Name:

Enrolment No:

UPES
UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Geomatics **Semester: IV**
Program: B Tech Civil Engineering **Time 03 hrs.**
Course Code: CIVL 2004 **Max. Marks: 100**

Instructions:

SECTION A (Answer all questions)

S. No.		Marks	CO
Q 1	Define weight of observations.	**4**	**1**
Q 2	How layout of triangulation important in survey?	**4**	**2**
Q 3	Define oblique photograph.	**4**	**3**
Q 4	What are the basic components of GIS?	**4**	**4**
Q 5	Define star at prime at vertical star at horizon.	**4**	**5**
	SECTION B (Answer any four questions)		
Q 6	Find the Distance and height of the object for the case "base of the object is inaccessible, Instrument stations is not in the vertical plane as the elevated object".	**10**	**1**
Q 7	How Characteristics of Signal play a role in defining the position of signal during survey?	**10**	**2**
Q 8	A photo was taken over a plot of area 150 m^2 and got an image size of 88 cm^2. If the image was taken from a height of 1 km, find the focal length of the camera.	**10**	**3**
Q 9	Classify remote sensing based on plat-form and energy source with neat sketches.	**10**	**4**
Q 10	Find the shortest distance between a station (29° 52' N, 77° 54' E) at Roorkee and to a station (28° 34' N, 77° 06' E) at Delhi. Determine the azimuth of the line along which the direction of the shortest distance to be set out starting from Roorkee.	**10**	**5**
	SECTION-C (Answer any two questions)		
Q 11	Angles were measured on a station and the observations were recorded as follows, find the most probable values of the angle A and B.	**20**	**1**
Q 12	The co-ordinates of three points on a photograph are A(-6,-2) B (-9,7) and C (9,8) find the area of the triangle on ground with a scale of 1 in 1000.	**20**	**3**

Angle	Value	Weight
A	55°30'10"	4
B	40°20'20"	3
A+B	95°50'10"	1

Q 13	Explain the use of GPS in Civil Engineering with reference to survey practices. Explain Napiers rule of Circular parts.	**10 each**	**5**

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SECTION A (Answer all questions)

S. No.		Marks	CO
Q 1	What are the different types of errors?	**4**	**1**
Q 2	How is fieldwork important in survey?	**4**	**2**
Q 3	Draw the geometry of Vertical aerial photograph.	**4**	**3**
Q 4	Define Visual image interpretation.	**4**	**4**
Q 5	Define solar and mean solar time.	**4**	**5**
	SECTION B (Answer any four questions)		
Q 6	Define laws of weights with proper examples.	**10**	**1**
Q 7	In a triangle ABC, angles A, B, C were observed as 55°, 44°, 71°, calculate the strength of the figure use table attached.	**10**	**2**
Q 8	A photograph was taken from an height of 150 ft, if the average photo base length is 4.8 in and differential parallax is 0.7 in, find the actual height of the object.	**10**	**3**
Q 9	Discuss about various space platforms used in RS depending on their utility in various situations.	**10**	**4**
Q 10	Find the shortest distance between a station (39° 52' N, 67° 54' E) at Warangal and to a station (18° 34' N, 97° 06' E) at Hyderabad. Determine the azimuth of the line along which the direction of the shortest distance to be set out starting from Warangal.	**10**	**5**
	SECTION-C (Answer any two questions)		
Q 11	A The elevations of two proposed triangulation stations A and B, 100 km apart, are 140m and 416m above the MSL, respectively. The elevation of an intervening peak at C, 60 km from A, which is likely to obstruct the line of sight, is 150m. Ascertain if A and B are inter-visible, and if not find the height required for the scaffold at B so that the line of sight clears C by 3m.	**20**	**1**
Q 12	Explain photographic co-ordinate system and the importance of scaling in it. Derive parallax equations in stereo photogrammetry.	**10 each**	**3**
Q 13	How Total station is superior over other survey instruments explain its usage. Explain celestial coordinate system.	**10 each**	**5**

Table 2.1 *Table for determining relative strength of triangulation figures (Values of $\delta A^2 + \delta A \delta B + \delta B^2$)*

	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
10°	428	359																					
12°	359	295	253																				
14°	315	253	214	187																			
16°	284	225	187	162	143																		
18°	262	204	168	143	126	113																	
20°	245	189	153	130	113	100	91																
22°	232	177	142	119	103	91	81	74															
24°	221	167	134	111	95	83	74	67	61														
26°	213	160	126	104	89	77	68	61	56	51													
28°	206	153	120	99	83	72	63	57	51	47	43												
30°	199	148	115	94	79	68	59	53	48	43	40	33											
35°	188	137	106	85	71	60	52	46	41	37	33	27	23										
40°	179	129	99	79	65	54	47	41	36	32	29	23	19	16									
45°	172	124	93	74	60	50	43	37	32	28	25	20	16	13	11								
50°	167	119	89	70	57	47	39	34	29	26	23	18	14	11	9	8							
55°	162	115	86	67	54	44	37	32	27	24	21	16	12	10	8	7	5						
60°	159	112	83	64	51	42	35	30	25	22	19	14	11	9	7	5	4	4					
65°	155	109	80	62	49	40	33	28	24	21	18	13	10	7	6	5	4	3	2				
70°	152	106	78	60	48	38	32	27	23	19	17	12	9	7	5	4	3	2	2	1			
75°	150	104	76	58	46	37	30	25	21	18	16	11	8	6	4	3	2	2	1	1	1		
80°	147	102	74	57	45	36	29	24	20	17	15	10	7	5	4	3	2	1	1	1	0	0	
85°	145	100	73	55	43	34	28	23	19	16	14	10	7	5	3	2	2	1	1	0	0	0	0
90°	143	98	71	54	42	33	27	22	19	16	13	9	6	4	3	2	1	1	1	0	0	0	0
95°	140	96	70	53	41	32	26	22	18	15	13	9	6	4	3	2	1	1	0	0	0	0	
100°	138	95	68	51	40	31	25	21	17	14	12	8	6	4	3	2	1	1	0	0	0		
105°	136	93	67	50	39	30	25	20	17	14	12	8	5	4	2	2	1	1	0	0			
110°	134	91	65	49	38	30	24	19	16	13	11	7	5	3	2	2	1	1	1				
115°	132	89	64	48	37	29	23	19	15	13	11	7	5	3	2	2	1	1					
120°	129	88	62	46	36	28	22	18	15	12	10	7	5	3	2	2	1						
125°	127	86	61	45	35	27	22	18	14	12	10	7	5	4	3	2							
130°	125	84	59	41	34	26	21	17	14	12	10	7	5	4	3								
135°	122	82	58	43	33	26	21	17	14	12	10	7	5	4									
140°	119	80	56	42	32	25	20	17	14	12	10	8	6										
145°	116	77	55	41	32	25	21	17	15	13	11	9											
150°	112	75	54	40	32	26	21	18	16	15	13												
152°	111	75	53	40	32	26	22	19	17	16													
154°	110	74	53	41	33	27	23	21	19														
156°	108	74	54	42	34	28	25	22															
158°	107	74	54	43	35	30	27																
160°	107	74	56	45	38	33																	
162°	107	76	59	48	42																		
164°	109	79	63	54																			
166°	113	86	71																				
168°	122	98																					
170°	143																						

(Contd.)