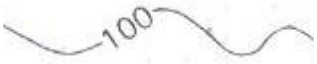
MERCHANT SHIPPING SECRETARIAT
GOVERNMENT OF SRI LANKA
CERTIFICATE OF COMPETENCY EXAMINATION

GRADE : OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 500 GT OR MORE (UNLIMITED)
SUBJECT : COASTAL NAVIGATION
DATE : 14.08.2023 Time : 0900 to 1200 hrs

Time allowed **THREE hours** Total marks : 160
ANSWER ALL QUESTIONS Pass marks : 70%

Formulae and all intermediate steps taken in reaching your answer should be clearly shown. You may draw sketches wherever required. Electronic devices capable of storing and retrieving are **not** allowed.

1) State the meaning of the following Admiralty Chart Abbreviations/symbols as illustrated in BA 5011:

Question number	Symbol
a)	
b)	
c)	
d)	
e)	

(04 marks each)

2) Answer the following questions with regards to the chart provided:
   a) What is the IALA maritime Buoyage System Region used?
   b) What is the correction to be applied when plotting GPS positions on the chart?
   c) If the draught of the vessel is 16 m, what is the closest distance to the shore that the vessel can approach safely by using this chart alone in areas where largest scale charts are available?
   d) What is the scale of the chart?
   e) What is the chart to refer for routeing regulations, reporting requirements etc?

(04 marks each)

3) On 16th June, your vessel departs Dover and at 1030 hrs her position is 51^0 06'N, 001^0 25'E. She is bound for Cherbourg (49^0 40'N, 001^0 40'W). Vessel draws 12.2 m and is capable of steaming at 18 Knots. She also equipped with the equipment required for her size and the type of the vessel.
   a) Plot the position at 1030 hrs.

(05 marks)

   b) Draw up a passage plan from 1030 hrs position to the Cherbourg deep-sea pilot boarding ground giving due respect to international collision regulations, clearly giving the information as required by commonly used standards.

(25 marks)

   c) Find the ETA at the destination without considering the effects of any winds or currents.

(05 marks)

   d) With the aid of the following high/low water heights and times at Dover, find the set and the rate of the current at the tidal diamond "**Q**".

Time	**Height (m)**
0006	6.5
0733	1.1
1223	6.7
1955	1.0

(10 marks)

   e) Cherbourg is in France. What are the publications to refer when entering French waters to identify the French regulations?

(05 marks)

4) a) Mark the following on a labeled sketch:
   i. Charted depth
   ii. Drying height
   iii. Elevation of a light house

(02 marks each)

b) Find the latest time on 12th May to pass under the London Bridge, England (51° 30' N, 000° 05' W) with an air draft of 28 m. Required to have a clearance of 3.5 m beneath the bridge for safe passing. At the highest tidal level for the day the air draft between the bridge and water level is 29 m. Assume that the vessel has ample under keel clearance throughout the day.

(24 marks)

5) A vessel steering a course of 080^0 (T) at a speed of 18 knots, observed the bearing of the Lizard point light (49^0 57'N, 005^0 10'W) as 060^0 (T) at 0830 hrs. The same light bore 325^0 (T) at 0930 hrs. If a known current was setting 120^0 (T) at a rate of 3 knots, find,

a) The position at 0930 hrs

(20 marks)

b) The position at 0830 hrs

(05 marks)

c) If the true course to steer from 0930 hrs is 075^0 (T), calculate the course to steer from 0930 hrs counteracting the above current.

(15 marks)

ENGLAND – LONDON BRIDGE

LAT 51°30'N LONG 0°05'W

TIME ZONE **UT(GMT)** TIMES AND HEIGHTS OF HIGH AND LOW WATERS YEAR 20

MAY

	Time	m		Time	m
1	0531	0.9	**16**	0004	6.8
	1148	6.4		0645	0.2
M	1800	1.1	TU	1237	7.1
				1905	0.5
2	0003	6.4	**17**	0053	6.9
	0636	0.7		0732	0.1
TU	1238	6.8	W	1322	7.2
	1858	0.8		1952	0.4
3	0051	6.7	**18**	0138	7.0
	0733	0.5		0816	0.1
W	1322	7.0	TH	1403	7.1
	1951	0.6	O	2036	0.4
4	0136	6.9	**19**	0219	6.9
	0822	0.4		0856	0.3
TH	1405	7.2	F	1438	6.9
●	2040	0.5		2116	0.5
5	0219	7.1	**20**	0255	6.8
	0906	0.3		0932	0.5
F	1447	7.2	SA	1508	6.8
	2125	0.4		2150	0.6
6	0302	7.3	**21**	0328	6.7
	0946	0.4		1001	0.7
SA	1529	7.2	SU	1537	6.7
	2206	0.3		2215	0.8
7	0346	7.3	**22**	0400	6.6
	1022	0.4		1020	0.9
SU	1612	7.1	M	1608	6.6
	2245	0.3		2230	0.8
8	0432	7.2	**23**	0435	6.5
	1055	0.6		1038	0.9
M	1655	6.9	TU	1644	6.5
	2322	0.4		2252	0.8
9	0520	7.0	**24**	0514	6.4
	1131	0.8		1107	1.0
TU	1741	6.6	W	1723	6.4
				2326	0.9
10	0004	0.6	**25**	0558	6.2
	0613	6.7		1146	1.1
W	1215	1.1	TH	1808	6.2
	1834	6.2			
11	0056	0.9	**26**	0010	1.0
	0717	6.3		0647	6.0
TH	1312	1.5	F	1236	1.3
	1944	5.9		1859	6.0
12	0209	1.1	**27**	0110	1.2
	0837	6.2		0745	5.9
F	1433	1.7	SA	1342	1.5
	2105	5.9		2000	5.8
13	0342	1.0	**28**	0230	1.2
	0949	6.3		0851	5.9
SA	1606	1.5	SU	1503	1.5
	2212	6.2		2110	5.9
14	0456	0.7	**29**	0343	1.1
	1050	6.6		1000	6.1
SU	1716	1.1	M	1614	1.4
	2310	6.5		2218	6.1
15	0555	0.4	**30**	0450	0.9
	1146	6.9		1103	6.4
M	1813	0.8	TU	1719	1.1
				2319	6.4
31					

JUNE

	Time	m		Time	m
1	0015	6.7	**16**	0114	6.8
	0658	0.5		0743	0.4
TH	1251	7.0	F	1337	6.9
	1922	0.7	O	2009	0.6
2	0107	7.0	**17**	0157	6.8
	0753	0.4		0825	0.5
F	1340	7.2	SA	1414	6.8
●	2016	0.5		2050	0.6
3	0156	7.2	**18**	0236	6.7
	0842	0.3		0902	0.7
SA	1426	7.2	SU	1446	6.7
	2107	0.3		2126	0.7
4	0245	7.4	**19**	0311	6.6
	0928	0.3		0934	0.8
SU	1512	7.3	M	1517	6.6
	2155	0.2		2155	0.8
5	0334	7.4	**20**	0344	6.5
	1010	0.4		0957	0.9
M	1558	7.2	TU	1549	6.6
	2239	0.1		2216	0.9
6	0423	7.4	**21**	0418	6.5
	1049	0.5		1020	1.0
TU	1644	7.0	W	1624	6.5
	2323	0.2		2241	0.9
7	0513	7.2	**22**	0456	6.4
	1129	0.7		1052	1.0
W	1732	6.8	TH	1702	6.4
				2315	0.8
8	0007	0.4	**23**	0538	6.4
	0607	6.9		1131	1.0
TH	1212	1.0	F	1744	6.3
	1824	6.5		2357	0.9
9	0056	0.6	**24**	0624	6.3
	0707	6.6		1216	1.1
F	1303	1.2	SA	1832	6.2
	1927	6.2			
10	0154	0.8	**25**	0046	0.9
	0814	6.4		0716	6.2
SA	1406	1.4	SU	1310	1.3
	2036	6.1		1926	6.1
11	0302	0.8	**26**	0147	1.0
	0920	6.4		0815	6.1
SU	1517	1.5	M	1417	1.4
	2140	6.2		2029	6.1
12	0412	0.8	**27**	0258	1.0
	1019	6.5		0919	6.2
M	1630	1.3	TU	1530	1.4
	2239	6.4		2135	6.2
13	0515	0.7	**28**	0409	0.9
	1115	6.7		1024	6.3
TU	1736	1.1	W	1641	1.2
	2334	6.6		2240	6.3
14	0609	0.5	**29**	0522	0.8
	1207	6.8		1126	6.6
W	1833	0.8	TH	1751	1.0
				2343	6.6
15	0026	6.7	**30**	0630	0.7
	0658	0.4		1224	6.8
TH	1254	6.9	F	1858	0.8
	1923	0.7			

JULY

	Time	m		Time	m
1	0042	6.9	**16**	0137	6.7
	0729	0.5		0755	0.7
SA	1317	7.0	SU	1352	6.8
●	1958	0.5	O	2026	0.7
2	0138	7.2	**17**	0218	6.7
	0823	0.4		0836	0.7
SU	1408	7.2	M	1428	6.7
	2054	0.2		2106	0.7
3	0230	7.4	**18**	0255	6.6
	0913	0.3		0912	0.8
M	1456	7.3	TU	1502	6.7
	2146	0.1		2142	0.8
4	0322	7.5	**19**	0329	6.6
	1000	0.3		0942	0.9
TU	1544	7.3	W	1534	6.6
	2233	0.0		2210	0.9
5	0412	7.5	**20**	0402	6.5
	1043	0.4		1009	1.0
W	1631	7.2	TH	1607	6.5
	2318	0.0		2235	0.9
6	0501	7.4	**21**	0437	6.5
	1123	0.6		1040	1.0
TH	1717	7.0	F	1642	6.5
				2305	0.8
7	0000	0.1	**22**	0516	6.5
	0551	7.1		1117	0.9
F	1203	0.8	SA	1720	6.5
	1804	6.8		2340	0.8
8	0042	0.3	**23**	0558	6.5
	0643	6.8		1157	1.0
SA	1245	1.0	SU	1803	6.4
	1856	6.5			
9	0126	0.6	**24**	0020	0.8
	0740	6.5		0645	6.4
SU	1332	1.2	M	1242	1.1
	1955	6.3		1852	6.3
10	0216	0.8	**25**	0108	0.9
	0842	6.3		0739	6.2
M	1427	1.4	TU	1337	1.3
	2100	6.1		1950	6.2
11	0313	1.0	**26**	0208	1.1
	0942	6.2		0841	6.1
TU	1528	1.5	W	1447	1.4
	2203	6.1		2057	6.1
12	0417	1.1	**27**	0325	1.2
	1040	6.2		0949	6.1
W	1638	1.4	TH	1606	1.4
	2303	6.2		2208	6.2
13	0523	1.0	**28**	0452	1.1
	1134	6.4		1058	6.3
TH	1752	1.2	F	1727	1.2
	2359	6.4		2319	6.4
14	0620	0.8	**29**	0609	0.9
	1225	6.6		1202	6.6
F	1852	1.0	SA	1843	0.9
15	0050	6.6	**30**	0025	6.8
	0710	0.7		0712	0.6
SA	1311	6.7	SU	1259	6.9
	1941	0.8		1947	0.5
31					

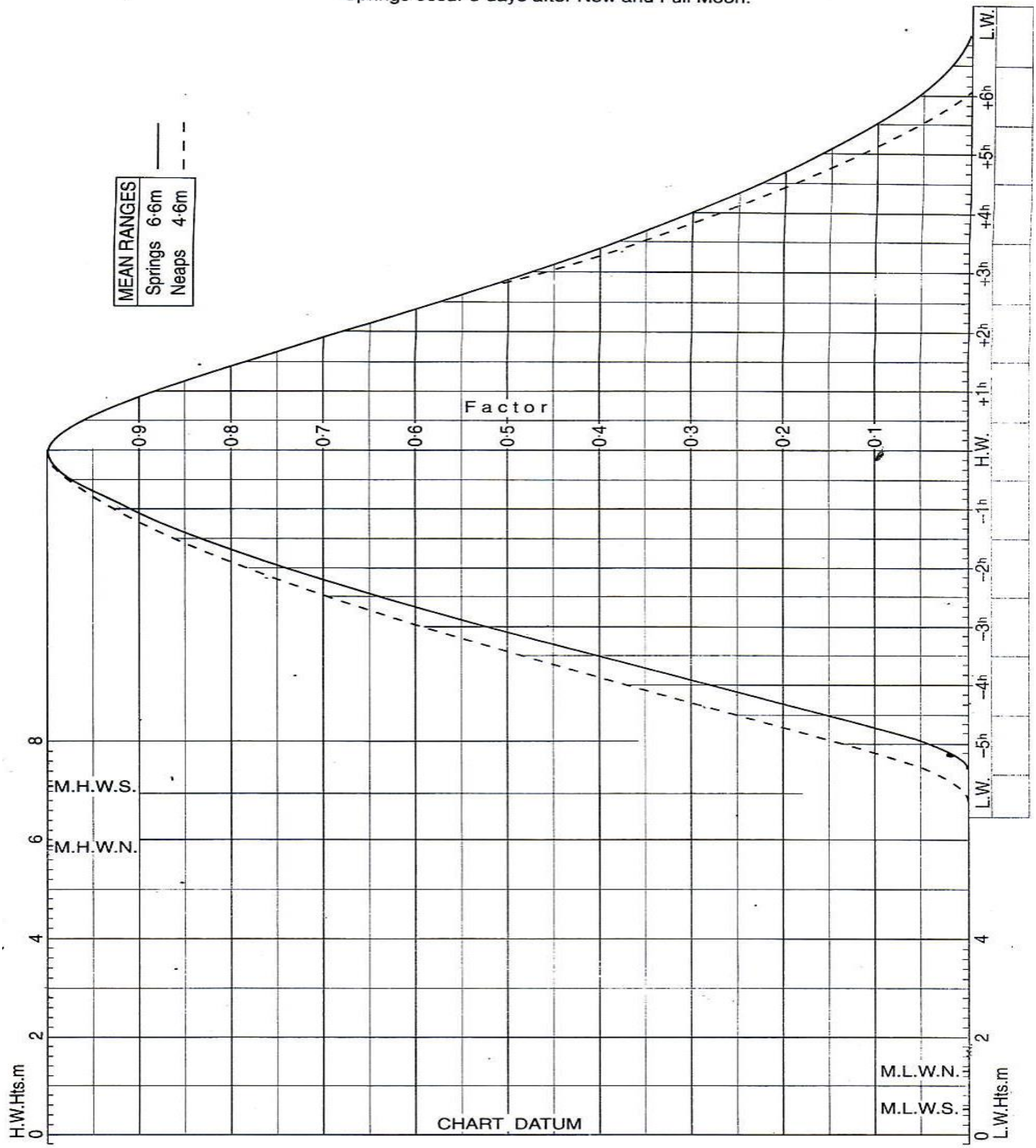
AUGUST

	Time	m		Time
1	0217	7.4	**16**	0235
	0900	0.3		0855
TU	1441	7.3	W	1445
	2135	−0.1		2127
2	0308	7.6	**17**	0309
	0948	0.3		0930
W	1527	7.3	TH	1518
	2222	−0.2		2201
3	0356	7.6	**18**	0342
	1031	0.3		1000
TH	1612	7.3	F	1548
	2305	−0.2		2227
4	0442	7.5	**19**	0415
	1110	0.4		1030
F	1654	7.2	SA	1619
	2342	0.0		2250
5	0526	7.2	**20**	0451
	1145	0.6		1101
SA	1736	7.0	SU	1655
				2318
6	0016	0.3	**21**	0530
	0610	6.8		1136
SU	1219	0.9	M	1736
	1817	6.7		2351
7	0050	0.6	**22**	0613
	0655	6.4		1214
M	1256	1.1	TU	1823
	1903	6.3		
8	0130	0.9	**23**	0030
	0747	6.1		0703
TU	1340	1.4	W	1301
	2003	6.0		1918
9	0220	1.2	**24**	0122
	0851	5.8		0804
W	1436	1.6	TH	1407
	2118	5.7		2025
10	0320	1.4	**25**	0239
	0958	5.8		0918
TH	1540	1.6	F	1540
	2230	5.8		2144
11	0427	1.4	**26**	0432
	1100	5.9		1037
F	1650	1.5	SA	1717
	2332	6.1		2305
12	0537	1.2	**27**	0556
	1155	6.2		1145
SA	1816	1.2	SU	1835
13	0027	6.4	**28**	0014
	0637	1.0		0659
SU	1245	6.5	M	1244
	1915	0.9		1935
14	0115	6.6	**29**	0112
	0728	0.8		0754
M	1330	6.7	TU	1335
	2003	0.7	●	2029
15	0157	6.8	**30**	0203
	0814	0.7		0844
TU	1409	6.8	W	1423
O	2048	0.7		2119
31				

LONDON BRIDGE

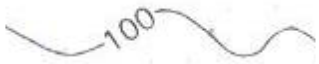
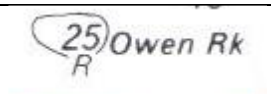
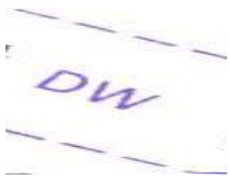
MEAN SPRING AND NEAP CURVES

Springs occur 3 days after New and Full Moon.



Answers

Answer 1

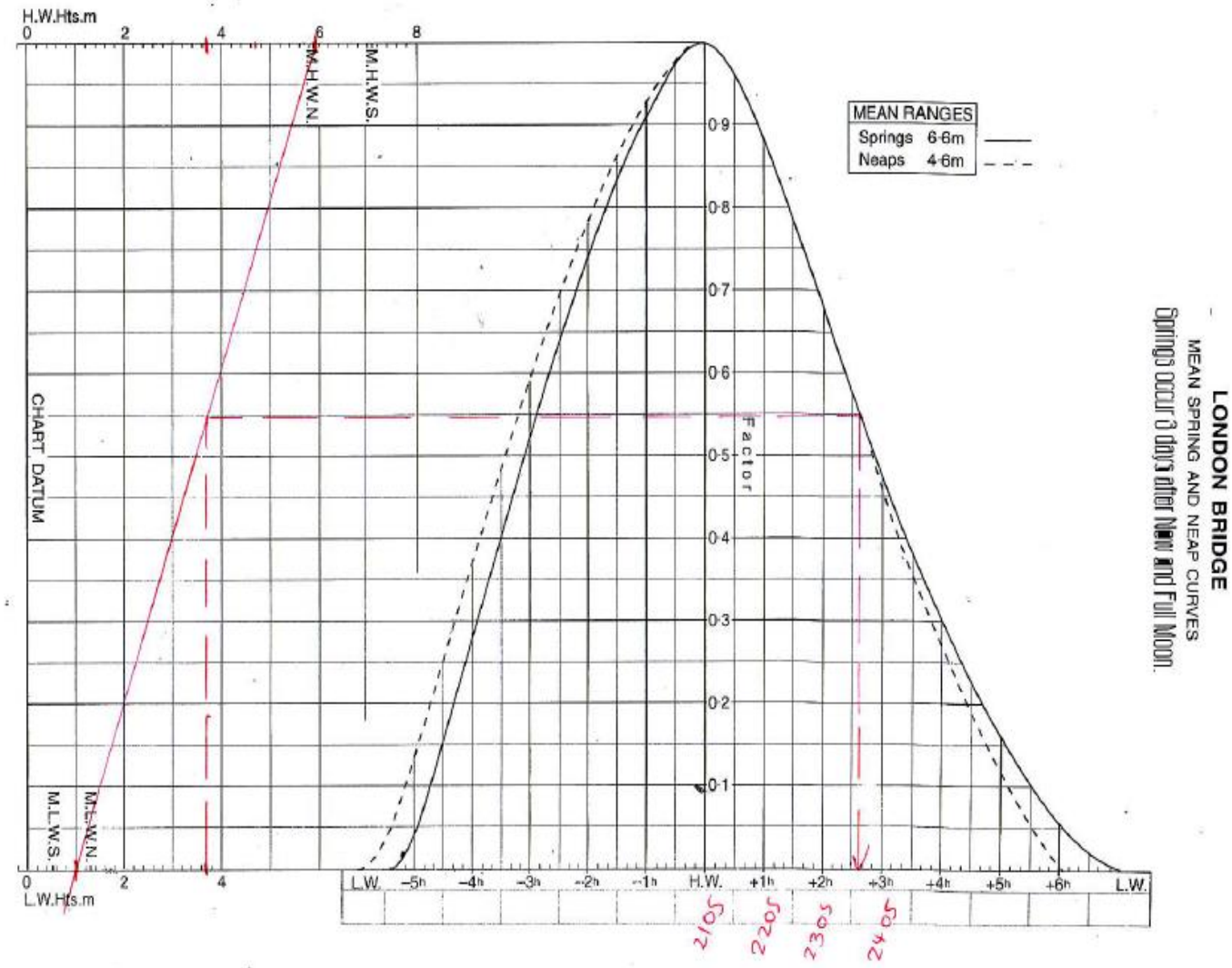
Question number	Symbol	Answers
a)		Submarine cable
b)		Depth contour with 100 m depth
c)		Rock with 25 m depth. Name of the rock is Owen rock
d)		Yellow colour pilar buoy with a yellow flash
e)		Deep water route

Answer 2

a) IALA Region A
b) Latitude – no corrections. Longitudes to be moved 0.1 minutes Eastward
c) 06 nautical miles
d) 1:500 000
e) BA 5500

Answer – 4(b)

Total air draught required = 3.5 + 28 = 31.5 m
Elevation of the bridge from the highest tide for the day = 29 m
The highest tide for the day = 6.2 m
Therefore, height between bridge and the chart datum =29 + 6.2 = 35.2 m
Therefore, the highest tide that the vessel can sail = 35.2 – 31.5 = 3.7 m



A tide of 3.7 m occurs at 2340 hrs.

Therefore, the latest time the vessel may sail is 2400 hrs.

Answer 5

a) 49^0 50.5' N, 005^0 04.2' W
b) 49^0 48.6' N, 005^0 36' W
c) 067^0 (T)