

Candidate's Name:

Ports and Maritime Organization
Examination and Certification Directorate
Exams Code : CMSN

Subject : Ocean Voyage & Celestial Navigation
Rank : Chief Mate (GT≥3000)

Date :
Time Allowed : 2.5 Hours

Pass Mark: 60

Use Nautical Almanac for the Year 2000, Norie's Tables and work Sheet

Q.1) -An observation of celestial body bearing 050° when worked by Marcq St Hilaire method, using a DR $30^{\circ} 40' S$, $064^{\circ} 18' E$, gave an intercept of 3.8' away. Find by plotting, the intercept and bearing which would have been obtained if a DR of $30^{\circ} 34' S$, $064^{\circ} 24' E$ had been used. From your plot also give the longitude which would have been obtained if the sight had been worked by longitude by chronometer method, using DR latitude $30^{\circ} 40' S$.

(20 Marks)

Q.2) -On March/ 24th/ 2000 in DR $43^{\circ} 20' N$, $034^{\circ} 20' W$, during morning twilight the sextant altitude of Polaris was $43^{\circ} 00.5'$. Index error 1.5' off the arc. Height of eye 12m. A chronometer which was 2m 20s fast on GMT, showed 07h 23m 00s at the time. Find the direction of the position line and a position through which it passes.

(20 Marks)

Q.3) -From the following information regarding star Gacrux near the meridian and below the pole, find the direction of the P/L and the latitude in which it crosses the DR longitude.

Date at ship 22nd June 2000, DR $44^{\circ} 50' S$, $010^{\circ} 47' W$. Sextant Altitude; $17^{\circ} 51'$, I.E. = 1.8' off the arc. H.E. = 10m. GMT; 07h 29m 24s.

(20 Marks)

Q.4) -You are to make a passage from west coast of England to east coast of Canada on a panamx bulk carrier, in month of February. Discuss the meteorological phenomena which you are expecting to be encountered, the source of information and the necessary safety measures to be considered.

(15 Marks)

Q.5) - After calculating the following simultaneous observations, using DR; $15^{\circ} 46.0' S$, $064^{\circ} 12.0' E$, It was noted that the correction for index error has been omitted. Find the vessel's observed position and also the Index error.

(25 Marks)

Star	Az.	Intercept
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a) Capella	023°	6.4 ' T
b) Procyon	147°	3.0 ' A
c) Fomalhaut	244°	1.4 ' T

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Use Nautical Almanac for the Year 2000, Norie's Tables and chartlet

Q.1) On 30/Aug/2000 at about 0830 hrs at ship in DR 40° 20' N , 175° 10' W when the chronometer showed 08h 25m 10s and was 01m 05s fast on GMT, the sextant altitude of the Sun's lower limb was 36° 01.7' , index error 0.4' off the arc, height of eye 15.7 meters.

Find the position line and a position through which it passes. **(20 Marks)**

Q.2) On 12/April/ 2000 in DR 41° 15' N , 035° 10'W , during morning twilight the sextant altitude of Polaris was 42° 02.0' . Index error 1.5' off the arc. Height of eye 14m. A chronometer showed 07h 11m 05s which was 2m 20s fast on GMT at the time. Find the direction of the position line and a position through which it passes. **(20 Marks)**

Q.3) On 13/sept/2000 in DR.26° 40' S , 082° 42'W at about 0550 p.m the sun set bearing was 274° by compass, variation 5° W. Find the true Amplitude and compass deviation. **(20 Marks)**

Q.4) You are to make a passage from west coast of Australia to Chah bahar on a panamx bulk carrier, in month of July. Discuss the meteorological phenomena which you are expecting to be encountered, the source of information and the necessary safety measures to be considered. **(15 Marks)**

Q.5) After calculating the following simultaneous observations, using DR; 25° 40.0' S, 060° 15.0' E , It was noted that the correction for index error has been omitted. Find the vessel's observed position and also the Index error. **(25 Marks)**

Star	Az.	Intercept
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a) Altair	025°	4.2 ' T
b) Mirfak	325°	2.8 ' A
c) Hamal	065°	1.8 ' T