NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2020

NAUTICAL SCIENCE: PAPER I

MARKING GUIDELINES

Time: 3 hours 150 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

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SECTION A PRACTICAL CHARTWORK

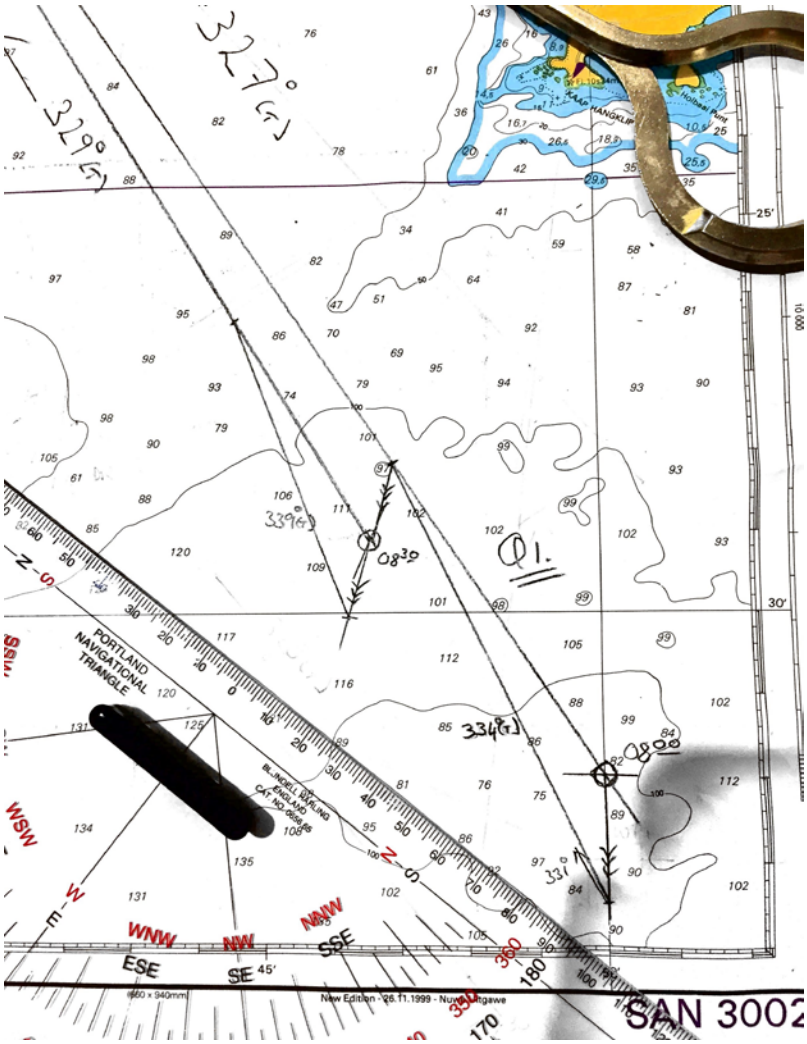
QUESTION 1

Course to make good	327° (T)	Chart
Course to counter current	334° (T)	
Leeway	– 5° W	
Course to steer	331° (T) **(Q 1.1)**	(5)

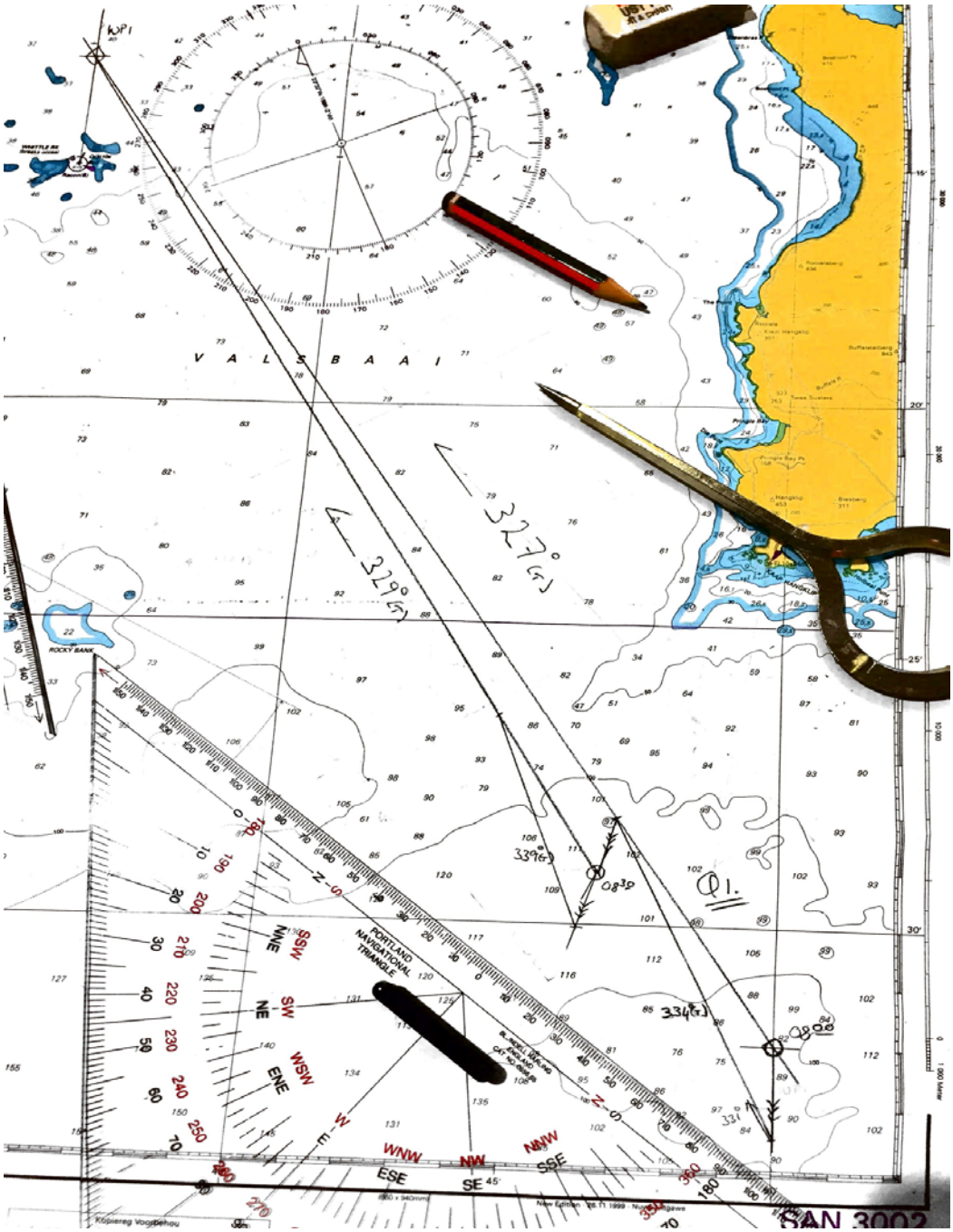
At 08:30 set and drift found to be 197° × 2 knots **(Q 1.2)** (12)

Course to make good 329° (T) **(Q 1.3)** (8)

Marks include work done on the chart.



Question 1 Chart work



Question 1 Chartwork.

[25]

QUESTION 2

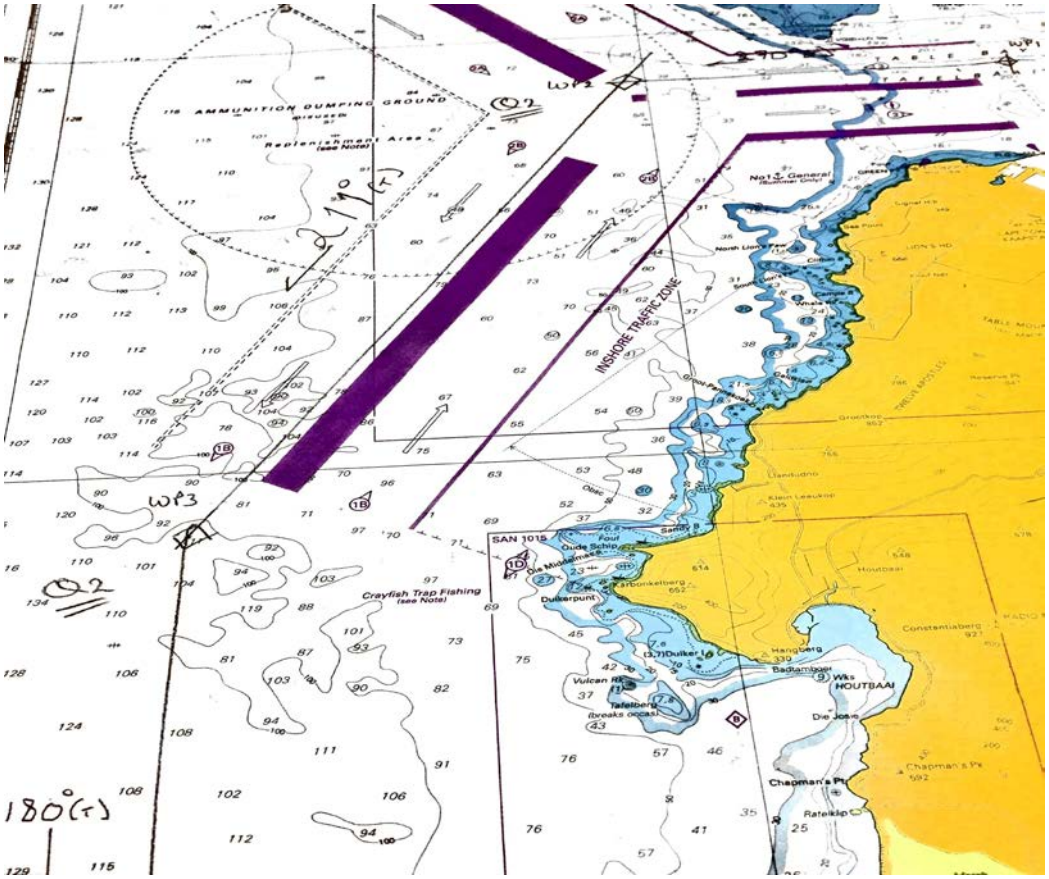
2.1 Chart (15)

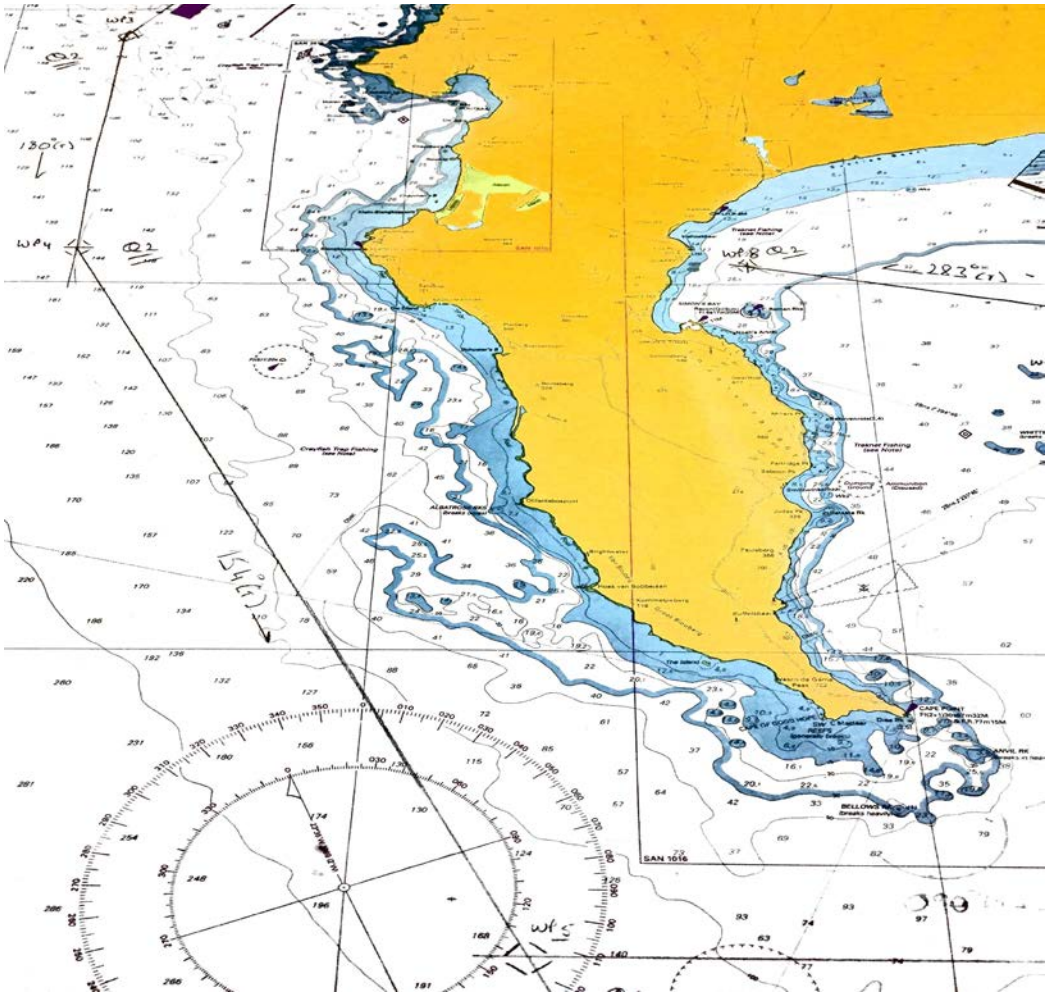
2.2

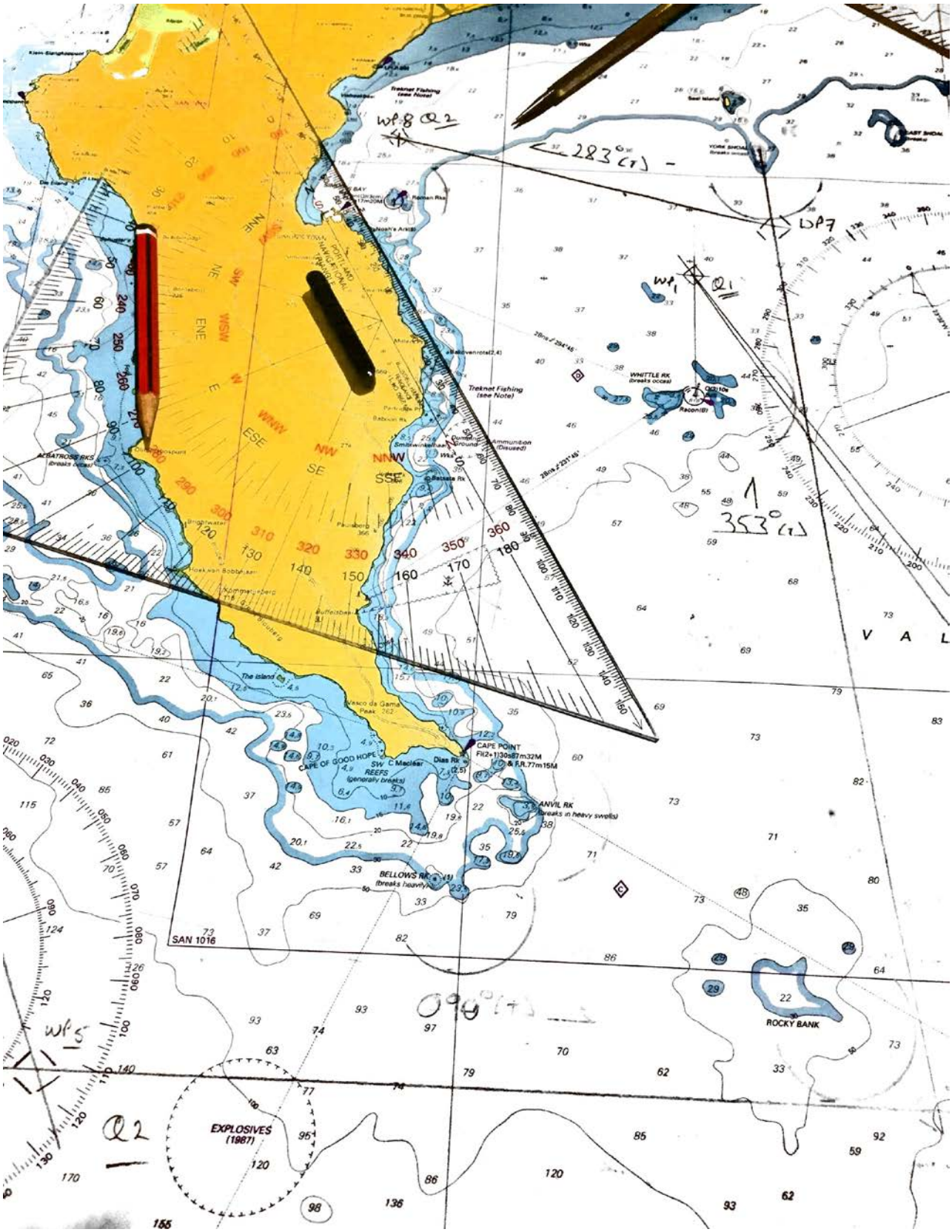
WP	Position	Next Course (T)	Distance to next WP (miles)	Time to the next WP @ 10 kts	Marks
1	CPT BW Lt 180° (T) × 2,5' 33° 51,3'S 018° 26,0'E	270^{0o}	5,5'	$0^h\ 33^m$	(2)
2	Green Pt. Lt 126° (T) × 4,6' 33° 51,3'S 018° 19,6'E	211°	11,4	$1^h\ 08^m$	(2)
3	Duiker Pt. 103° (T) × 5,0' 34° 01,2'S 018° 12,8'E	180°	7,7'	$0^h\ 46^m$	(2)
4	Slangkop Lt. 090° × 5,4' 34° 08,9'S 018° 12,2'E	154°	19,1'	$1^h\ 55^m$	(2)
5	Cape Point Lt. 049° × 7,4' 34° 26,2'S 018° 23,1'E	090°	12,3'	$1^h\ 14^m$	(2)
6	Cape Point Lt. 306° × 8,3' 34° 26,2'S 018° 38,8'E	353°	15,2'	$1^h\ 31^m$	(2)
7	Whittle Rk.Buoy 201° × 4,0' 34° 11,1'S 018° 36,0'E	283°	7,1'	$0^h\ 43^m$	(2)
8	Anchor Position Roman Rks. Lt. 180° × 1,4' 34° 09,5'S 018° 27,6'E	---	---	---	
	TOTAL		78,3'	$7^h\ 50^m$	(1)

[30]

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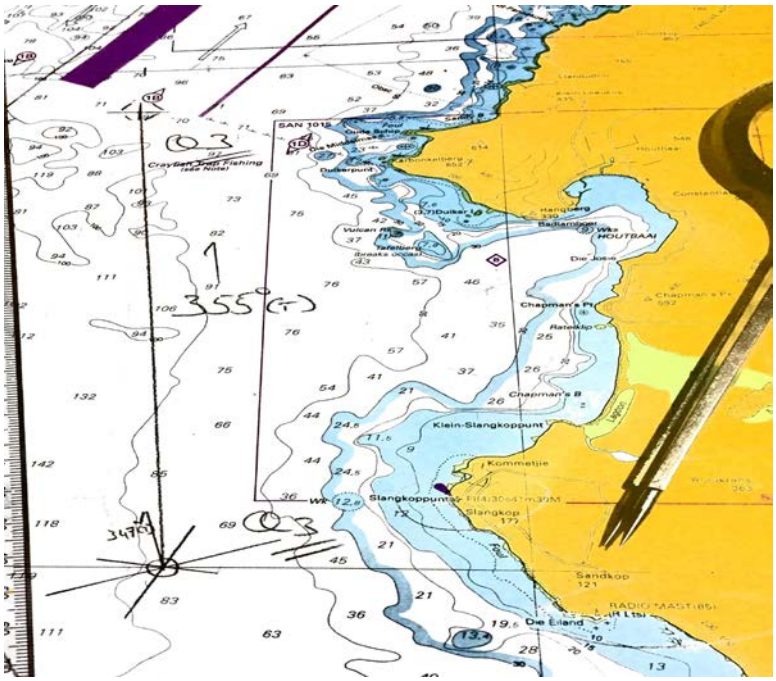

AMMUNITION DUMPING GROUND
INSHORE TRAFFIC ZONE
Crayfish Trap Fishing
(see Note)
SAN 1015
Houtbaai
Constantiaberg
Chapman's Pk
Rateiskop
180°(T)
wp2
wp3
Q2


wp3
wp4
wp8
Q2
180°(T)
283°(T)
154°(T)
SAN 1016


WP8 Q2
283°(T)
DP7
WP1
Q1
353°(T)
WHITTLE RK
(breaks occas)
Racon(B)
Treknet Fishing
(see Note)
Ammunition
(Disused)
ALBATROSS RKS
(breaks occas)
CAPE POINT
Fl(2+1)30s87m32M
& F.R.77m15M
CAPE OF GOOD HOPE
SW C Maclear
REEFS
(generally breaks)
Dias Rk
ANVIL RK
(breaks in heavy swells)
BELLOWS RK
(breaks heavily)
SAN 1016
ROCKY BANK
WP5
Q2
EXPLOSIVES
(1987)
V A L

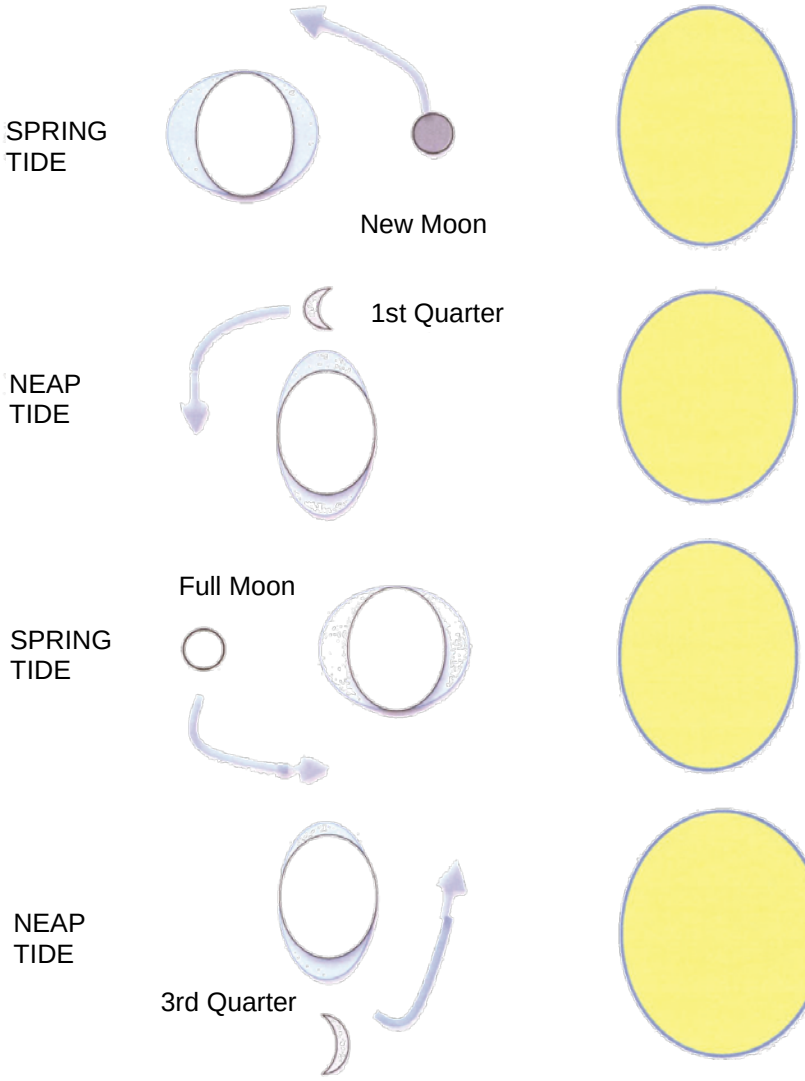
QUESTION 3

	V/I Heading	Slangkoppunt Lt.	Radio Mast	Marks
Compass	000° .	086° .	118° .	
Deviation	4° E	4° E	4° E	
Magnetic	004° .	090° .	122° .	(2)
Variation	22° W	22° W	22° W	(2)
True	342° .	068° .	100° .	(2)
Course TMG	355° (T)			
Leeway NW	8° .			
Steer	347° (T)			(2)
Variation	22° W.			
Magnetic	009°(M)			(1)
Deviation	5° E.			
Compass Course	004° (C)			(1)
CHART				(5)
				[15]



QUESTION 4

4.1



(3)

(3)

(3)

(3)

4.2 Chart Datum is the datum to which all soundings on navigational charts have been reduced. It is the Lowest Astronomical Tide (LAT) computed over 19 years of predictions. (3)

[15]

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QUESTION 5

5.1 Whittle Rock Racon Buoy has on the top mark two cones pointing outward or diametrically opposed, which indicate safe water to pass East of the buoy. (4)

5.2 Slangkoppunt Lighthouse:
- White light flashing sequence 4 every 30 seconds (2)
- Height of the light is 41 metres above MHWS (2)
- Range of visibility is 30 miles. (2)

5.3 Last correction in 2008, No. 97.
Or whatever is printed on the chart used for the exam on the day (bottom left corner). (2)

5.4 The note specifically says "anchoring and trawling is prohibited 1 nautical mile either side of the submarine cable." (2)

5.5 Scale is 1: 100 000 (34° 10'S). (1)
[15]

100 marks

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SECTION B ASTRO-NAVIGATION

QUESTION 6

6.1	Zone Time	08 45			
	Long 40°E (Zone – 3)	03 00			
	GMT	05 45			(2)
	GHA 05:00	251° 26.2'	Dec	s 13° 32,4'	
	Inc 49 m	11° 15,0'	'd'	,6'	
	GHA	262° 41,2'	Dec	S13°31,8'	(2)
	Long E	40° 00,0'			
	LHA	302° 41,2'	True brg.	089° (T)	(6)
			Obs. Brg.	108° (C)	
	A	0,307 N	Compass error	19° W	
	B	0,290 S	Comp. Head	220° (C)	
	C	0,017 N	Ship's head	201° (T)	(5)
	Az.	N 89° E			(5)
6.2	True brg	089° (T)			
	Var.	22° W			
	Mag. Brg.	110° (M)			
	Comp. brg	108° (C)			
	Dev.	3° E			(5)
					[25]

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QUESTION 7

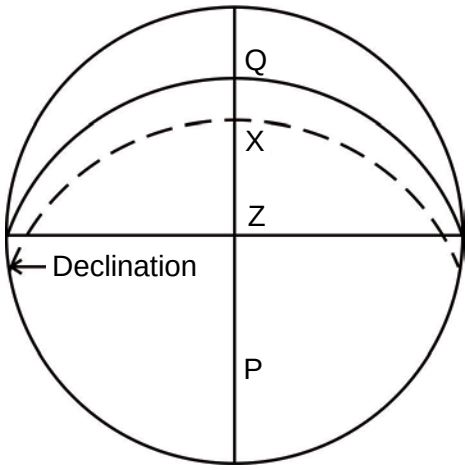
7.1 7.1.1

LMT Mer. Pass.	12 14,0	Dec.	13° 47,4' S	
Long 11° 30'E	46,0	'd'	,4 .	
GMT Mer. Pass.	11 28,0	Dec.	13° 47,0' S	
Zone	1 00,0			
Zone time at Mer. Pass.	12 28,0			(5)

7.1.2

Sext. Alt.		73° 11,7'	
i.e. (off)	(+)	0,5'	
Obs. Alt.		73° 12,2'	
Dip	(–)	6,1'	
App. Alt.		73° 06,1'	
Total correction	(+)	15:9'	
True alt.		73° 22,0'	
		90° 00,0'	
ZX		16° 38,0'	
Dec. S		13° 47,0'	
Lat.		30° 25,0 S	(15)

7.2



(5)
[25]

50 marks

Total: 150 marks

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