



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.

SECTION A PRACTICAL CHARTWORK

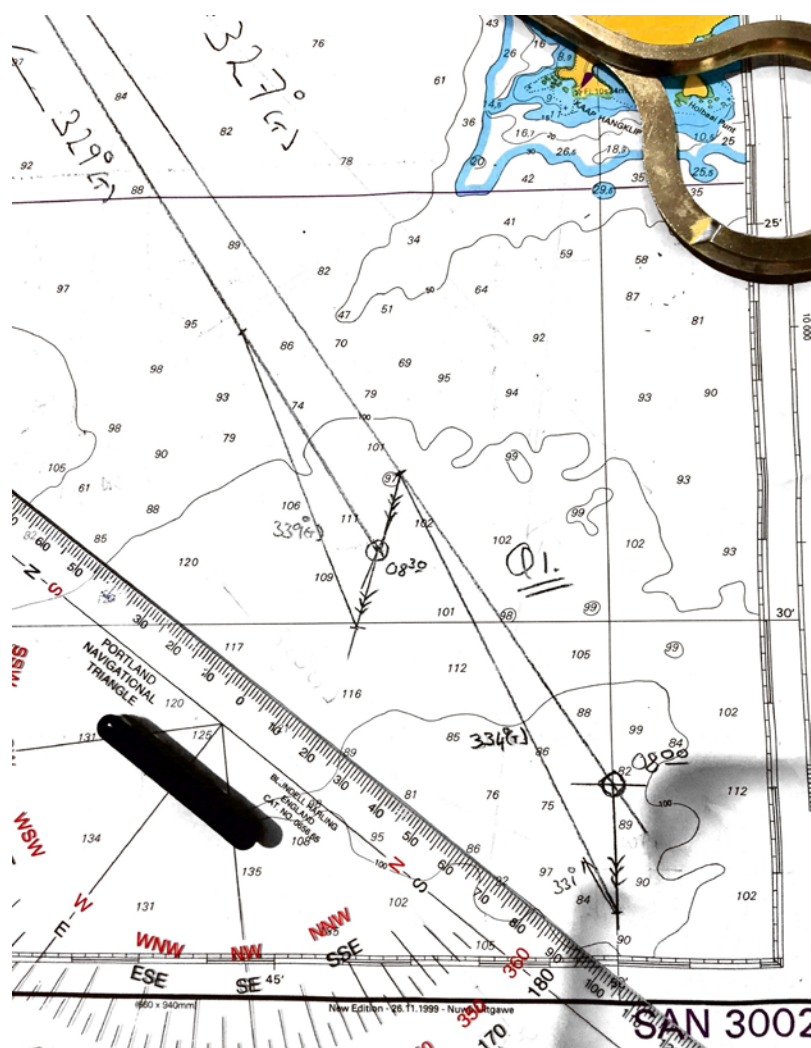
QUESTION 1

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

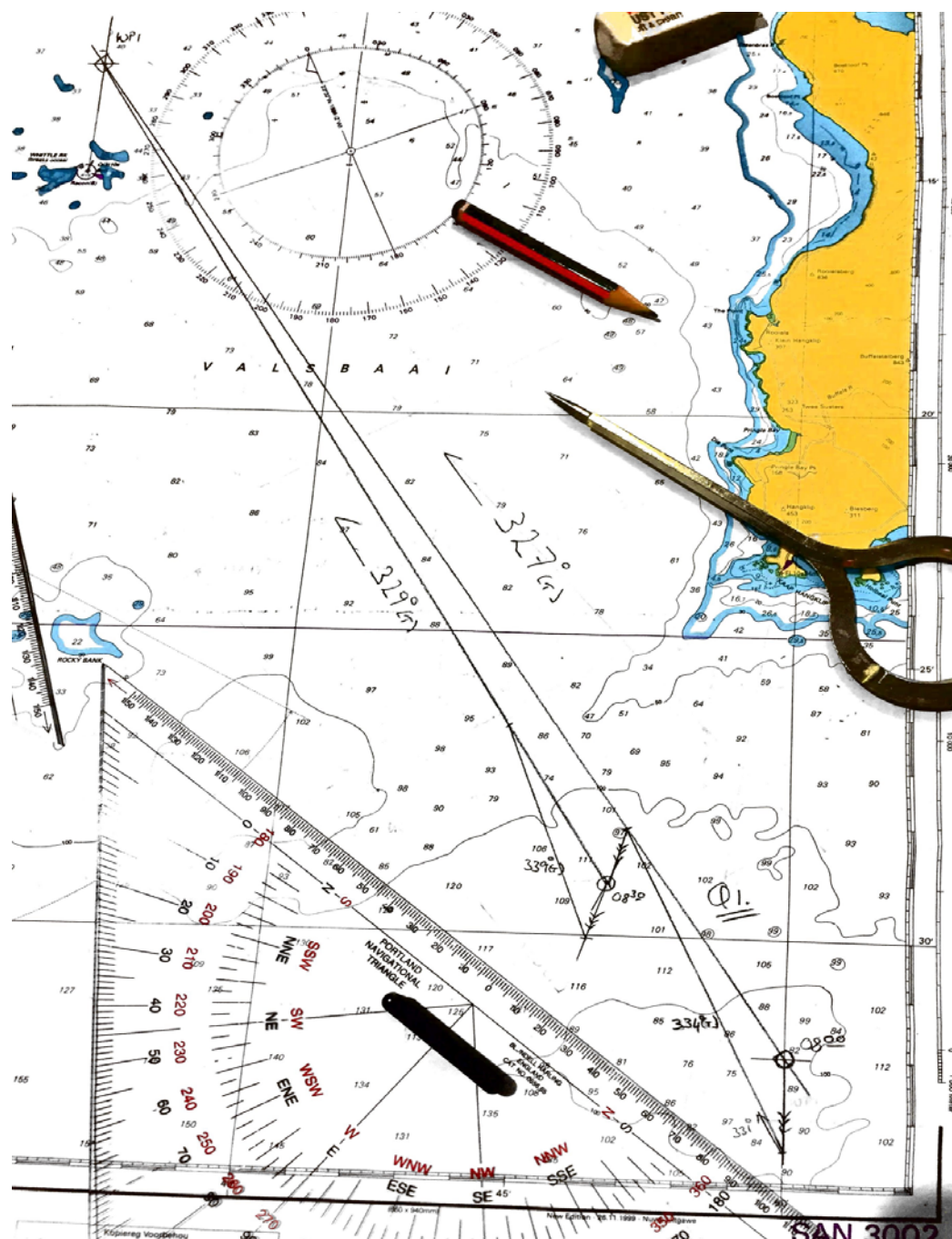
At 08:30 set and drift found to be 197° × 2 knots (Q 1.2)

Course to make good 329° (T) (Q 1.3)

Marks include work done on the chart.



Question 1 Chart work



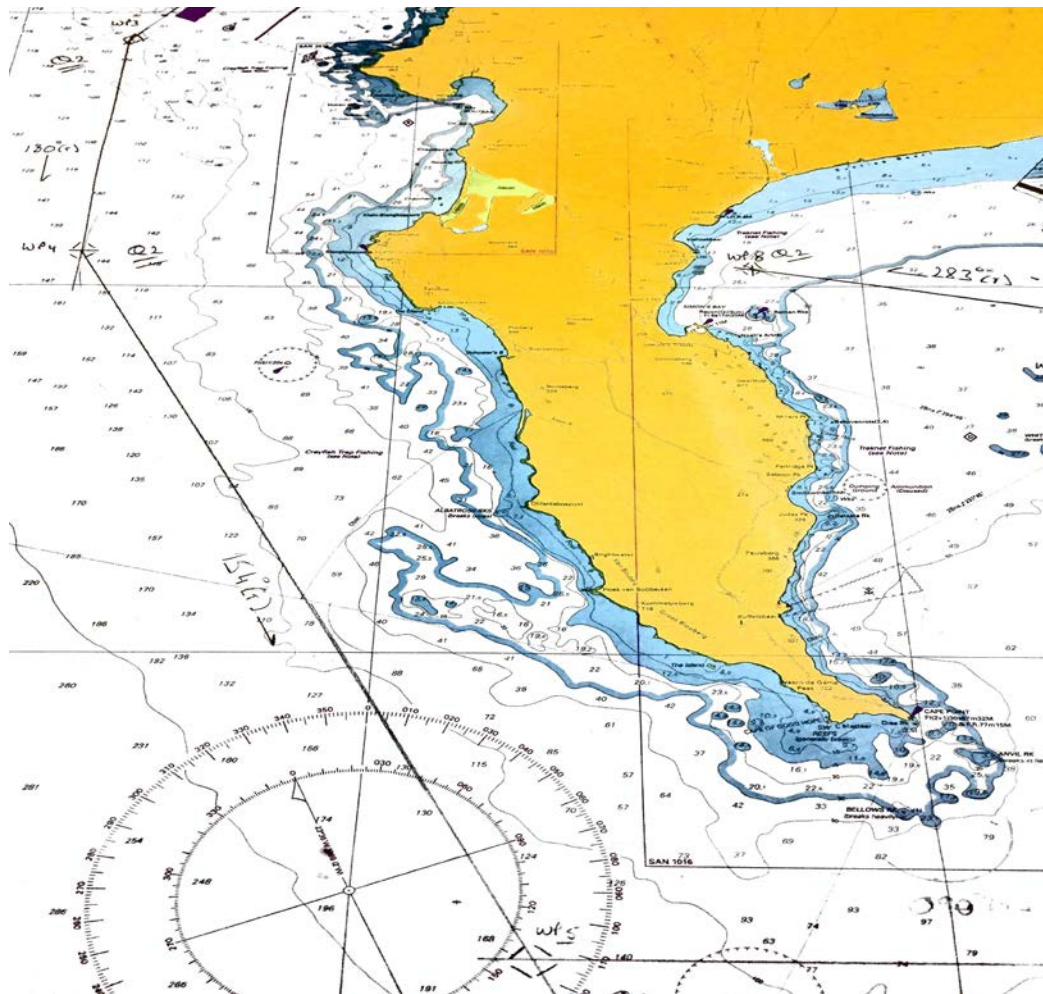
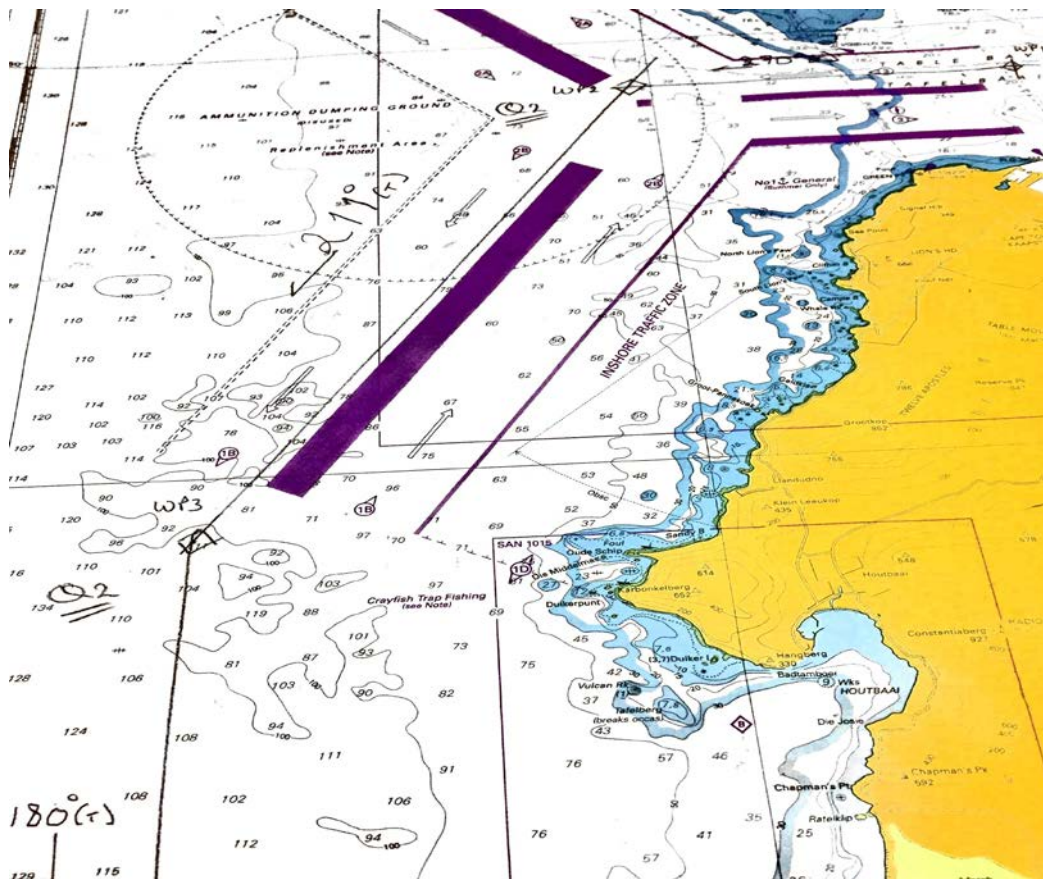
Question 1 Chartwork.

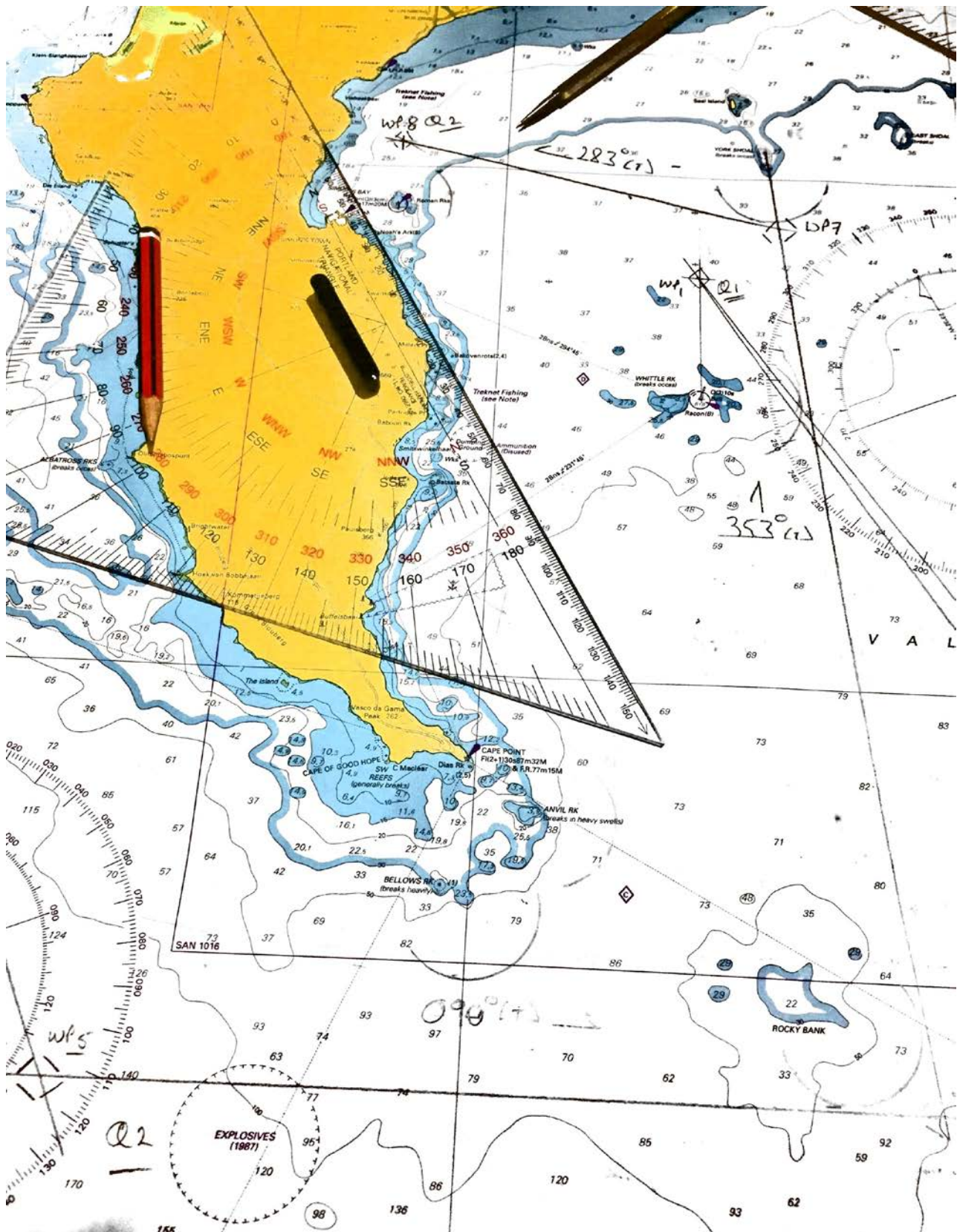
QUESTION 2

2.1 Chart

2.2

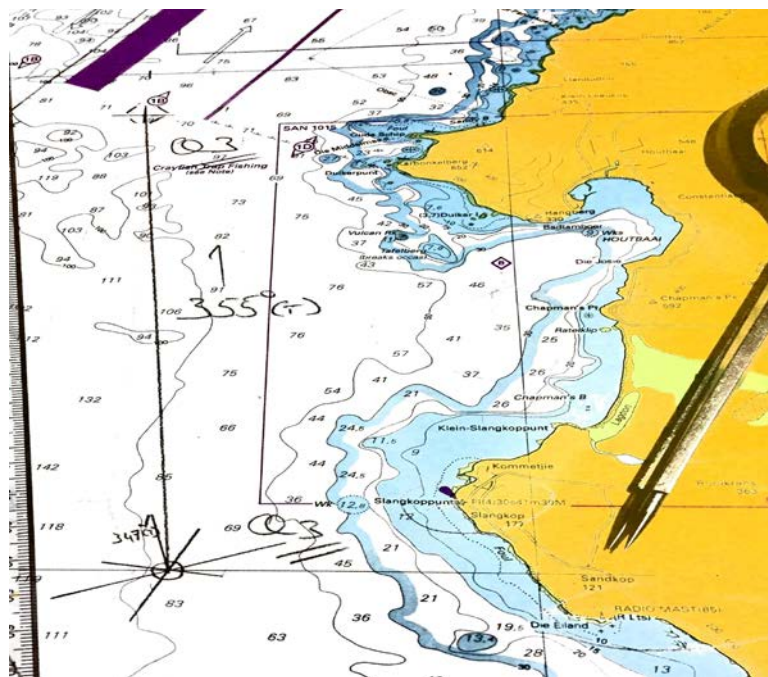
WP	Position	Next Course (T)	Distance to next WP (miles)	Time to the next WP @ 10 kts
1	CPT BW Lt 180° (T) × 2,5' 33° 51,3'S 018° 26,0'E	270 ⁰⁰	5,5'	0 ^h 33 ^m
2	Green Pt. Lt 126° (T) × 4,6' 33° 51,3'S 018° 19,6'E	211°	11,4	1 ^h 08 ^m
3	Duiker Pt. 103° (T) × 5,0' 34° 01,2'S 018° 12,8'E	180°	7,7'	0 ^h 46 ^m
4	Slangkop Lt. 090° × 5,4' 34° 08,9'S 018° 12,2'E	154°	19,1'	1 ^h 55 ^m
5	Cape Point Lt. 049° × 7,4' 34° 26,2'S 018° 23,1'E	090°	12,3'	1 ^h 14 ^m
6	Cape Point Lt. 306° × 8,3' 34° 26,2'S 018° 38,8'E	353°	15,2'	1 ^h 31 ^m
7	Whittle Rk. Buoy 201° × 4,0' 34° 11,1'S 018° 36,0'E	283°	7,1'	0 ^h 43 ^m
8	Anchor Position Roman Rks. Lt. 180° × 1,4' 34° 09,5'S 018° 27,6'E	---	---	---
	TOTAL		78,3'	7 ^h 50 ^m





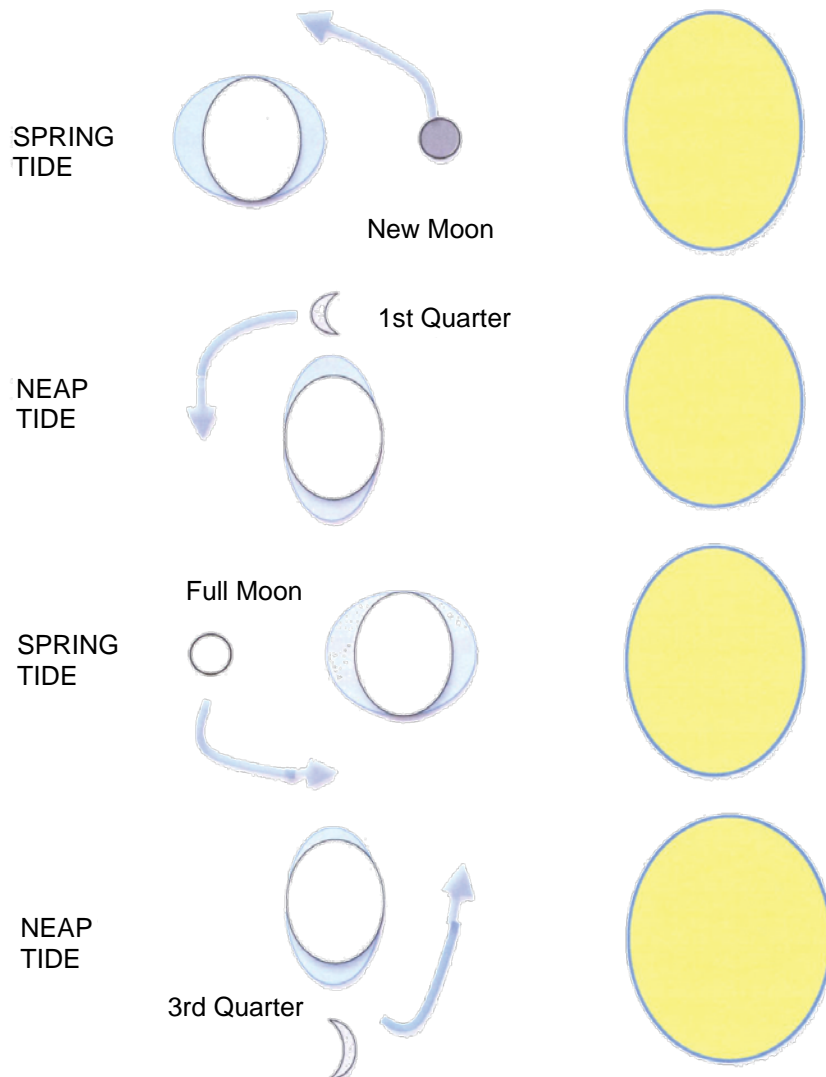
QUESTION 3

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

CHART

QUESTION 4

4.1



- 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.

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.
- 5.2 Slangkoppunt Lighthouse:
- White light flashing sequence 4 every 30 seconds
 - Height of the light is 41 metres above MHWS
 - Range of visibility is 30 miles.
- 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).
- 5.4 The note specifically says "anchoring and trawling is prohibited 1 nautical mile either side of the submarine cable."
- 5.5 Scale is 1: 100 000 (34° 10'S).

SECTION B ASTRO-NAVIGATION**QUESTION 6**

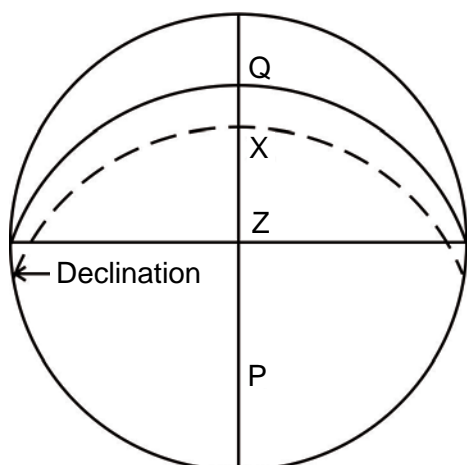
6.1	Zone Time	08 45		
	Long 40°E (Zone – 3)	<u>03 00</u>		
	GMT	05 45		
	GHA 05:00	251° 26,2'	Dec	s 13° 32,4'
	Inc 49 m	<u>11° 15,0'</u>	'd'	<u>.6'</u>
	GHA	262° 41,2'	Dec	S13°31,8'
	Long E	<u>40° 00,0'</u>		
	LHA	302° 41,2'	True brg.	089° (T)
	A	0,307 N	Obs. Brg.	<u>108°</u> (C)
	B	<u>0,290</u> S	Compass error	19° W
	C	0,017 N	Comp. Head	<u>220°</u> (C)
	Az.	N 89° E	Ship's head	201° (T)
6.2	True brg	089° (T)		
	Var.	22° W		
	Mag. Brg.	110° (M)		
	Comp. brg	<u>108°</u> (C)		
	Dev.	3° E		

QUESTION 7

7.1	7.1.1	LMT Mer. Pass.	12 14,0	Dec.	13° 47,4' S
		Long 11° 30'E	<u>46,0</u>	'd'	,4 .
		GMT Mer. Pass.	11 28,0	Dec.	13° 47,0' S
		Zone	<u>1 00,0</u>		
		Zone time at Mer. Pass.	12 28,0		

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

7.2

**Total: 150 marks**