmat.com/past-paper-worked-solutions/>

## Section 3 example essays

<https://pmt.physicsandmathstutor.com/download/Admissions/BMAT/Section-3/Essay-Writing-Practice/Example%20Essays.pdf>

## Section 3 example essay plans

<https://pmt.physicsandmathstutor.com/download/Admissions/BMAT/Section-3/Essay-Writing-Practice/Example%20Essays.pdf>

## Introduction to the 4 pillars of medical ethics (useful for Section 3)

<https://pmt.physicsandmathstutor.com/download/Admissions/BMAT/Section-3/Notes/Four%20Pillars%20of%20Medical%20Ethics.pdf>

## General BMAT revision

<https://www.physicsandmathstutor.com/admissions/bmat/>

This page links into pages for each of the 3 sections, which contains useful revision guides and materials. The most useful part of this website is that the past paper questions are grouped by topic, for example, for Section 2 all of the physics questions related to the topic of electricity can be found in a single document.

## WHAT IS CONSIDERED TO BE A "GOOD SCORE"?

### Section 1 & 2

Both Sections 1 & 2 are scored on a scale from 1.0 to 9.0, with 9.0 being the maximum score achievable. A 5 is considered an average score, and according to University of Oxford Medical Sciences Division 'the typical average applicant should be working towards a 6' – meaning that 6 would be considered a good score. It is worth noting that scores of 7 and above are quite rare. There is no set cut off score at Oxford, but as you would expect, the higher the score the better.

### Section 3

In Section 3 candidates are assessed on the quality of content of their essay on a scale of 1 to 5 (5 being the highest), and on the quality of their English on a scale of A to E (A being the highest). There are no clear guidelines about what a good Section 3 score is on the Medical Sciences Division's page. However, generally for the BMAT 3A or higher (4A, 5A) would be considered a good score. Typically, most candidates will achieve an A for their quality of English regardless of their quality of content. It is also worth noting that when shortlisting candidates for interview, one of the main things looked at will be an applicants BMAT score – however, the scores for Sections 1 & 2 will receive greater weighting (40% each) than the Section 3 score (20% weighting).