



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2008

NAUTICAL SCIENCE: PAPER I

MARKING GUIDELINES

Time: 3 hours

Marks: 150

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**

At 09:30 a GPS fix gave the following position of the vessel:

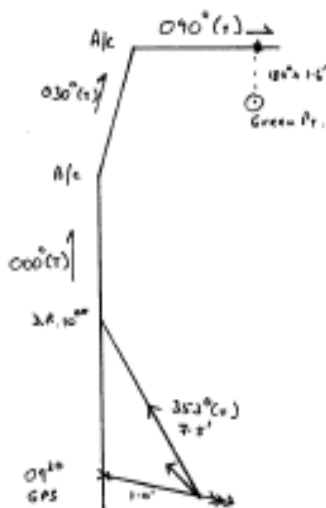
- Latitude $34^{\circ} 20'S$ Longitude $018^{\circ} 15'E$.
- Speed through the water is 15 knots.
- Current is estimated to set 100° (T) at 2,0 knots.
- The estimated leeway is 5° due to a NW'ly wind.
- The Magnetic Variation is $23^{\circ}W$.

- 1.1. What is the compass course to steer to the next alter course position Latitude $34^{\circ} 01'S$ Longitude $018^{\circ} 15'E$ entering the traffic zone approaching Table Bay? (13)
 - 1.2. Lay off the courses on the chart from this last position to the Pilot rendezvous position: Green Point (Fl 10s. 20m 25M) bearing 180° (T) x 1,6 miles. (4)
 - 1.3. What is the ETA at the Pilot rendezvous position? (3)
- [20]**

ANSWER QUESTION 1

1.1	Course to make good	000° (T)	4	
	Course to counter current	353° (T)	3	
	Leeway (NW)	5°		
	Course to steer	348° (T)	3	
	Variation	23° W		
	Magnetic course	011° (M)		
	Deviation	5° E		
	Compass course	<u>006° (C)</u>	3	(13)

1.2



1.3 **Dist made good ½ hour** **7,3 miles**
Speed made good ½ hour **14,6 knots**

Dist. To go to A/c **19,0 miles**
A/c to next A/c **9,9 miles**
A/c to pilot **2,7 miles**
Total distance to go at 09:30 **31,6 miles** **(4)**

@ 14,6 knots **2h 10m**
ETA Pilot **09h 30m**
11h 40m **(3)**

[20]

QUESTION 2

A vessel at anchor off Smitswinkelbaai observes that horizontal sextant angles between

- Simonsberg $\Delta 546$ and Paulsberg $\Delta 366$ is 65°
- Cape Point Fl(2+1) 30s 87m 32M and Paulsberg $\Delta 366$ is 55° .

Determine the position of the vessel.

[20]

ANSWER QUESTION 2

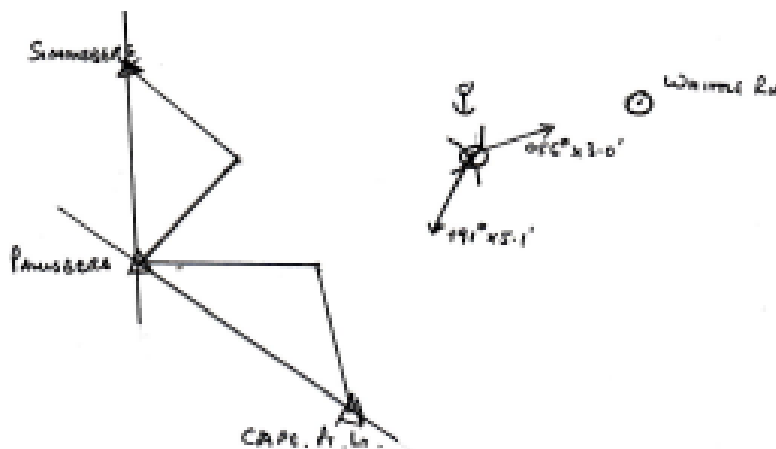
Simonsberg/ Paulsberg bearing		$347^\circ / 167^\circ$
Base angle	$90^\circ - 65^\circ$	25°
Bearing from Simonsberg	$167^\circ - 25^\circ$	142°
Bearing from Paulsberg	$347^\circ + 25^\circ$	012°

Paulsberg/ Cape Point Lt bearing		$336^\circ / 156^\circ$
Base angle	$90^\circ - 55^\circ$	35°
Bearing from Cape Point Lt	$336^\circ + 35^\circ$	011°
Bearing from Paulsberg	$156^\circ - 35^\circ$	121°

Vessel's anchor position is: Lat. $34^\circ 16,4'S$ Long. $018^\circ 31,2'E$

Or Whittle Rk. buoy brg. 056° x $3,0'$

Or Cape Point Lt brg. 191° x $5,1'$



[20]

QUESTION 3

At 15:00 a vessel steering 092° (C) observed Cape Point Fl(2+1) 30s 87m 32M bearing 042° (C).

At 15:30 Cape Point Fl(2+1) 30s 87m 32M was bearing 352° (C). The vessel maintained a speed of 8,0 knots, and the current was known to be setting 290° (T) at 1,8 knots.

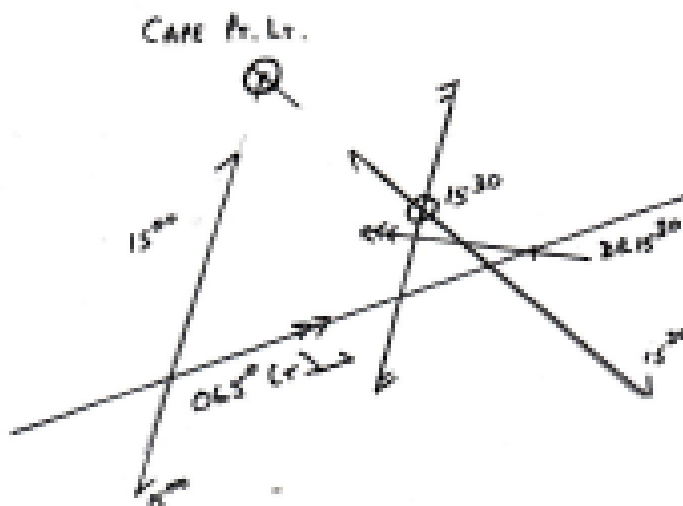
Determine the position of the vessel at 15:30.

[20]

ANSWER QUESTION 3

	V/I Heading	Bearing at 15:00	Bearing at 15:30
Compass	092°	042°	352°
Deviation	4° W	4° W	4° W
Magnetic	088°	038°	348°
Variation	23° W	23° W	23° W
True	065°	015°	325°

(10)



(10)

Position at 15:30 Cape Point Lt. bearing 325° (T) x 2,9 miles

Lat. $34^\circ 23,7'$ S; Long. $018^\circ 31,8'$ E.

[20]

QUESTION 4

Your vessel is at anchor off the Port of Walvis Bay waiting to enter the port.

The minimum depth in the approach channel is 5,0m.

The vessel's draught is 4,7m, and you are required to maintain a minimum clearance of 0,7m beneath the keel.

What is the earliest time the vessel may cross this point on the rising tide p.m. on Friday, 23 November 2001?

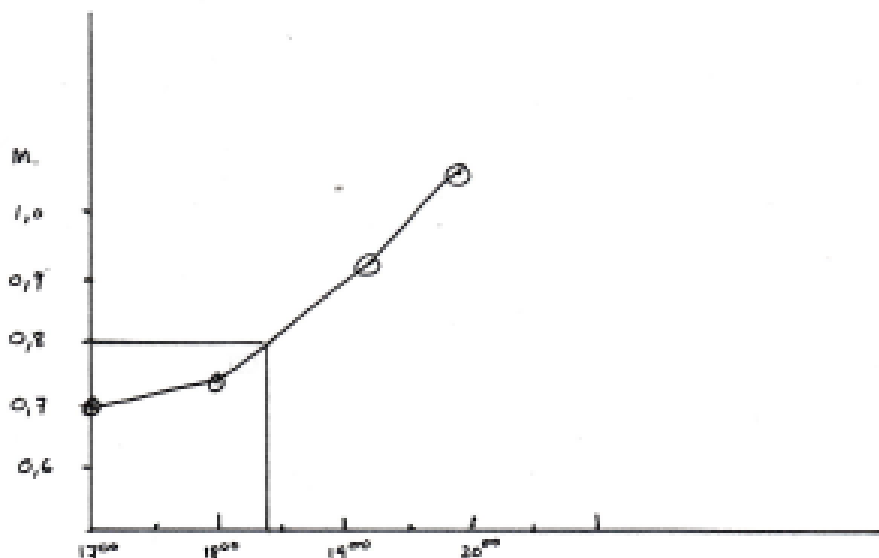
[20]**ANSWER QUESTION 4**

Draught	4,7 m
Clearance	<u>0,7 m</u>
Depth required	5,4 m
Chart depth	<u>4,6 m</u>
Height of tide	<u>0,8 m</u>

(See attached graph)

The earliest time to cross is at

18:18 on Friday 23 Nov.
2001

[20]

QUESTION 5

- 5.1 What is the warning about 'Crayfish Trap Fishing' shown on the chart South of Slangkoppunt? (5)
- 5.2 What is the meaning of the abbreviation 'Obsc' shown on the chart South of Slangkoppunt? (3)
- 5.3 Describe the characteristics of Robben Island lighthouse. (6)
- 5.4 What is the scale of Chart 3002? (2)
- 5.5 Which is the safe side to pass Whittle Rock buoy Q(3) 10s Bell in Valsbaai? (4)
- [20]**

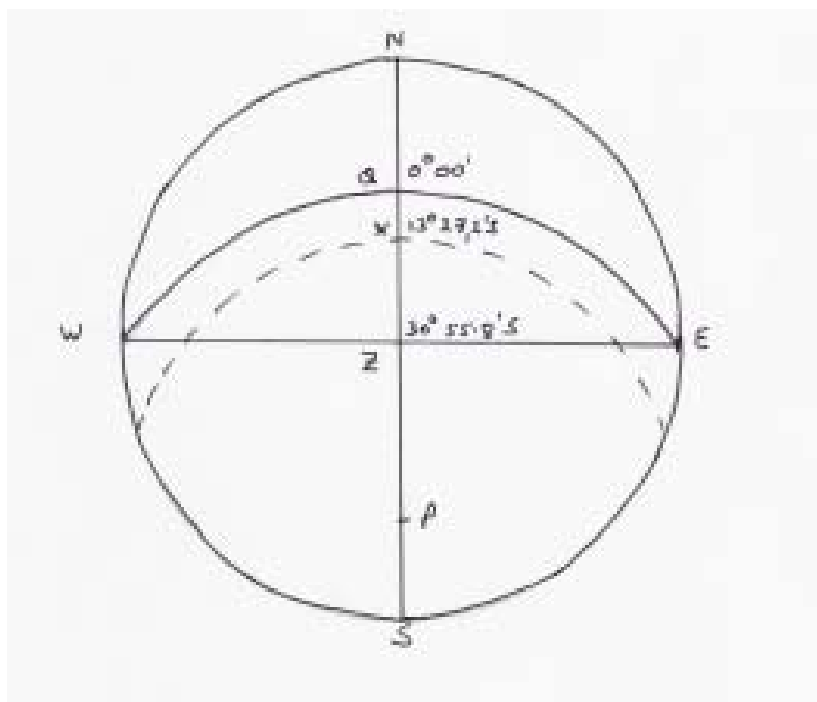
ANSWER QUESTION 5

- 5.1 **Mariners should navigate with caution in the area between Green Point and Cape Point within 3 nautical miles off the coast, on account of the presence of anchored or drifting small fishing vessels and their unlit bottom gear, marker buoys and recovery lines.** (5)
- 5.2 **'Obsc' means obscure, and the dotted arc line adjacent denotes the arc of the circumference of Cape Point Lt which is obscured.** (5)
- 5.3 **Robben Island lighthouse will display the following characteristics:**
- **Occulting white light changing to red on its southern sector;**
 - **The frequency is 7 seconds;**
 - **Height of the lighthouse is 47 metres;**
 - **Nominal range of the white light is 24 miles, and of the red light 12 miles.** (5)
- 5.4 **The scale of chart SAN 3002 is**
1 : 100 000 at Lat. 34° 10" S. (2)
- 5.5 **The safe passage past Whittle Rk. Buoy is on the East side.** (4)

[20]

100 marks

6.2



(5)
[25]

