



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2010

NAUTICAL SCIENCE: PAPER I

MARKING GUIDELINES

Time: 3 hours

150 marks

These marking guidelines were used as the basis for the official IEB marking session. They were prepared for use by examiners and sub-examiners, all of whom were required to attend a rigorous standardisation meeting to ensure that the guidelines were consistently and fairly interpreted and applied in the marking of candidates' scripts.

At standardisation meetings, decisions are taken regarding the allocation of marks in the interests of fairness to all candidates in the context of an entirely summative assessment.

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, and different interpretations of the application thereof. Hence, the specific mark allocations have been omitted.

SECTION A PRACTICAL CHARTWORK**QUESTION 1**

	Course	Brg. of Robben Isl. Lt.
	158° (C)	142° (C)
Deviation	<u>1° E</u>	<u>1° E</u>
	159° (M)	143° (M)
Variation	<u>24° W</u>	<u>24° W</u>
	135° (T)	119° (T)

- 1.1 Course to make good 140° (T)
 Course to counter current 134° (T)
 Leeway (W) 7° +
 Course to steer 141° (T)
 Var 24° W
 Magnetic course 165° (M)
 Dev 1° E
Compass course to steer 164° (C)

(15)

- 1.2 Course to the Pilot station 090° 4,6 miles.

(5)
[20]**QUESTION 2**

- 2.1 Simonsberg/Else Pk 90° - 75° = 15° brg 358°/178°
 Simonsberg 178° + 15° = 193°
 Else Pk 358° - 15° = 343°
 Else Pk/Kalkbaaiberg 90° - 43° = 47° brg 185°/005°
 Else Pk 005° + 47° = 052°
 Kalkbaaiberg 185° - 47° = 138°

Anchor position Roman Rocks Lt. brg. 197° x 1,5'

(15)

- 2.2 Simon's Town Breakwater light brg. 224° x 2,3'
 Kalkbaai breakwater light brg. 330° x 2,2'
 Nearest point of land Else Pk. Quarry Radar range 1,7'
 Seal Island nearest Radar range 5,5'
 Whittle Rock Racon 137° x 7,2'

(3)

- 2.3 Radar, compass bearings, echo sounder, GPS.

(2)
[20]

QUESTION 3

	Course	10:00	11:00
Compass	150°	070°	010°
Dev	0°	0°	0°
Magnetic	150°	070°	010°
Var	24° W	24° W	24° W
True	126°	046°	346°
Position at 11:00	<u>Cape Point Lt brg 346° (T) x 7,1'</u> <u>Lat 34° 28,1'S Long 018° 32,0' E</u>		

(20)
[20]**QUESTION 4**

4.1

Draught	=	2,62 m
Clearance	=	<u>1,50</u>
Depth required	=	4,12
Chart depth	=	<u>2,50</u>
Height of tide	=	1,62 m

From the Tide Tables, cross at 15h 30m 1 December

(16)

4.2

4.2.1

Spring Tide occurs at: Full Moon when the attractive forces of the sun and moon combine New Moon when the sun and moon are in conjunction.

(2)

Neap Tide occurs at: Moon's 1st quarter when the gravitational forces are acting at 90° Moon's 3rd quarter when the sun and moon are in quadrature.

(2)
[20]**QUESTION 5**

5.1 Kaap Hangklip Lt. (Fl. 10s 34m 25M)

Flash white light with a frequency of 10 secondsHeight of light 34 meters above MHWSRange of visibility 25 miles.

(5)

5.2 Cape Point light southern range shows (F. R. 77m 15M)

Fixed red lightHeight of light 77 meters above MHWSRange of visibility is 15 miles

(5)

5.3 No. 4 Anchorage Hazardous Block

e.g. Breakwater Lt. brg 177° x 3,7'(10)
[20]**100 marks**

SECTION B ASTRO-NAVIGATION**QUESTION 6**

LMT	09h 52m	GHA	=	299° 04,0'	Dec	=	12° 54,9'
		08:00					N
Long 15°10'	<u>01 00</u>	Inc 52m	=	<u>13° 00,0'</u>	'd'	=	0,7'
E	-						
GMT	08h 52m	GHA	=	312° 04,0'	Dec	=	12° 54,2'
		08:52					N
		Long	=	<u>1° 00,7'</u>			
		15°10'					
		LHA	=	313° 04,7'			

A	=	0.501 N	True brg	054°
B	=	<u>0.317 N</u>	Compass brg	<u>069°</u>
C	=	0.818 N	Error	15° W
Az.	=	N 54° E		
		054°		

6.1

Compass Hdg	340°
Compass error	<u>15° W</u>
True heading	<u>325°</u>

(15)

6.2

Compass error	15°W
Var	<u>23° W</u>
Deviation	<u>8° E</u>

(10)

[25]

QUESTION 7

7.1 7.1.1

LMT Mer Pass 12h 04m
 Long 4 38 +
 069°30'W
 GMT Mer Pass 16h 42m (7.1.1)
 Zone 5 00 -
 Zone time MP 11h 42m (7.1.1)

(5)

7.1.2

Sext Alt	=	72° 51,2'	Dec	13° 07,9' N
i.e. (off)	=	<u>1.5'</u> +	'd'	<u>0.6'</u> -
Obs Alt	=	72° 52,7'	Dec	13° 07,3' N
dip	=	<u>6.2'</u> -		
(12,5m)				
App Alt	=	72° 46,5'		
Total corr	=	<u>15.9'</u> +		
True alt	=	73° 02,4'		
		<u>90° 00.0'</u>		
ZX	=	16° 57,6'		
Dec	=	13° 07,3' N		
Lat.	=	<u>30° 04,9' N</u> (7.1.2)		

(15)

7.2 7.2.1

(1)

7.2.2

(1)

7.2.3

(1)

7.2.4

(1)

7.2.5

(1)
[25]

50 marks

Total: 150 marks