



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2013

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.

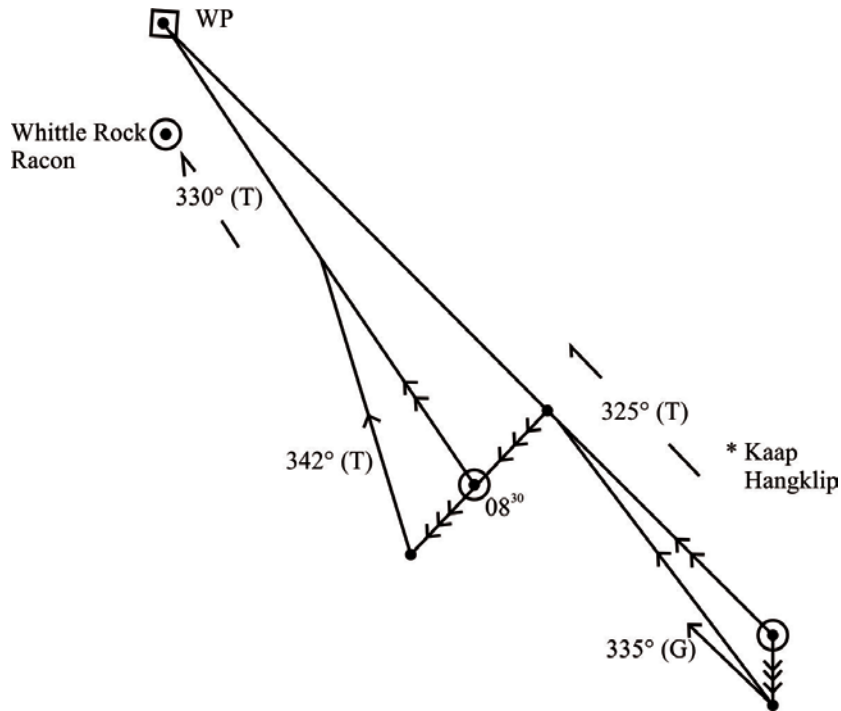
SECTION A PRACTICAL CHARTWORK

QUESTION 1

Course to make good	325° (T)	Chart	
Course to counter current	330° (T)		
Leeway	5° W		
Course to steer	335° (T)		(5)

At 08:30 set and drift found to be 217° × 3,8 knots (12)

Course to make good 342° (T) (8)



[25]

QUESTION 2

2.1 Chart (15)

2.2

WP	Position	Course	Distance	
1	CPT BW Lt 180° (T) × 2.5' 33° 51.3'S 018° 26.0'E			
2	Green Pt. Lt 124u (T) × 4.8' 33° 51.3's 018° 19.3'e	270u	5.8'	1
3	34u 00.4'S 018u 12.7'E	217u	10.6'	2
4	Slangkop Lt. 082° × 5.4' 34° 10.0'S 018° 12.7'E	180u	9.4'	2
5	Cape Point Lt. 061u × 6.1' 34° 24.7'S 018° 22.6'E	151°	16.7'	2
6	Care Point Lt. 322u × 4.2' 34 24.7'S 018° 33.8'E	090u	8.6'	2
7	Roman Rks. Lt. 277° × 9.4' Whittle Rk. Buoy 235° × 4.7' 34° 12.1'S 018° 38.9'E	021u	13.5'	2
8	Anchor Position Roman Rks. Lt. 180° × 1.4' 34° 09.5'S 018° 27.6'E	285u	9.7'	1
	TOTAL		74.3'	

(12)

2.3 Total dist = 74,3 miles; Speed = 12 kts; Passage time= 6 hrs 11 min (6,2 hrs) (3)
[30]

QUESTION 3

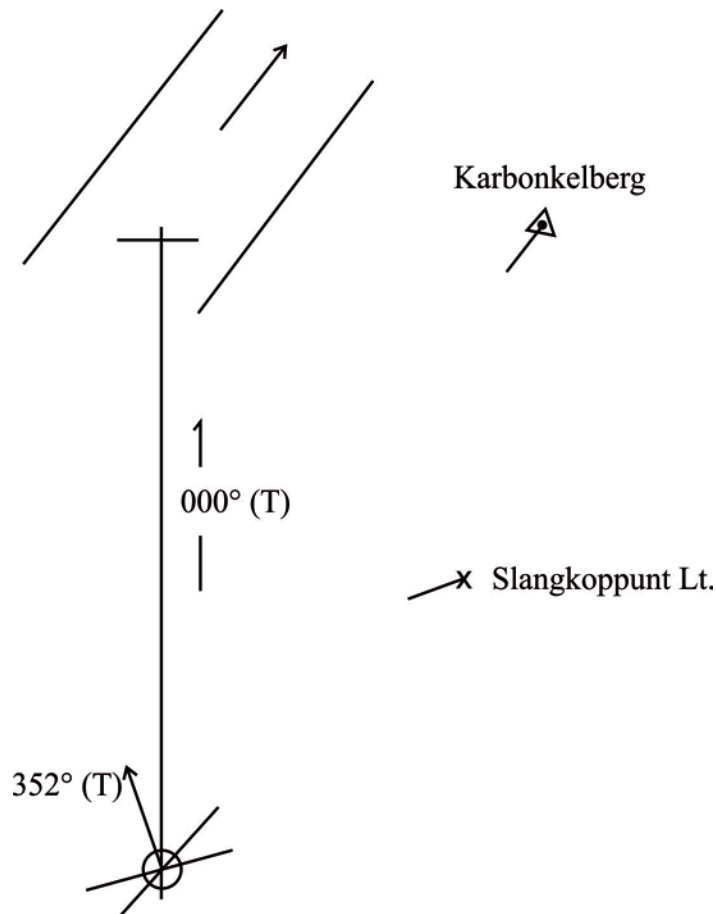
	V/I Heading	Slangkoppunt Lt.	Karbonkelberg Bn.	
Compass	000°.	086°.	040°.	
Deviation	4°E	4°E	4°E	
Magnetic	004°.	090°.	044°.	2
Variation	22°W	22°W	22°W	2
True	342°.	068°.	022°.	2

(6)

Course TMG	000° (T)		
Leeway NW	8°.		
Steer	352° (T)		2
Variation	22°W.		
Magnetic	014° (M)		1
Deviation	5°E.		
Compass Course	009° (C)		1

(4)

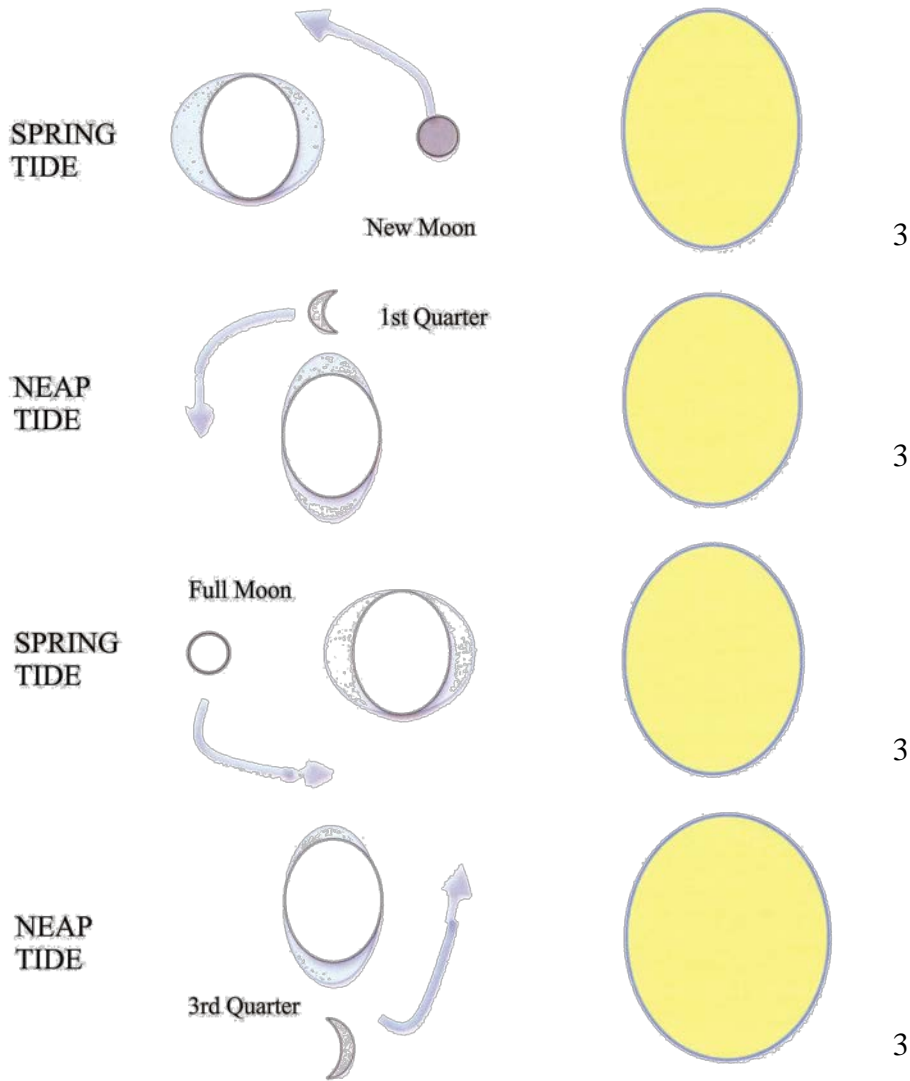
CHART



(5)
[15]

QUESTION 4

4.1



(12)

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]

QUESTION 5

- 5.1 Whittle Rock Racon Buoy has on the top mark two cones points outward or diametrically opposed, which indicate safe water to pass East of the buoy. (4)
- 5.2 Slangkoppunt Light House:
- White light flashing sequence 4 every 30 seconds 2
 - Height of the light is 4.1 metres above MHWS 2
 - Range of visibility is 30 miles. 2
- (6)
- 5.3 Last correction in 2003, No. 57. (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

SECTION B ASTRO-NAVIGATION

6.1	LMT	08 45			
	Long 40° E	<u>02 56</u>			
	GMT	05 49			2
	GHA 05:00	251° 26.2'	Dec	s 13° 32.4'	
	Inc 49 m	<u>12° 15.0'</u>	'd'	<u>.6'</u>	
	GHA	263° 41.2'	Dec	S13°31.8'	2
	Long E	<u>40° 00.0'</u>			
	LHA	303° 41.2'	True brg.	089° (T)	6
			Obs. Brg.	<u>108° (C)</u>	
	A	0.307N	Compass error	19° W	
	B	<u>0.290 S</u>	Comp. Head	<u>220° (C)</u>	
	C	0.017 N	Ship's head	201° (T)	5
	Az.	N89° E			5

(20)

6.2	True brg	089° (T)
	Var.	22° W
	Mag. Brg.	110° (M)
	Comp. brg	<u>108° (C)</u>
	Dev.	30 E

(5)

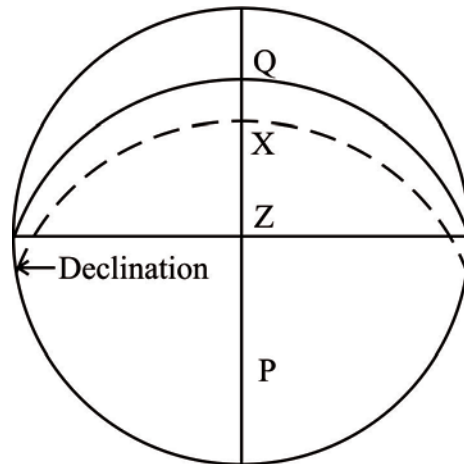
[25]

QUESTION 7

7.1	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		

(5)

7.2	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



(15)

(5)

[25]

50 marks

Total: 150 marks