EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

MATHEMATICS **6880/02**

Paper 2 Calculator Structured Questions (Core and Extended) **October/November 2020**

Confidential

MARK SCHEME

{6880/02}

MARKS: 90

This document consists of **8** printed pages.

GENERALL INSTRUCTIONS

Administration

1. **Arrival of Scripts**
   - Please use scissors to open plastic envelopes.
   - Check scripts **on arrival** against attendance registers **and** mark sheet.
     If you have any paper 1 scripts which do not appear to be for you, please contact either Principal examiner or your Team leader. They should be able to send them directly to the correct examiner.

     If they are SGCSE scripts but papers 2 or 3 then it may be possible to send them directly to the correct examiner by contacting the principal Examiner of that paper. Otherwise, you return them to Examination Council.

   - Please refer to instructions for Examiners for other aspects of administration.

2. **Co-ordinations**
   - Examiners should answer the question paper before the coordination meeting so that they have a full understanding of what is expected.
   - Throughout your marking you must explain marks for work which is partially correct. This is usually done with the normal prefixes e.g. M, A, SC, B etc.
   - All provisionally (dummies) marked scripts must be reviewed in the light of any amendments to mark scheme made at the coordination meeting and any subsequent comments from team leader.
   - Before you proceed with your marking, check all comments and amendments made during coordination. Scripts should be marked in the order of your apportionment sheet, if possible.
   - As soon as possible after the meeting you should provisionally mark about 10 scripts for the team leader to ascertain if you are marking according to the scheme agreed upon.

3. **Batch**
   Your team leader will sample every batch that you mark. The team leader will sample the first 10 scripts from the first batch you mark to ascertain if your marking is consistent with what has been agreed on coordination. Feedback will be given immediately for you to make changes. Where the mark scheme has not been adhered to, you are expected to go through the whole batch before continuing to the next batch and before entering the marks onto the mark sheets.

4. **Examiners' Report**
   You are expected to complete an examiner's report form, which will later be used to compile a paper report. You should include overall comments, comments on certain individual questions and details of any problems with individual centres.

5. **Mark Sheets and Checking**
   The scripts should show ringed totals for each double page and these ringed totals will check the sub-totals. There should also be final total at the top of the front sheet, which should be ringed on checking. Please be careful to check the mark sheets.

   These sheets should be signed by your checker.

Marking

1. Procedure

- Mark in RED – ink or ballpoint.
- Marks should be written in the right-hand margin. Do not enter marks in the body of scripts.
- Sub-totals should add up to a ringed total for each double page. A full total should then appear on the first page and is to be ringed on checking. Full details of partial marks given are necessary e.g. partial credit by M marks, ticking, crossing underlining, ringing candidates' work. The sub-totals should agree to those beside the relevant question parts.
- Indicate where errors are first made and how any follow-throughs have been checked.
- In many cases a correct final answer will receive full marks. In some cases a method is required and here you should use M's in your marking.

2. Deleted Work

This is marked if it is legible and if it has not been replaced.

3. Types of Mark

- M – for a correct method applied to appropriate numbers.
- A – for accuracy and depend on M marks. Hence MOA1 is not possible
- B – independent accuracy marks. A fully correct final answer may receive full marks without the need to check for method. These cases would score, for example B2 and only when incorrect answers are seen is the M looked for. Please refer to mark scheme to see which questions can be marked in this way.
- S, P and C marks are given in graph questions for scale, plotting and curve quality.
- R and E marks are given for reasoning or explanations.
- SC marks are given in special cases only when mentioned in the mark scheme.
- ft or hooked tick will indicate the award of follow-through marks when the mark scheme allows it.

  A further error in a follow-through would lose such marks and can be indicated by a note or by a hooked tick crossed out.

4. Mis-reads

These happen the first time a candidate copies a number from the question paper and must be consistent throughout the question. One A mark or one B mark is deducted. M marks are still awarded. Indicate by MR -1.

5. Choice

If two answers are given and they are not the same then mark the worst.

6. Notation

Allow any sensible notation. Watch out for commas being used for decimal points and dots used for products.

7. Abbreviations

In addition to those already seen the following may crop up.

cao – correct answer only
ww – without working
www – without wrong working
oe – or equivalent
soi – seen or implied
bod – benefit of doubt
art – anything rounding to
isw – ignore subsequent working
ft – follow through
oor – out of range
mog – marks on graph
cso – correct solution only
t& I –trial and improvement
t& e – trial and error

8. Equivalent Methods

In general, equivalent methods are accepted. However, scale drawings are not accepted in place of calculations.

9. Accuracy

- If a question asks for a particular level of accuracy then the mark scheme will include specific details.

10. Transcription Error

If it is clear that an incorrect final answer is a transcription error then allow full marks.

11. Method Marks

- Complete correct methods receive M marks when arithmetic errors or incomplete solutions occur. If a correct method is followed by a further incorrect method step then the M mark will probably be lost.
- Some questions may require a method to be seen, even when a final answer is correct.
- **I**f two different methods are used then the final answer can imply **which** one was used. If there is no final answer or other evidence then mark the worst method.

Question	Answer	Marks	Notes
1(a)(i)	2 by 3	B1	
(ii)	$\begin{pmatrix} 10 & -4 & -2 \\ -6 & 8 & -14 \end{pmatrix}$	B2	B1 for one wrong entry
(b)	$-4-m=-2, \quad 2q-5=-11$ $m=-2 \qquad q=-3$	M1, M1 A1, A1 [7]	SC1 for $\begin{pmatrix} 6 & -4 \\ 2 & 2q \end{pmatrix}$ seen
2(a)	$\frac{13}{3}-\frac{13}{5}$ $\frac{65}{15}-\frac{39}{15}$ *oe* $1\frac{11}{15}$	M1 M1 A1	Or M1 for $2\frac{5-9}{15}$ M1 for $2\frac{-4}{15}$ Accept $\frac{26}{15}$
(b)	2.35 + 4.494 – 3.193 3.651	M2 A1 [6]	M1 for 4.494 or M1 for 3.193
3	1.23×10^{-1}	B3 [3]	Accept use of another common power of 10. M2 for 0.123 oe. e.g 12.33×10^{-2} M1 *for* $\frac{2.7\times10^4+75\times10^4}{6.3\times10^6}$ *oe*
4(a)	$\mathbf{a} = \begin{pmatrix} -6 \\ 4 \end{pmatrix}$	B2	B1 for each direction
(b)	$\lvert\mathbf{a}\rvert = \sqrt{(-6)^2+4^2}$ 7.21	M1 A1 [4]	

5(a)	$(x - 9)(x + 9)$	B2	B1 for each factor
(b)	$(8+2)(m-5)=m(4-1)$	M1	
	$10m - 50 = 3m$	M1	
	$m = \frac{50}{7}$ *oe*	A1	
(c)	$2x - 1 = 5$	M1	
	$x = 3$	A1	
		[7]	
6(a)	Alternate	B1	
(b)	Interior/co-interior/allied	B1	
(c)	Corresponding	B1	
(d)	Vertically opposite	B1	
		[4]	
7(a)	Octagon	B1	
(b)	8	B1	
(c)(i)	1080°	B2	M1 for 180×6 or SC1 for 135° seen
(ii)	45°	B1	
		[5]	
8(a)	Venn diagram correctly filled	B3	B2 for one wrong entry B1 for two wrong entries
(b)(i)	10, 11, 12	B1	
(ii)	7	B1	
(c)	5	B1	
		[6]	

9(a)(i)	$3(x+2) - 2(7x + 2) = 24$	M1	removing fractions
	$3x + 6 - 14x - 4 = 24$	M1	opening brackets
	$-11x = 22$	M1	collecting like terms
	$x = -2$	A1	
(ii)	$(x-6)(x+4)$	M1	
	6 and -4	A1A1	
(b)	$x = 1$ and $y = -3$	B3 [10]	B2 for one correct value M1 for eliminating one variable correctly
10(a)	$p = 7$ and $q = 4$	B1B1	
(b)	8 + *their* q + 4 + 2	M1ft	
	18	A1	
(c)	2	B1	
(d)	2	B2	B1 for $\frac{n+1}{2}$ soi
(e)	$\frac{61}{30}$	M2	M1 for 7 + 16 +12 + 16 + 10 M1 for denominator 30
	2.03	A1	
(f)(i)	$\frac{20}{30}$ *oe*	B2ft	B1 for 8 + *their p* +5
(ii)	$\frac{6}{30}$ *oe*	B2	B1 for 4 + 2
		[14]	

11(a)	9	B1	
		M1	
(b)(i)	$\frac{40}{360}\times\pi\times5^2$	A1	
	$8.73(cm^2)$		
(ii)	$(2\times20\times5)+(2\times their(b)(i))+$	M3ft	M1each- for sector areas, rectangular areas and curved area expressions seen
	$20\times\frac{40}{360}\times2\times\pi\times5$		
	287.27 (cm^2)	A1	
(iii)	$their(b)(i)\times20$	M1ft	
	174.5 *to* $174.6(cm^3)$	A1	
		[9]	
12(a)	$\frac{2-5}{2-3}$	M1	
	3	A1	
(b)	$y=$ *their(a)x* + c	M1ft	
	y = 3*x* -4 cao	A1	
(c)	$y = 3x - 3$	B1ft	
		[5]	
13(a)(i)	Accurate diagram drawn	B4	B1for 120°,B1 for 20,B1for 220°, B1for for 20
(ii)	AC = 6.2 to 6.6	B1	
(iii)	AC = 24.8 to 26.4	B2	M1 for their (b) × 4
(iv)	168° to 172°	B1	
(b)	045°	B2	M1 for 225° or 135° seen
		[10]	