



**UNIVERSITI KUALA LUMPUR**  
**MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY**

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**FINAL EXAMINATION**  
**SEPTEMBER 2016 SEMESTER**

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**COURSE CODE** : LOB 10203  
**COURSE NAME** : OCEANOGRAPHY  
**PROGRAMME NAME** : BACHELOR OF MARITIME OPERATIONS  
BACHELOR OF NAVAL ARCHITECTURE AND SHIP  
BUILDING  
**DATE** : 13<sup>TH</sup> JANUARY 2017  
**TIME** : 09.00 AM – 10.30 PM  
**DURATION** : 2½ HOURS

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**INSTRUCTIONS TO CANDIDATES**

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1. Please **CAREFULLY** read the instructions given in the question paper.
  2. This question paper has information printed on both sides of the paper.
  3. This question paper consists of **TWO (2)** sections; Section A and Section B.
  4. Answer **ALL** questions in Section A. For Section B, answer **THREE (3)** questions.
  5. Please write your answers on the answer booklet provided.
  6. Answer all questions in English language **ONLY**.
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**THERE ARE 4 PAGES OF QUESTIONS, INCLUDING THIS PAGE.**

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SECTION A (Total: 40 marks)

**INSTRUCTION: Answer ALL questions.**

**Please use the objective answer sheet provided.**

**Question 1**

- (a) Briefly, define the plate tectonics. (4 marks)
- (b) Describe the evidence to support theory introduced by Alfred Wegener in 1912. (8 marks)
- (c) Plate boundaries can be divided into three types. Compare the characteristics, tectonic processes for convergent and divergent plate boundaries with an example. (8 marks)

**Question 2**

- (a) Discuss the differences between a spring tide and neap tide in terms of lunar and solar alignment, gravitational attraction and tidal range. (8 marks)
- (b) On 14 December 2016, at Mersing, Johor, the high tide was 2.6 meters at 0838 hours. The succeeding time was 1524 hours where the height is 0.6 meters. Determine the height of tide in at 1200 hours. (12 marks)

**SECTION B (Total: 60 marks)****INSTRUCTION: Answer THREE question ONLY.****Please use the answer booklet provided.****Question 3**

The atmosphere and ocean act as one interdependence system that influence the winds and currents and affecting the weather system.

- (a) Wind direction modified by Coriolis Effect. Explain in details regarding this effect and deflection of wind belt.

(12 marks)

- (b) Explain the composition and the physical properties of atmosphere in order to balance the earth temperature.

(8 marks)

**Question 4**

Bathymetric charts are typically produced to support safety of surface or sub-surface navigation, and usually show seafloor relief or terrain as contour lines and selected depths and typically also provide surface navigational information.

- (a) Describe what is bathymetry?

(4 marks)

- (b) Examine two types of continental margin.

(8 marks)

- (c) Differentiate between chemical composition and physical properties of earth structure.

(8 marks)

**Question 5**

Surface of oceans dominated by current systems. Currents transfer heat from warmer to cooler area.

- (a) Define wind driven current. (4 marks)
- (b) Explain the term of upwelling and downwelling of current. (4 marks)
- (c) Explain the circulation of current system around Pacific Ocean area. (12 marks)

**Question 6**

- (a) Discuss the change of wave characteristics, speed (S), wavelength (L), wave height (H), wave base and steepness that occur as tsunami wave move to shallow water. Illustrate your answer. (12 marks)
- (b) Breaker zone is the nearshore zone between the outermost breakers and the bore area where wave water rushes onto the beach. Briefly differentiates between two type of breakers. (8 marks)

**END OF EXAMINATION PAPER**

JADUAL MENGIRA TINGGI AIR PASANG SURUT PADA WAKTU  
DI ANTARA AIR PASANG DAN SURUT

JADUAL I - AM

(Untuk Keterangan lanjut lihat muka surat viii hingga x)

TABLE FOR FINDING THE HEIGHT OF THE TIDE AT TIMES  
BETWEEN HIGH AND LOW WATER  
TABLES I - GENERAL

(For Instructions see pages viii to x)

Tempoh pasang atau surut (Duration of rise or fall)	SELANG DARI AIR SURUT (PASANG) TERHAMPIR INTERVAL FROM NEAREST LOW WATER (HIGH WATER)																Tempoh pasang atau surut (Duration of rise or fall)				
	0145	0150	0155	0201	0206	0211	0216	0222	0227	0232	0237	0243	0248	0253	0258	0304		0309	0314	0319	0325
0330	0145	0150	0155	0201	0206	0211	0216	0222	0227	0232	0237	0243	0248	0253	0258	0304	0309	0314	0319	0325	0330
40	0150	0155	0201	0206	0212	0217	0223	0228	0234	0239	0245	0250	0256	0301	0307	0312	0318	0323	0329	0334	40
0350	0155	0201	0206	0212	0218	0224	0230	0235	0241	0247	0252	0258	0304	0310	0315	0321	0327	0333	0338	0344	0350
0400	0200	0206	0212	0218	0224	0230	0236	0242	0248	0254	0300	0306	0312	0318	0324	0330	0336	0342	0348	0354	0400
10	0205	0211	0217	0224	0230	0236	0242	0249	0255	0301	0307	0314	0320	0326	0332	0339	0345	0351	0357	0404	10
20	0210	0216	0223	0229	0236	0242	0249	0255	0302	0308	0315	0321	0328	0334	0341	0347	0354	0400	0407	0413	20
30	0215	0222	0228	0235	0242	0249	0255	0302	0309	0316	0322	0329	0336	0343	0349	0356	0403	0410	0416	0423	30
40	0220	0227	0234	0241	0248	0255	0302	0309	0316	0323	0330	0337	0344	0351	0358	0405	0412	0419	0426	0433	40
0450	0225	0232	0239	0247	0254	0301	0308	0316	0323	0330	0337	0345	0352	0359	0406	0414	0421	0428	0435	0443	0450
0500	0230	0237	0245	0252	0300	0307	0315	0322	0330	0337	0345	0352	0400	0407	0415	0422	0430	0437	0445	0452	0500
10	0235	0243	0250	0258	0306	0314	0321	0329	0337	0345	0352	0400	0408	0416	0423	0431	0439	0447	0454	0502	10
20	0240	0248	0256	0304	0312	0320	0328	0336	0344	0352	0400	0408	0416	0424	0432	0440	0448	0456	0504	0512	20
30	0245	0253	0301	0310	0318	0326	0334	0343	0351	0359	0407	0416	0424	0432	0440	0449	0457	0505	0513	0522	30
40	0250	0258	0307	0315	0324	0332	0341	0349	0358	0406	0415	0423	0432	0440	0449	0457	0506	0514	0523	0531	40
0550	0255	0304	0312	0321	0330	0339	0347	0356	0405	0414	0422	0431	0440	0449	0457	0506	0515	0524	0532	0541	0550
0600	0300	0309	0318	0327	0336	0345	0354	0403	0412	0421	0430	0439	0448	0457	0506	0515	0524	0533	0542	0551	0600
10	0305	0314	0323	0333	0342	0351	0400	0410	0419	0428	0437	0447	0456	0505	0514	0524	0533	0542	0551	0601	10
20	0310	0319	0329	0338	0348	0357	0407	0416	0426	0435	0445	0454	0504	0513	0523	0532	0542	0551	0601	0610	20
30	0315	0325	0334	0344	0354	0404	0413	0423	0433	0443	0452	0502	0512	0522	0531	0541	0551	0601	0610	0620	30
40	0320	0330	0340	0350	0400	0410	0420	0430	0440	0450	0500	0510	0520	0530	0540	0550	0600	0610	0620	0630	40
0650	0325	0335	0345	0356	0406	0416	0426	0437	0447	0457	0507	0518	0528	0538	0548	0559	0609	0619	0629	0640	0650
0700	0330	0340	0351	0401	0412	0422	0433	0443	0454	0504	0515	0525	0536	0546	0557	0607	0618	0628	0639	0649	0700
10	0335	0346	0356	0407	0418	0429	0439	0450	0501	0512	0522	0533	0544	0555	0605	0616	0627	0638	0648	0659	10
20	0340	0351	0402	0413	0424	0435	0446	0457	0508	0519	0530	0541	0552	0603	0614	0625	0636	0647	0658	0709	20
30	0345	0356	0407	0419	0430	0441	0452	0504	0515	0526	0537	0549	0600	0611	0622	0634	0645	0656	0707	0719	30
40	0350	0401	0413	0424	0436	0447	0459	0510	0522	0533	0545	0556	0608	0619	0631	0642	0654	0705	0717	0728	40
0750	0355	0407	0418	0430	0442	0454	0505	0517	0529	0541	0552	0604	0616	0628	0639	0651	0703	0715	0726	0738	0750
0800	0400	0412	0424	0436	0448	0500	0512	0524	0536	0548	0600	0612	0624	0636	0648	0700	0712	0724	0736	0748	0800
Julat (Range)	PEMBETULAN TINGGI AIR SURUT (PASANG) CORRECTIONS TO HEIGHT OF LOW WATER (HIGH WATER)																Julat (Range)				
	2.5	2.7	2.9	3.1	3.3	3.5	3.6	3.8	4.0	4.1	4.3	4.4	4.5	4.6	4.7	4.8		4.9	4.9	5.0	5.0
5	2.5	2.7	2.9	3.1	3.3	3.5	3.6	3.8	4.0	4.1	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.9	5.0	5.0	5
6	3.0	3.2	3.5	3.7	3.9	4.1	4.4	4.6	4.8	4.9	5.1	5.3	5.4	5.6	5.7	5.8	5.9	5.9	6.0	6.0	6
7	3.5	3.8	4.0	4.3	4.6	4.8	5.1	5.3	5.6	5.8	6.0	6.2	6.3	6.5	6.6	6.7	6.8	6.9	7.0	7.0	7
8	4.0	4.3	4.6	4.9	5.2	5.5	5.8	6.1	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.7	7.8	7.9	8.0	8.0	8
9	4.5	4.9	5.2	5.6	5.9	6.2	6.5	6.9	7.1	7.4	7.7	7.9	8.1	8.3	8.5	8.7	8.8	8.9	9.0	9.0	9
10	5.0	5.4	5.8	6.2	6.5	6.9	7.3	7.6	7.9	8.2	8.5	8.8	9.0	9.3	9.5	9.6	9.8	9.9	9.9	10.0	10
11	5.5	6.0	6.4	6.8	7.2	7.6	8.0	8.4	8.7	9.1	9.4	9.7	9.9	10.2	10.4	10.6	10.7	10.8	10.9	11.0	11
12	6.0	6.5	6.9	7.4	7.9	8.3	8.7	9.1	9.5	9.9	10.2	10.6	10.9	11.1	11.3	11.5	11.7	11.8	11.9	12.0	12
13	6.5	7.0	7.5	8.0	8.5	9.0	9.5	9.9	10.3	10.7	11.1	11.4	11.8	12.0	12.3	12.5	12.7	12.8	12.9	13.0	13
14	7.0	7.6	8.1	8.6	9.2	9.7	10.2	10.7	11.1	11.5	11.9	12.3	12.7	13.0	13.2	13.5	13.7	13.8	13.9	14.0	14
15	7.5	8.1	8.7	9.3	9.8	10.4	10.9	11.4	11.9	12.4	12.8	13.2	13.6	13.9	14.2	14.4	14.6	14.8	14.9	15.0	15
16	8.0	8.7	9.3	9.9	10.5	11.4	11.6	12.2	12.7	13.2	13.7	14.1	14.5	14.8	15.1	15.4	15.6	15.8	15.9	16.0	16
17	8.5	9.2	9.8	10.0	11.1	11.8	12.4	12.9	13.5	14.0	14.5	15.0	15.4	15.7	16.0	16.4	16.6	16.8	16.9	17.0	17
18	9.0	9.7	10.4	11.1	11.8	12.4	13.1	13.7	14.3	14.8	15.4	15.8	16.3	16.7	17.0	17.3	17.6	17.8	17.9	18.0	18
19	9.5	10.3	11.0	11.7	12.4	13.1	13.8	14.5	15.1	15.7	16.2	16.7	17.2	17.6	18.0	18.3	18.5	18.7	18.9	19.0	19
20	10.0	10.8	11.6	12.3	13.1	13.8	14.5	15.2	15.9	16.5	17.1	17.6	18.1	18.5	18.9	19.2	19.5	19.7	19.9	20.0	20
21	10.5	11.3	12.1	13.0	13.7	14.5	15.3	16.0	16.7	17.3	17.9	18.5	19.0	19.5	19.9	20.2	20.5	20.7	20.9	21.0	21
22	11.0	11.9	12.7	13.6	14.4	15.2	16.0	16.7	17.5	18.1	18.8	19.4	19.9	20.4	20.8	21.2	21.5	21.7	21.9	22.0	22
23	11.5	12.4	13.3	14.2	15.1	15.9	16.7	17.5	18.3	19.0	19.6	20.2	20.8	21.3	21.7	22.1	22.4	22.7	22.9	23.0	23
24	12.0	13.0	13.9	14.8	15.7	16.6	17.4	18.3	19.1	19.8	20.5	21.1	21.7	22.2	22.7	23.1	23.4	23.7	23.9	24.0	24
25	12.5	13.5	14.5	15.4	16.4	17.3	18.2	19.0	19.8	20.6	21.3	22.0	22.6	23.3	23.6	24.0	24.4	24.7	24.8	25.0	25
26	13.0	14.0	15.0	16.0	17.0	18.0	18.9	19.8	20.6	21.4	22.2	22.9	23.5	24.1	24.6	25.0	25.4	25.6	25.8	26.0	26
27	13.5	14.6	15.6	16.7	17.7	18.7	19.6	20.6	21.4	22.3	23.0	23.8	24.4	25.0	25.5	26.0	26.3	26.6	26.8	27.0	27
28	14.0	15.1	16.2	17.3	18.3	19.4	20.4	21.3	22.1	23.1	23.9	24.6	25.3	25.9	26.5	26.9	27.3	27.6	27.8	28.0	28
29	14.5	15.7	16.8	17.9	19.0	20.0	21.1	22.1	23.0	23.9	24.8	25.5	26.2	26.9	27.4	27.9	28.3	28.6	28.8	29.0	29
30	15.0	16.2	17.3	18.5	19.6	20.7	21.8	22.8	23.8	24.7	25.6	26.4	27.1	27.8	28.4	28.9	29.3	29.6	29.8	30.0	30
31	15.5	16.7	17.9	19.1	20.3	21.4	22.5	23.6	24.6	25.6	26.5	27.3	28.0	28.7	29.3	29.8	30.2	30.6	30.8	31.0	31
32	16.0	17.3	18.5	19.7	21.0	22.1	23.3	24.4	25.4	26.4	27.3	28.2	28.9	29.6	30.3	30.8	31.2	31.6	31.8	32.0	32
33	16.5	17.8	19.1	20.4	21.6	22.8	24.0	25.1	26.2	27.2	28.2	29.0	29.8	30.6	31.2	31.7	32.2	32.5	32.8	32.9	33
34	17.0	18.4	19.7	21.0	22.3	23.5	24.7	25.9	27.0	28.0	29.0	29.9	30.8	31.5	32.1	32.7	33.2	33.5	33.8	33.9	34
35	17.5	18.9	20.2	21.6	22.9	24.2	25.4	26.6	27.8	28.9	29.9	30.8	31.7	32.4	33.1						

**JADUAL MENGIRA TINGGI AIR PASANG SURUT PADA WAKTU  
DI ANTARA AIR PASANG DAN SURUT**

**JADUAL 1 - AM  
(Untuk Keterangan lanjut lihat muka surat viii hingga x)**

**TABLE FOR FINDING THE HEIGHT OF THE TIDE AT TIMES  
BETWEEN HIGH AND LOW WATER  
TABLES 1 - GENERAL  
(For Instructions see pages viii to x)**

Tempoh pasang atau surut (Duration of rise or fall)	SELANG DARI AIR SURUT (PASANG) TERHAMPIR INTERVAL FROM NEAREST LOW WATER (HIGH WATER)																Tempoh pasang atau surut (Duration of rise or fall)				
	0005	0011	0016	0021	0026	0032	0037	0042	0047	0053	0058	0103	0108	0114	0119	0124		0129	0135	0140	0145
0330	0005	0011	0016	0021	0026	0032	0037	0042	0047	0053	0058	0103	0108	0114	0119	0124	0129	0135	0140	0145	0330
40	0006	0011	0017	0022	0028	0033	0039	0044	0050	0055	0101	0106	0112	0117	0123	0128	0134	0139	0145	0150	40
0350	0006	0012	0017	0023	0029	0035	0040	0046	0052	0058	0103	0109	0115	0121	0126	0132	0138	0144	0149	0155	0350
0400	0006	0012	0018	0024	0030	0036	0042	0048	0054	0100	0106	0112	0118	0124	0130	0136	0142	0148	0154	0200	0400
10	0006	0013	0019	0025	0031	0038	0044	0050	0056	0103	0109	0115	0121	0128	0134	0140	0146	0153	0159	0205	10
20	0007	0013	0020	0026	0033	0039	0046	0052	0059	0105	0112	0118	0125	0131	0138	0144	0151	0157	0204	0210	20
30	0007	0014	0020	0027	0034	0041	0047	0054	0101	0108	0114	0121	0128	0135	0141	0148	0155	0202	0208	0215	30
40	0007	0014	0021	0028	0035	0042	0046	0056	0103	0110	0117	0124	0131	0138	0145	0152	0159	0206	0213	0220	40
0450	0007	0015	0022	0029	0036	0044	0051	0058	0105	0113	0120	0127	0134	0142	0149	0156	0203	0211	0218	0225	0450
0500	0008	0015	0023	0030	0038	0045	0053	0100	0108	0115	0123	0130	0138	0145	0153	0200	0208	0215	0223	0230	0500
10	0008	0016	0023	0026	0039	0047	0054	0102	0110	0118	0125	0133	0141	0149	0156	0204	0212	0220	0227	0235	10
20	0008	0016	0024	0032	0040	0048	0056	0104	0112	0120	0128	0136	0144	0152	0200	0208	0216	0224	0232	0240	20
30	0008	0017	0025	0033	0041	0050	0058	0106	0114	0123	0131	0139	0147	0156	0204	0212	0220	0229	0237	0245	30
40	0009	0017	0026	0034	0043	0051	0100	0108	0117	0125	0134	0142	0151	0159	0208	0216	0225	0233	0242	0250	40
0550	0009	0018	0026	0035	0044	0053	0101	0110	0119	0128	0138	0145	0154	0203	0211	0220	0229	0238	0246	0255	0550
0600	0009	0018	0027	0036	0045	0054	0103	0112	0121	0130	0139	0148	0157	0206	0215	0224	0233	0242	0251	0300	0600
10	0009	0019	0028	0037	0046	0056	0105	0114	0123	0133	0142	0151	0200	0210	0219	0228	0237	0247	0256	0305	10
20	0010	0019	0029	0038	0048	0057	0107	0116	0126	0135	0145	0154	0204	0213	0223	0232	0242	0251	0301	0310	20
30	0010	0020	0029	0039	0049	0059	0108	0118	0128	0138	0147	0157	0207	0217	0226	0236	0246	0256	0305	0315	30
40	0010	0020	0030	0040	0050	0100	0110	0120	0130	0140	0150	0200	0210	0220	0230	0240	0250	0300	0310	0320	40
0650	0010	0021	0031	0041	0051	0102	0112	0122	0132	0143	0153	0203	0213	0224	0234	0244	0254	0305	0315	0325	0650
0700	0011	0021	0032	0042	0053	0103	0114	0124	0135	0145	0156	0206	0217	0227	0238	0248	0259	0309	0320	0330	0700
10	0011	0022	0032	0043	0054	0105	0115	0126	0137	0148	0158	0209	0220	0231	0241	0252	0303	0314	0324	0335	10
20	0011	0022	0033	0044	0055	0106	0117	0128	0139	0150	0201	0212	0223	0234	0245	0256	0307	0318	0329	0340	20
30	0011	0023	0034	0045	0056	0108	0119	0130	0141	0153	0204	0215	0226	0238	0249	0300	0311	0323	0334	0345	30
40	0012	0023	0035	0046	0058	0109	0121	0132	0144	0155	0207	0218	0230	0241	0253	0304	0316	0327	0339	0350	40
0750	0012	0024	0035	0047	0059	0111	0122	0134	0146	0158	0209	0221	0233	0245	0256	0308	0320	0332	0343	0355	0750
0800	0012	0024	0036	0048	0100	0112	0124	0136	0148	0200	0212	0224	0236	0248	0300	0312	0324	0336	0348	0400	0800
Julat (Range)	PEMBETULAN TINGGI AIR SURUT (PASANG) CORRECTIONS TO HEIGHT OF LOW WATER (HIGH WATER)																Julat (Range)				
	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.5	1.7		1.9	2.1	2.3	2.5
5	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	5
6	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.1	1.2	1.4	1.6	1.9	2.1	2.3	2.5	2.7	3.0	6
7	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.2	1.4	1.7	1.9	2.2	2.4	2.7	3.0	3.2	3.5	7
8	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.7	4.0	8
9	0.0	0.1	0.1	0.2	0.3	0.5	0.7	0.9	1.1	1.3	1.6	1.9	2.1	2.5	2.8	3.1	3.4	3.8	4.1	4.5	9
10	0.0	0.1	0.1	0.2	0.4	0.5	0.7	1.0	1.2	1.5	1.8	2.1	2.4	2.7	3.1	3.5	3.8	4.2	4.6	5.0	10
11	0.0	0.1	0.2	0.3	0.4	0.6	0.8	1.1	1.3	1.6	1.9	2.3	2.6	3.0	3.4	3.8	4.2	4.6	5.0	5.5	11
12	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.1	1.4	1.8	2.1	2.5	2.9	3.3	3.7	4.1	4.6	5.1	5.5	6.0	12
13	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.2	1.6	1.9	2.3	2.7	3.1	3.5	4.0	4.5	5.0	5.5	6.0	6.5	13
14	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.3	1.7	2.1	2.5	2.9	3.3	3.8	4.3	4.8	5.4	5.9	6.4	7.0	14
15	0.0	0.1	0.2	0.4	0.6	0.8	1.1	1.4	1.8	2.2	2.6	3.1	3.6	4.1	4.6	5.2	5.7	6.3	6.9	7.5	15
16	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.5	1.9	2.3	2.8	3.3	3.8	4.4	4.9	5.5	6.1	6.7	7.3	8.0	16
17	0.0	0.1	0.2	0.4	0.6	0.9	1.3	1.6	2.0	2.5	3.0	3.5	4.1	4.6	5.2	5.9	6.5	7.2	7.8	8.5	17
18	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.7	2.2	2.6	3.2	3.7	4.3	4.9	5.6	6.2	6.9	7.6	8.3	9.0	18
19	0.0	0.1	0.3	0.5	0.7	1.0	1.4	1.8	2.3	2.8	3.3	3.9	4.5	5.2	5.9	6.6	7.3	8.0	8.7	9.5	19
20	0.0	0.1	0.3	0.5	0.8	1.1	1.5	1.9	2.4	2.9	3.5	4.1	4.8	5.5	6.2	6.9	7.7	8.4	9.2	10.0	20
21	0.0	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.7	4.3	5.0	5.7	6.5	7.3	8.0	8.9	9.7	10.5	21
22	0.0	0.1	0.3	0.5	0.8	1.2	1.6	2.1	2.6	3.2	3.9	4.5	5.3	6.0	6.8	7.6	8.4	9.3	10.1	11.0	22
23	0.0	0.1	0.3	0.6	0.9	1.3	1.7	2.2	2.8	3.4	4.0	4.7	5.5	6.3	7.1	7.9	8.8	9.7	10.6	11.5	23
24	0.0	0.1	0.3	0.6	0.9	1.3	1.8	2.3	2.9	3.5	4.2	4.9	5.7	6.6	7.4	8.3	9.2	10.1	11.0	12.0	24
25	0.0	0.2	0.3	0.6	1.0	1.4	1.8	2.4	3.0	3.7	4.4	5.2	6.0	6.8	7.7	8.6	9.6	10.5	11.5	12.5	25
26	0.0	0.2	0.4	0.6	1.0	1.4	1.9	2.5	3.1	3.8	4.6	5.4	6.2	7.1	8.0	9.0	10.0	11.0	12.0	13.0	26
27	0.0	0.2	0.4	0.7	1.0	1.5	2.0	2.6	3.2	4.0	4.7	5.6	6.4	7.4	8.3	9.3	10.3	11.4	12.4	13.5	27
28	0.0	0.2	0.4	0.7	1.1	1.5	2.1	2.7	3.4	4.1	4.9	5.8	6.7	7.6	8.6	9.7	10.7	11.8	12.9	14.0	28
29	0.0	0.2	0.4	0.7	1.1	1.6	2.1	2.8	3.5	4.2	5.1	6.0	6.9	7.9	9.0	10.0	11.1	12.3	13.3	14.5	29
30	0.0	0.2	0.4	0.7	1.1	1.6	2.2	2.9	3.6	4.4	5.3	6.2	7.2	8.2	9.3	10.4	11.5	12.7	13.8	15.0	30
31	0.0	0.2	0.4	0.8	1.2	1.7	2.3	3.0	3.7	4.5	5.4	6.4	7.4	8.5	9.6	10.7	11.9	13.1	14.3	15.5	31
32	0.0	0.2	0.4	0.8	1.2	1.7	2.4	3.1	3.8	4.7	5.6	6.6	7.6	8.7	9.9	11.0	12.3	13.5	14.7	16.0	32
33	0.1	0.2	0.5	0.8	1.3	1.8	2.4	3.2	4.0	4.8	5.8	6.8	7.9	9.0	10.2	11.4	12.6	13.9	15.2	16.5	33
34	0.1	0.2	0.5	0.8	1.3	1.9	2.5	3.2	4.1	5.0	6.0	7.0	8.1	9.3	10.5	11.7	13.0	14.3	15.6	17.0	34
35	0.1	0.2	0.5	0.9	1.3	1.9	2.6	3.3	4.2	5.1	6.1	7.2	8.4	9.6	10.8	12.1	13.4	14.8	16.1	17.5	35
36	0.1	0.2	0.5	0.9	1.4	2.0	2.7	3.4	4.3	5.3	6.3	7.4	8.6	9.8	11.1	12.4	13.8	15.2	16.6	18.0	36
37	0.1	0.2	0.5	0.9	1.4	2.0	2.7	3.5	4.4	5.4	6.5	7.6	8.8	10.1	11.4	12.8	14.2	15.6	17.0	18.5	37
38	0.1																				