

ACADEMIC YEAR 2023 – 2024

Program	Year	Semester	Paper	
DO's	3	5	Mid-term exam	
MODULE NAME:	Celestial Navigation- II			
MODULE CODE:	DCNAV-II		EXAM DATE:	5 /11/2023
TEACHER'S NAME:	Capt. Sherif Hussein		DURATION:	60 Min

STUDENT NAME:	
STUDENT ID:	

	30
--	-----------

ANSWER ALL QUESTIONS

FINAL MARKS

Answer the following question in full term (time and date):

Q1: Calculate the G.M.T(GD), given that Z.T is 1930, June 27th; for an observer in long. $098^{\circ} 30' W$

.....

.....

.....

.....

.....

.....

.....

Q2: If LMT $07h 20m 33s$ May 23rd for an observer in long $96^{\circ} 34' W$, Find the GMT

.....

.....

.....

.....

.....

.....

.....

Q3: If LMT $20h 15m 53s$ June 25th for an observer in long $126^{\circ} 34' w$ Find the GMT

.....

.....

.....

.....

.....

.....

.....

Q4: If GMT $04h 10m 50s$ June 20th Find the LMT for an observer in long $137^{\circ} 30' W$

.....

.....

.....

.....

.....

.....

.....

Q5: If Zone Time (Z.T.) was recorded to be 2335 April 18th; for an observer in Longitude $161^{\circ} 15'.0$ W.
 Calculate Zone Time (Z.T.) at the same moment for an observer in Longitude $135^{\circ} 10'.0$ E.

.....

.....

.....

.....

.....

.....

Q6: If LMT $17^{\text{h}} 37^{\text{m}} 18^{\text{s}}$ May 15th for an observer in long $101^{\circ} 33'.5$ E Find the LMT for an observer
 in long $134^{\circ} 22'.6$ W

.....

.....

.....

.....

.....

.....

Q7: If Zone Time (Z.T.) was recorded to be 0610 August 1st; for an observer in Longitude $107^{\circ} 18'.0$ E.
 Calculate Zone Time (Z.T.) at the same moment for an observer in Longitude $145^{\circ} 38'.0$ W.

.....

.....

.....

.....

.....

.....

Q8: Calculate the T.Z.D of the star if the S.Alt is $36^{\circ} 40.5'$ I.Er 1.7 off arc , H.E 22 m.

ANS: Sex.Alt:

.....

.....

I. Er.....

.....

Obs.Alt.....

.....

Dip.....

.....

App.Alt.....

.....

Cor.....

.....

T. Alt.....

.....

90.....

.....

T.Z.D.....

Q9: Calculate the T.Z.D if the S.Alt of the Sun L.L is 47° 46.5' on the 22nd of May, I.Er 1.5 on arc, H.E 17 m

ANS: Sex.Alt:

..... I. Er.....

..... Obs.Alt.....

..... Dip.....

..... App.Alt.....

..... Cor.....

..... T. Alt.....

..... 90.....

..... T.Z.D.....

Q10: Ship in D.R (13° 40'S, 132° 50'E) on April 13th, 1990. Use the Amplitude method, to find the compass Errors and Dev. if the sun set at Bg. 268°(C), 281°(G) and var. was 5°E.

L.M.T		
Lat.co		Dec
c L.M.T		d.c
Long/T		C Dec.
G.M.T		

Sin Amp. = Sin Dec ÷ Cos Lat

Amp. =

T.Brg setting = 270 ± Amp

T.Brg =

<u>T.Bg</u>		<u>T.Bg</u>
<u>G.Bg</u>		<u>C.Bg</u>
<u>G.Er</u>		<u>C.Er</u>
		Var.
		Dev.

Good Luck

Lat.	Sunset	Twilight	
		Civil	Naut.
	h m	h m	h m
N 72	20 18	21 58	###
N 70	20 01	21 22	###
68	19 48	20 58	23 15
66	19 38	20 39	22 15
64	19 29	20 24	21 43
62	19 21	20 11	21 20
60	19 15	20 01	21 02
N 58	19 09	19 52	20 48
56	19 04	19 44	20 35
54	19 00	19 37	20 25
52	18 55	19 31	20 16
50	18 52	19 26	20 08
45	18 44	19 14	19 51
N 40	18 37	19 05	19 39
35	18 31	18 57	19 28
30	18 26	18 51	19 20
20	18 18	18 40	19 07
N 10	18 10	18 32	18 57
0	18 04	18 25	18 49
S 10	17 57	18 18	18 43
20	17 50	18 12	18 38
30	17 42	18 06	18 34
35	17 37	18 03	18 32
40	17 32	18 00	18 31
45	17 27	17 56	18 30

UT [GMT]	SUN		G.
	G.H.A.	Dec.	
d h	o /	o /	o
13 00	179 49.6	N 8 52.3	330
01	194 49.8	53.2	344
02	209 49.9	54.1	359
03	224 50.1	55.0	14
04	239 50.3	55.9	28
05	254 50.4	56.8	43
06	269 50.6	N 8 57.7	57
07	284 50.7	58.6	72
08	299 50.9	8 59.5	86
F 09	314 51.1	9 00.5	101
R 10	329 51.2	01.4	115
I 11	344 51.4	02.3	130
D 12	359 51.5	N 9 03.2	144
A 13	14 51.7	04.1	159
Y 14	29 51.9	05.0	173
20	120 00.3	53.5	236
21	135 00.4	54.4	250
22	150 00.6	55.3	265
23	165 00.7	56.2	279
S.D. 16.0		d 0.9	S.D.

r. or Corr ⁿ d		r. or Corr ⁿ d		r. or Corr ⁿ d	
0-0	0-0	6-0	0-4	12-0	0-7
0-1	0-0	6-1	0-4	12-1	0-7
0-2	0-0	6-2	0-4	12-2	0-7
0-3	0-0	6-3	0-4	12-3	0-7
0-4	0-0	6-4	0-4	12-4	0-7
0-5	0-0	6-5	0-4	12-5	0-7
0-6	0-0	6-6	0-4	12-6	0-7
0-7	0-0	6-7	0-4	12-7	0-7
0-8	0-0	6-8	0-4	12-8	0-7
0-9	0-1	6-9	0-4	12-9	0-8
1-0	0-1	7-0	0-4	13-0	0-8
1-1	0-1	7-1	0-4	13-1	0-8

A2 ALTITUDE CORRECTION TABLES 10°-90°—SUN, STARS, PLANETS

OCT.—MAR. SUN			APR.—SEPT.			STARS AND PLANETS				DIP				
App. Alt.	Lower Limb	Upper Limb	App. Alt.	Lower Limb	Upper Limb	App. Alt.	Corr ⁿ	App. Alt.	Additional Corr ⁿ	Ht. of Eye	Corr ⁿ	Ht. of Eye	Ht. of Eye	Corr ⁿ
9 34	+10.8	21.3	9 39	+10.6	21.2	9 56	-5.3			m		ft.	m	
9 45	+10.9	21.4	9 51	+10.7	21.1	10 08	-5.2		1990	2.4	-2.8	8.0	1.0	-1.8
9 56	+11.0	21.3	10 03	+10.8	21.0	10 20	-5.1		VENUS	2.6	-2.9	8.6	1.5	-2.2
10 08	+11.1	21.2	10 15	+10.9	20.9	10 33	-5.0		Jan. 1—Feb. 8	2.8	-3.0	9.2	2.0	-2.5
10 21	+11.2	21.1	10 27	+11.0	20.8	10 46	-4.9		0 + 0.5	3.0	-3.1	10.5	2.5	-2.8
10 34	+11.3	21.0	10 40	+11.1	20.7	11 00	-4.8		26 + 0.5	3.2	-3.2	11.2	3.0	-3.0
10 47	+11.4	20.9	10 54	+11.2	20.6	11 14	-4.7		46 + 0.4	3.4	-3.3	11.9	See table	
11 01	+11.5	20.8	11 08	+11.3	20.5	11 29	-4.6		60 + 0.3	3.6	-3.4	12.6	+	
11 15	+11.6	20.7	11 23	+11.4	20.4	11 45	-4.5		73 + 0.2	3.8	-3.5	13.3	m	
11 30	+11.7	20.6	11 38	+11.5	20.3	12 01	-4.4		84 + 0.1	4.0	-3.6	14.1	20	-7.9
11 46	+11.8	20.5	11 54	+11.6	20.2	12 18	-4.3		Feb. 9—Feb. 23	4.3	-3.7	14.9	22	-8.3
12 02	+11.9	20.4	12 10	+11.7	20.1	12 35	-4.2		0 + 0.4	4.5	-3.8	15.7	24	-8.6
12 19	+12.0	20.3	12 28	+11.8	20.0	12 54	-4.1		29 + 0.3	4.7	-3.9	16.5	26	-9.0
12 37	+12.1	20.2	12 46	+11.9	19.9	13 13	-4.0		51 + 0.2	5.0	-4.0	17.4	28	-9.3
12 55	+12.2	20.1	13 05	+12.0	19.8	13 33	-3.9		68 + 0.1	5.2	-4.1	18.3	+	
13 14	+12.3	20.0	13 24	+12.1	19.7	13 54	-3.8		83 + 0.1	5.5	-4.2	19.1	30	-9.6
13 35	+12.4	19.9	14 07	+12.2	19.6	14 16	-3.7		Feb. 24—Mar. 18	5.8	-4.2	19.9	32	-10.0
13 56	+12.5	19.8	14 30	+12.3	19.5	14 40	-3.6		0 + 0.3	6.1	-4.3	20.1	34	-10.3
14 18	+12.6	19.7	14 54	+12.4	19.4	15 04	-3.5		34 + 0.2	6.3	-4.4	21.0	36	-10.6
14 42	+12.7	19.6	15 19	+12.5	19.3	15 30	-3.4		60 + 0.1	6.6	-4.5	22.0	38	-10.8
15 06	+12.8	19.5	15 46	+12.6	19.2	16 26	-3.2		80 + 0.1	6.9	-4.6	22.9	+	
15 32	+12.9	19.4	16 14	+12.7	19.1	17 28	-3.1		Mar. 19—May 7	7.2	-4.7	23.9	40	-11.1
15 59	+13.0	19.3	16 44	+12.8	19.0	18 02	-3.0		0 + 0.2	7.5	-4.8	24.9	42	-11.4
16 28	+13.1	19.2	17 15	+13.0	18.8	18 38	-2.9		41 + 0.1	7.9	-4.9	26.0	44	-11.7
16 59	+13.2	19.1	17 48	+13.1	18.7	19 17	-2.8		76 + 0.1	8.2	-5.0	27.1	46	-11.9
17 32	+13.3	19.0	18 24	+13.2	18.6	19 58	-2.7		May 8—Dec. 31	8.5	-5.1	28.1	48	-12.2
18 06	+13.4	18.9	19 01	+13.3	18.5	20 42	-2.6		0 + 0.1	8.8	-5.2	29.2	ft.	
18 42	+13.5	18.8	19 42	+13.4	18.4	21 28	-2.5		60 + 0.1	9.2	-5.3	30.4	2	-1.4
19 21	+13.6	18.7	20 25	+13.5	18.3	22 19	-2.4			9.5	-5.4	31.5	4	-1.9
20 03	+13.7	18.6	21 11	+13.6	18.2	23 13	-2.3		MARS	9.9	-5.5	32.7	6	-2.4
20 48	+13.8	18.5	22 00	+13.7	18.1	24 11	-2.2		Jan. 1—Aug. 9	10.3	-5.6	33.9	8	-2.7
21 35	+13.9	18.4	22 54	+13.8	18.0	25 14	-2.1		0 + 0.1	10.6	-5.7	35.1	10	-3.1
22 26	+14.0	18.3	23 51	+13.9	17.9	26 22	-2.0		60 + 0.1	11.0	-5.8	36.3	See table	
23 22	+14.1	18.2	24 53	+14.0	17.8	27 36	-1.9		Aug. 10—Oct. 21	11.4	-5.9	37.6	+	
24 21	+14.2	18.1	26 00	+14.1	17.7	28 56	-1.8		0 + 0.2	11.8	-6.0	38.9	ft.	
25 26	+14.3	18.0	27 13	+14.2	17.6	30 24	-1.7		41 + 0.2	12.2	-6.1	40.1	70	-8.1
26 36	+14.4	17.9	28 33	+14.3	17.5	32 00	-1.6		76 + 0.1	12.6	-6.2	41.5	75	-8.4
27 52	+14.5	17.8	30 00	+14.4	17.4	33 45	-1.5		Oct. 22—Dec. 17	13.0	-6.3	42.8	80	-8.7
29 15	+14.6	17.7	31 35	+14.5	17.3	35 40	-1.4		0 + 0.3	13.4	-6.4	44.2	85	-8.9
30 46	+14.7	17.6	33 20	+14.6	17.2	37 48	-1.3		34 + 0.2	13.8	-6.5	45.5	90	-9.2
32 26	+14.8	17.5	35 17	+14.7	17.1	40 08	-1.2		60 + 0.1	14.2	-6.6	46.9	95	-9.5
34 17	+14.9	17.4	37 26	+14.8	17.0	42 44	-1.1		80 + 0.1	14.7	-6.7	48.4	+	
36 20	+15.0	17.3	39 50	+14.9	16.9	45 36	-1.0		Dec. 18—Dec. 31	15.1	-6.8	49.8	100	-9.7
38 36	+15.1	17.2	42 31	+15.0	16.8	48 47	-0.8		0 + 0.2	15.5	-6.9	51.3	105	-9.9
41 08	+15.2	17.1	45 31	+15.1	16.7	52 18	-0.7		41 + 0.2	16.0	-7.0	52.8	110	-10.2
43 59	+15.3	17.0	48 55	+15.2	16.6	56 11	-0.6		76 + 0.1	16.5	-7.1	54.3	115	-10.4
47 10	+15.4	16.9	52 44	+15.3	16.5	60 28	-0.5			16.9	-7.2	55.8	120	-10.6
50 46	+15.5	16.8	57 02	+15.4	16.4	65 08	-0.4			17.4	-7.3	57.4	125	-10.8
54 49	+15.6	16.7	61 51	+15.5	16.3	70 11	-0.3			17.9	-7.4	58.9	+	
59 23	+15.7	16.6	67 17	+15.6	16.2	75 34	-0.2			18.4	-7.5	60.5	130	-11.1
64 30	+15.8	16.5	73 16	+15.7	16.1	81 13	-0.1			18.8	-7.6	62.1	135	-11.3
70 12	+15.9	16.4	79 43	+15.8	16.0	87 03	0.0			19.3	-7.7	63.8	140	-11.5
76 26	+16.0	16.3	86 32	+15.9	15.9	90 00	0.0			19.8	-7.8	65.4	145	-11.7
83 05	+16.1	16.2	90 00							20.4	-7.9	67.1	150	-11.9
90 00										20.9	-8.0	68.8	155	-12.1
										21.4	-8.1	70.5		