STEP Preparation (6 pages, 11/8/16)

[See also "How to tackle STEP questions" and "STEP: Further Exam Technique"]

Contents

(A) About STEP

(i) STEP 2 is supposed to be harder than STEP 1. STEP 3 is mainly Further Maths material (but without any Matrices). There are a few Further Maths topics (such as Proof by Induction and Inequalities) that can appear in STEP 1 or 2. The Mechanics sections of STEP 1 & 2 assume knowledge of both M1 & M2. See the STEP Specification for details.

(ii) The papers are 3 hours long. Of the 13 questions (8 Pure, 3 Mechanics & 2 Probability & Statistics), any number can be attempted, but only the best 6 will be counted. (Earlier papers contain 3 Probability & Statistics questions.)

(iii) No calculators are allowed, but a formulae booklet is provided.

(iv) Grade boundaries

Candidates are awarded an S, 1, 2, 3 or U grade.

All questions carry 20 marks, so that the maximum mark is 120.

STEP 1

2015 S/1: 96 1/2: 65 2/3: 45

2014 S/1: 90 1/2: 63 2/3: 43

2013 S/1: 100 1/2: 82 2/3: 64

2012 S/1: 93 1/2: 77 2/3: 54

2011 S/1: 86 1/2: 66 2/3: 47

2010 S/1: 103 1/2: 84 2/3: 70

STEP 2

2015 S/1: 94 1/2: 68 2/3: 60

2014 S/1: 95 1/2: 74 2/3: 64

2013 S/1: 100 1/2: 79 2/3: 67

2012 S/1: 91 1/2: 72 2/3: 60

2011 S/1: 83 1/2: 62 2/3: 49

2010 S/1: 105 1/2: 79 2/3: 64

STEP 3

2015 S/1: 88 1/2: 65 2/3: 54

2014 S/1: 81 1/2: 59 2/3: 48

2013 S/1: 85 1/2: 63 2/3: 48

2012 S/1: 84 1/2: 65 2/3: 53

2011 S/1: 91 1/2: 65 2/3: 52

2010 S/1: 78 1/2: 56 2/3: 46

(B) Resources

(a) Official STEP website:

http://www.admissionstestingservice.org/our-services/subject-specific/step/about-step/

This gives access to:

(i) STEP Specification ("About STEP" in the left-hand menu)

(ii) Formulae booklet ("Preparing for STEP", then "STEP Documents")

(iii) past papers & solutions (1998-) ("Preparing for STEP")

There are 3 components to the solutions:

(a) "Hints & Solutions" (or "Hints & Answers")

These sometimes give full solutions, but not always (also, there may be alternative approaches which aren't mentioned).

(b) Examiners' Report

These often highlight students' shortcomings; bear in mind though that the comments usually relate to the students who don't do that well in the STEP paper.

They can indicate questions that are unpopular and yet do-able with moderate preparation (eg a Probability question that only requires knowledge of the Poisson distribution). This can give you an advantage over other candidates.

(c) Mark Scheme (this was introduced for the first time in 2015)

(iv) “Advanced Problems in Mathematics” by Stephen Siklos (based on past STEP questions (though not identified), with discussions & solutions; including STEP 3 questions; 98 pages) ("Preparing for STEP", then "STEP Documents")

(vi) “Advanced Problems in Core Mathematics” by Stephen Siklos (as above, but STEP 1& 2 only; 164 pages) ("Preparing for STEP", then "STEP Documents")

(b) Other sources

(i) Peter Mitchell’s “Meikleriggs” website: solutions to past papers (2006-):

http://www.meikleriggs.org.uk/

(ii) “Ask NRICH” option in NRICH website:

www.nrich.maths.org

(iii) Notes and/or solutions for certain questions, on my website:

fmng.uk (there are also some notes on various topics relevant to STEP)

(C) Preparation Strategy

No candidate is expected to have studied all of the topics in the papers to sufficient depth, and it would seem to be a sensible strategy to specialise in a certain number of areas.

Also, given that there will be many rival candidates of a similar standard, one way of gaining the upper hand is by specialising in particular topics. Another way is to be good at choosing questions!

Topics to specialise in

It probably pays to specialise in topics that have some of the following characteristics:

(i) they are likely to crop up

(ii) they are easily recognisable (eg Integration, Vectors)

(iii) they are limited in scope

(iv) they involve standard techniques

(v) they generally don't involve long answers

(vi) they can often be checked in some way

(vii) they are not generally popular (eg Mechanics or Probability questions), but are nevertheless do-able with moderate preparation

Questions to target

In addition to the above considerations about specialisation:

(i) Q1 & (often) Q2 on each of the 3 papers are intended to be easier (or at least 'accessible' – ie not dependent on more advanced theory). However, nothing in STEP is guaranteed. You don't want to skip Q1/Q2 if everyone else is doing well on it! (On the other hand, if it happens to be the occasion when the second part of the question is too difficult, you don't want to be amongst the candidates who waste too much time on it; ie know when to cut your losses!)

(ii) 'Show that ...' (ie self-checking)

(iii) Questions with a clear topic and/or method (that you are happy with)

(iv) Short questions! (less time spent reading; especially if the question is not chosen)

Suggestions

Pick at least half a dozen topics, and arrange them in the order that you would attempt them in the exam. After attempting a paper under exam conditions, conduct a post-mortem to decide whether your selection of topics needs to be refined, and whether the order is still appropriate.

Whatever strategy you adopt, it is probably best to allow it to develop gradually over the course of the preparation period, so that by the time you come to the exam the strategy has been tested.