

Department of Civil Engineering

Surveying and Geomatics

II B.Tech - I Semester

Dr K Srikanth

Associate Professor

**GokarajuRangaraju Institute of
Engineering and Technology**

GokarajuRangaraju Institute of Engineering and Technology
Department of Civil Engineering
Surveying Theory
Course File Check List

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Bachupally, Hyderabad-500090
DEPARTMENT OF CIVIL ENGINEERING
SYLLABUS

Unit I: Introduction to Surveying Introduction - Objectives, classification and principles of surveying, Scales, Shrinkage of Map, Conventional symbols and Code of Signals, Surveying accessories, phases of surveying. Measurement of Distances and Directions Linear distances- Approximate methods, Direct Methods- Chains- Tapes, ranging, Tape corrections. Prismatic Compass - Bearings, included angles, Local Attraction, Magnetic Declination and dip

Unit I: Leveling Simple Leveling: Basic definitions; Types of levels and levelling staves - classification of methods of leveling; Sources of errors in leveling - Curvature and Refraction – Contour: contour interval; Characteristics of contours; Methods of plotting of contours; Uses of contour maps. Areas and Volumes: Introduction- Simpson’s rule - Boundaries with offsets at irregular intervals - coordinate method - planimeter; level section - two level section - trapezoidal and prismoidal rule - volume from contour plan - capacity of a reservoir.

Unit II: Theodolite Surveying: Types of Theodolites, Fundamental Lines, temporary adjustments, measurement of horizontal angle by repetition method and reiteration method, measurement of vertical Angle, Trigonometric leveling when base is accessible and inaccessible. Traversing: Methods of traversing, traverse computations and adjustments, Omitted measurements

Unit IV: Curves: Types of curves and their necessity, elements of simple, compound, reverse, transition and vertical curves. Tacheometric Surveying: Principles of Tacheometry, stadia and tangential methods of Tachometry. Modern Surveying Methods: Principle and types of E.D.M. Instruments, Total station- advantages and Applications. Field Procedure for total station survey, Errors in Total Station Survey, Global Positioning System- Principle and Applications.

Unit V: Photogrammetry Surveying Introduction, Basic concepts, perspective geometry of aerial photograph, relief and tilt displacements, terrestrial photogrammetry, flight planning; Stereoscopy, ground control extension for photographic mapping- aerial triangulation, radial triangulation, methods; photographic mapping- mapping using paper prints, mapping using stereo plotting instruments, mosaics, map substitutes. Digital Photogrammetry – Introduction.

Text/Reference Books:

1. Madhu, N, Sathikumar, R and Satheesh Gobi, Advanced Surveying: TotalStation, GISand Remote Sensing, Pearson India, 2006.
2. Manoj, K. Arora and Badjatia, Geomatics Engineering, Nem Chand & Bros, 2011.
3. Bhavikatti, S.S., Surveying and Levelling, Vol. I and I, I.K. International, 2010.
4. Chandra, A.M., Higher Surveying, Third Edition, New Age International (P)Limited, 2002.
5. Anji Reddy, M., Remote sensing and Geographical information system, B.S.Publications, 2001.
6. Arora, K.R., Surveying, Vol-I, I and II, Standard Book House, 2015

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DEPARTMENT OF CIVIL ENGINEERING
INDIVIDUAL TIME TABLE

I YEAR-A SECTION

ROOM NO: 4222

W.E.F: 08-03-2021

	1	2	3	4	5	6	7	8
	9:00-9:50	9:50-10:40	10:40-11:30	11:30-12:00	12:00-12:45	12:45-1:30	1:30-2:15	2:15-3:00
Monday	S&G			LUNCH BREAK				
Tuesday		S&G						
Wednesday								
Thursday								
Friday								
Saturday								

CODE	Subject	Faculty
GR20A2013	Surveying and Geomatics	Dr K Srikanth

CLASS COORDINATOR

PROGRAMME COORDINATOR

HOD



GokarajuRangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
PEO'S AND PO'S

Vision

To become a pioneering centre in civil engineering.

Mission

- To produce well qualified and talented engineers by imparting quality education.
- To enhance the skills of entrepreneurship, innovativeness, management and life-long learning in young engineers.
- To inculcate professional ethics and make socially responsible engineers.

PEOs

1. Graduates of the programme will be successful in technical and professional career.
2. Graduates of the programme will have proficiency in solving real time Civil Engineering projects.
3. Graduates of the programme will continue to engage in life-long learning with ethical and social responsibility.

Programme Outcomes

Graduates of the Civil Engineering programme will be able to

- a. apply knowledge of mathematics, science and fundamentals of Civil Engineering.
- b. analyse problem and interpret the data.
- c. design a system component, or process to meet desired needs in Civil Engineering within realistic constraints.
- d. identify, formulate, analyse and interpret data to solve Civil Engineering problems.
- e. use modern engineering tools such as CAD and GIS for the Civil Engineering practice.
- f. understand the impact of engineering solutions in a global, economic and societal context.
- g. understand the effect of Civil Engineering solutions on environment and to demonstrate the need for sustainable development.
- h. understanding of professional and ethical responsibility.
- i. work effectively as an individual or in a team and to function on multi-disciplinary context.
- j. communicate effectively with engineering community and society.
- k. demonstrate the management principles in Civil Engineering projects.
- l. recognize the need for and an ability to engage in life-long learning.



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DEPARTMENT OF CIVIL ENGINEERING
COURSE OBJECTIVES

Academic Year : 2020-21

Semester : I

Name of the Program: B.Tech Year: I YEAR Section: A

Course : Surveying and Geomatics Course Code: GR20A2013

Name of the faculty : Dr K Srikanth Dept: Civil Engineering

Designation : Associate Professor

On completion of this Course students shall be able to

S.No.	Objectives
1	Describe the function of surveying in civil engineering construction and work with survey observations, and perform calculations.
2	To introduce basics and concepts of curves which will enable to setup and map the curves on ground with precision.
3	To understand the working of Total Station equipment and solve the surveying problems.
4	To introduce basics and concepts of aerial photography, acquisition and mapping from aerial photographs using different types of stereo plotters.
5	The objective of this course is to familiarize about the principles of remote sensing, data acquisition and analyse of satellite data.

Signature of HOD

Signature of Faculty

Date:

Date:



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DEPARTMENT OF CIVIL ENGINEERING
COURSE OUTCOMES

Academic Year : 2020-21

Semester : I

Name of the Program: B.Tech

Year: I YEAR Section: A

Course : Surveying & Geomatics

Course Code: GR20A2013

Name of the faculty : Dr K Srikanth

Dept: Civil Engineering

Designation : Associate Professor

The expected Outcomes of this Course are

S.No.	Outcomes
1	Apply the knowledge, techniques, skills, and applicable tools of the discipline to Engineering and surveying activities.
2	To be able to calculate, design and layout of horizontal and vertical curves, Understand, interpret, and prepare plan, profile, and cross-section drawings.
3	Understand the advantages of electronic surveying over conventional surveying methods.
4	Acquire knowledge about photogrammetry principles, methods and product generation strategies in both Analytical and digital Photogrammetry system.
5	Acquire knowledge about the principles and physics of Remote sensing and data acquisition and getting familiarized with various data analysis techniques.

Signature of HOD

Signature of Faculty

Date:

Date:



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DEPARTMENT OF CIVIL ENGINEERING
STUDENTS ROLL LIST

Section – A

S.no	Roll No	Student name
1	20241A0101	AADHI SRIKAR RAO
2	20241A0102	ABHIRAM SAI YADAV JANGITI
3	20241A0103	BACCHUGUDAM RITHVIK REDDY
4	20241A0104	BANDLA NAVEEN
5	20241A0105	B.PRANAV SAI
6	20241A0106	BHATTU SUPREETH CHAKRAVARTHY
7	20241A0107	BHUPATHIRAJU HIMANTHAVARMA
8	20241A0108	BOINI HEMANTH
9	20241A0109	CHALLA AJAY KUMAR
10	20241A0110	DONABOINA SRI HARI
11	20241A0111	EPPA ARNAV
12	20241A0112	G L N RAGHURAMAN
13	20241A0113	GANDLA HARSHITH KUMAR
14	20241A0114	GUGGILLA SHASHANK
15	20241A0115	GUNDA SRIKANTH
16	20241A0116	JANGILI SRAVAN KUMAR
17	20241A0117	JANJIRALA SRUTHI
18	20241A0118	JARAPULA JAYANTH
19	20241A0119	K NIKHITHA
20	20241A0120	K SANJEEV KUMAR
21	20241A0121	K.KONDAL
22	20241A0122	KAMMAMPATI UDAYKIRAN
23	20241A0123	KARNE SRITHAN
24	20241A0124	KUNCHALA VARUN KUMAR
25	20241A0125	KUNTA NITHIN REDDY
26	20241A0126	M PAVAN KALYAN
27	20241A0127	MERE MAHESH
28	20241A0128	MOHAMMED AHMED
29	20241A0129	MOTHUKURI LAXMAN
30	20241A0130	MOTTADI ADITYA TEJA
31	20241A0131	MULA SUSHMA SRI
32	20241A0132	NAYINI SWETHA
33	20241A0133	PAIDIPALLY BHARATH
34	20241A0134	P.SAI KIRAN REDDY

35	20241A0135	PASNOOR PAVAN PRATHAP REDDY
36	20241A0136	PATHLAVATH SHIVA NAYAK
37	20241A0137	PEDDIBOINA ANUSHA
38	20241A0138	POREDDY ABHINAV REDDY
39	20241A0139	PULLAGURA SANTHOSH
40	20241A0140	RACHALA BHARATH
41	20241A0141	RADHARAPU SHAJI KUMAR
42	20241A0142	RAMAVATH ROJA
43	20241A0143	RATHLAVATH SAIRAM NAYAK
44	20241A0144	RAVI TEJA PASUNUTHI
45	20241A0146	SADDI SHRIANK REDDY
46	20241A0147	SATHVIKA NARLA
47	20241A0148	SOKKULA KOUSHIKREDDY
48	20241A0149	SRIRAM PANDAVULA
49	20241A0150	T.BHARGAVI
50	20241A0151	T.BHUVANESHWARI
51	20241A0152	S.TEJA RETIESH REDDY
52	20241A0153	TEJAVATH KALYANI
53	20241A0154	TELLAPURAM PRUDHVI RAJ
54	20241A0155	THADEM ROHITH
55	20241A0156	THUMMALA RAJASHEKAR
56	20241A0157	UVSGR KAMESWARA SAI KARTHIK
57	20241A0158	SREERAM VATTEM
58	20241A0159	V VIKESH
59	20241A0160	VENNAM SRIKAR
60	21245A0101	GUMADAVELLI ARUN KUMAR
61	21245A0102	KADIRABAD SRIRAM
62	21245A0103	MANIKONDA NIKITHA
63	21245A0104	PARIDULA PRATHYUSHA
64	21245A0105	PATERU MOUNA



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DEPARTMENT OF CIVIL ENGINEERING
GUIDELINES TO STUDY THE COURSE/SUBJECT

Academic Year : 2020-21

Semester : I

Name of the Program: B.Tech Year: I YEAR Section: A

Course : Surveying and Geomatics Course Code: GR20A2013

Name of the faculty : Dr K Srikanth Dept.: Civil Engineering

Designation : Associate Professor

Guidelines to study the course Surveying Theory

Surveying professionals must have strong mathematical skills in order to understand the complexities of calculating averages, measuring angles and computing land mass areas. Surveying requires specialized equipment, such as high-precision and electromechanical instruments and global positioning technologies, to acquire spatial data, perform data reduction, analyze measurements and make data adjustments.

Students should have the following prerequisites

1. Fundamentals of Engineering mathematics
2. Knowledge of basic science

To become expertise in this subject, students need to be perfect with the application of different instruments. Chain and tape are the most basic instrument that are utilized with any other instrument, so students have to thorough in doing the chain surveying with accuracy as possible. Concept of levelling can be applied in various other branches of surveying like preparing the contour maps, trigonometrical levelling. Usage of theodolite can be useful for theodolite survey, tachometric survey as well as for the setting out of curves also. So basic knowledge on theodolite and its applications is must

Where will this subject help?

1. Surveying helps in determining the relative positions of points on, above or below the ground surface. Relative position involves finding distances and angles
2. The main objective is to prepare the plans or maps and to carry out their areas and volumes
3. It helps in studying in studying the contour maps which is one of the preliminary survey in road construction.

4. It helps in giving the level where the formation level has to be from the ground surface for a railway track so that the proper drainage system can be provided during rainy season.
5. It also helps in determining the volume of the earthwork which means how much amount of the soil has to be cut in the area of high levels and how much amount of the soil has to be filled at the places of low levels.

Books/Material

S.No.	Text Books
1	Surveying (Vol-1,2&3) by B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain Laxmi publications(P)ltd. New Delhi
2	Duggal S K Surveying (Vol-1&2) Tata McGraw-Hill Pvt.Ltd New Delhi 2004
3	Surveying and leveling by R Subramanian, Oxford University Press, New Delhi

S.No.	Suggested / Reference Books
1	Arthur R Benton and Philip j taety, element of plane surveying Tata McGraw-Hill Pvt. Ltd. New Delhi 2000
2	Arora K R Surveying (Vol- 1,2&3) standard book house, new Delhi 2004
3	Chandra AM “plane surveying” New Age International Publications pvt limited New Delhi 2002
4	Chandra AM “Higher Surveying” New Age International Publications Pvt limited New Delhi 2002



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DEPARTMENT OF CIVIL ENGINEERING
COURSE DESIGN AND DELIVERY SYSTEM

1. The course syllabus is written into number of learning objectives and learning outcomes.
2. These learning objectives and outcomes will be achieved through lectures, assessments, assignments, experiments in the laboratory, projects, seminars and presentations, etc.,
3. Every student will be given an assessment plan, criteria for assessment, scheme of evaluation and grading method.
4. The learning process will be carried out through assessment of knowledge, skills and attitude by various methods and the student will be given guidance to refer to the textbooks, reference books, journals etc.,

The faculty be able to -

- Understand the principles of learning
- Understand the psychology of students
- Develop instructional objectives for a given topic
- Prepare course, lesson and unit plan
- Understand different methods of teaching and learning
- Use appropriate teaching and learning aids
- Plan and deliver lectures effectively
- Provide feedback system to students using various methods of assessments and tools of Evaluation
- Act as a guide, advisor, counselor, facilitator, motivator and not just as a teacher alone.

Signature of HOD

Signature of Faculty

Date:

Date:



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DEPARTMENT OF CIVIL ENGINEERING
COURSE SCHEDULE

Academic Year : 2020-21

Semester : I

Name of the Program: B.Tech

Year: I YEAR Sec A

Course : Surveying and Geomatics Course Code: GR18A2007

Name of the faculty : Dr K Srikanth Dept.: Civil Engineering

Designation : Associate Professor

Schedule for the whole course is:

Unit	Description	Duration (Date)		Total No. of Periods	Blooms taxonomy level
		From	To		
1	Introduction to Surveying			12	K3
2	Leveling			10	K3
3	Theodolite Surveying:			15	K3
4	Curves:			10	K3
5	Photogrammetry Surveying			8	K3

Signature of Faculty

Date:



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DEPARTMENT OF CIVIL ENGINEERING
COURSE PLAN

Section: A

Surveying and Geomatics GR20A2013
Session Plan (2021-2022)

S.no	Unit No	Date	Topic
1	I	07-10-2021	Introduction, Objectives, classification and principles of surveying
2	I	12-10-2021	Scales, Shrinkage of Map
3	I	14-10-2021	Conventional symbols and Code of Signals
4	I	19-10-2021	Surveying accessories, phases of surveying
5	I	21-10-2021	Approximate methods, Direct Methods- Chains- Tapes, ranging, Tape corrections.
6	I	26-10-2021	Bearings, included angles, Local Attraction
7	I	28-10-2021	Magnetic Declination and dip
8	II	28-10-2021	Basic definitions; Types of levels and levelling staves
9	II	01-11-2021	classification of methods of leveling
10	II	03-11-2021	Sources of errors in leveling
11	II	08-11-2021	Curvature and Refraction
12	II	10-11-2021	Areas and Volumes
13	II	15-11-2021	planimeter; level section
14	II	17-11-2021	capacity of a reservoir
15	II	22-11-2021	volume from contour plan
16	III	24-11-2021	Types of Theodolites, Fundamental Lines
17	III	24-11-2021	temporary adjustments and Permanent adjustment
18	III	29-11-2021	measurement of horizonta
19	III	01-12-2021	epetition method and reiteration method
20	III	06-12-2021	epetition method and reiteration method
21	III	08-12-2021	Trigonometric leveling when base is accessible and inaccessible
22	III	13-12-2021	Methods of traversing
23	III	15-12-2021	Problems
24	IV	20-12-2021	Types of curves
25	IV	22-12-2021	Problems on curves
26	IV	27-12-2021	Principles of Tacheometry
27	IV	29-12-2021	stadia and tangential methods of Tachometry
28	IV	03-01-2022	Principle and types of E.D.M

29	IV	05-01-2022	Total station- advantages and Applications
30	IV	17-01-2022	Global Positioning System
31	V	18-01-2022	Introduction, Basic concepts, perspective geometry of aerial photograph
32	V	22-01-2022	relief and tilt displacements
33	V	24-01-2022	flight planning; Stereoscopy, ground control extension for photographic mapping
34	V	25-01-2022	aerial triangulation, radial triangulation, methods
35	V	29-01-2022	photographic mapping- mapping using paper prints
36	V	31-01-2022	mapping using stereo plotting instruments
37	V	01-02-2022	mosaics, map substitutes. Digital Photogrammetry



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DEPARTMENT OF CIVIL ENGINEERING
SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2021-2022

Semester : I UNIT NO.: I

Name of the Program: B.TechCivil Engineering Year: I Section: A

Course/Subject: Surveying and GeomaticsCourse Code: GR20A2013

Name of the Faculty: Dr K Srikanth Dept.: Civil Engineering

Designation: ASSOCIATE PROFESSOR

Unit No.	Topics/Sub Topics	Date	No. of Periods	Objectives & Outcomes No.	References (Text book, Journal...)	Blooms taxonomy level
UNIT I	Survey introduction		1	COB-1 &COT- 1,5	Surveying Vol 1 B.C.Punmia	K2
	Survey introduction		1	COB-1 &COT- 1,5	Surveying Vol 1 B.C.Punmia	K2
	Classification, Principles		1	COB-1,3 &COT- 1,5	Surveying Vol 1 B.C.Punmia	K2
	survey stations and chain survey		1	COB-1,3 &COT- 1,5	Surveying Vol 1 B.C.Punmia	K2
	survey lines		1	COB-1,3 &COT- 1,4	Surveying Vol 1 B.C.Punmia	K2
	ranging methods		1	COB-1,3 &COT- 1,4	Surveying Vol 1 B.C.Punmia	K1
	chainsurvey and corrections		1	COB-1,3 &COT- 1,4	Surveying Vol 1 B.C.Punmia	K3
	compass survey		1	COB-1,3	Surveying	K3

				&COt- 1,4	Vol 1 B.C.Punmia	
	calculation of interior angles		1	COb-1,3 & COt-1,4	Surveying Vol 1 B.C.Punmia	K3
	levelling		1	COb-1,3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	levelling		1	COb-1,3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	Areas and volumes		1	COb-1,3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3

Signature of HOD

Signature of faculty

Date:

Date:



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DEPARTMENT OF CIVIL ENGINEERING
SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2021-2022

Semester : I UNIT NO.: I

Name of the Program: B.TechCivil Engineering Year: I Section: A

Course/Subject: SurveyingCourse Code: GR20A2013

Name of the Faculty: Dr K SrikanthDept.: Civil Engineering

Designation: ASSOCIATE PROFESSOR

Unit No.	Topics/Sub Topics	Date	No. of Periods	Objectives & Outcomes No.	References (Text book, Journal...)	Blooms taxonomy level
UNIT I	Basic definitions; Types of levels and levelling staves		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K2
	classification of methods of leveling		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K2
	Sources of errors in leveling		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K2
	Curvature and Refraction		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3
	Areas and Volumes		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3
	planimeter; level section		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3
	capacity of a reservoir		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3
	volume from contour plan		1	COB-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3

	Problems on areas		1	COb-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3
	volume from contour plan		1	COb-2 &COt- 4	Surveying Vol 1 B.C.Punmia	K3
	volume from contour plan		1	COb-2 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3

Signature of HOD

Signature of faculty

Date:

Date:



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DEPARTMENT OF CIVIL ENGINEERING
SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2021-2022

Semester : I UNIT NO.: II

Name of the Program: B.TechCivil Engineering Year: I Section: A

Course/Subject: Surveying Course Code: GR20A2013

Name of the Faculty: Dr K Srikanth Dept.: Civil Engineering

Designation: ASSOCIATE PROFESSOR

Unit No.	Topics/Sub Topics	Date	No. of Periods	Objectives & Outcomes No.	References (Text book, Journal...)	Blooms taxonomy level
Unit II	Types of Theodolites, Fundamental Lines		1	COb-3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	temporary adjustments and Permanent adjustment		1	COb-3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	measurement of horizonta		1	COb-3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	epetition method and reiteration method		1	COb-3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	epetition method and reiteration method		1	COb-3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	Trigonometric leveling when base is accessible and inaccessible		1	COb-3 &COt- 1,4	Surveying Vol 1 B.C.Punmia	K3
	Methods of		1	COb-2 &	Surveying Vol 1	K2

	traversing			COt-1, 6	B.C.Punmia	
	GPS Segments		1	COb-2 &COt- 1,6	Surveying Vol 1 B.C.Punmia	K3
	Errors and Biasesa		1	COb-2 &COt- 1,6	Surveying Vol 1 B.C.Punmia	K3
	Surveying with GPS		1	COb-2 &COt- 1,6	Surveying Vol 1 B.C.Punmia	K3

Signature of HOD

Signature of faculty

Date:

Date:



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DEPARTMENT OF CIVIL ENGINEERING
SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2021-2022

Semester : I

UNIT NO.: IV

Name of the Program: B.TechCivil Engineering Year: I

Section: A

Course/Subject: SurveyingCourse Code: GR20A2013

Name of the Faculty: Dr K Srikanth

Dept.: Civil Engineering

Designation: ASSOCIATE PROFESSOR

Unit No.	Topics/Sub Topics	Date	No. of Periods	Objectives & Outcomes No.	References (Text book, Journal...)	Blooms taxonomy level
UNIT IV	Types of curves		1	COB-2 &COT- 1,3	Surveying Vol 1&2 B.C.Punmia	K2
	Problems on curves		1	COB-2 &COT- 2,3	Surveying Vol 1&2 B.C.Punmia	K3
	Principles of Tacheometry		1	COB-2 &COT- 2,3	Surveying Vol 1&2 B.C.Punmia	K3
	stadia and tangential methods of Tachometry		1	COB-2 &COT- 2,3	Surveying Vol 1&2 B.C.Punmia	K3
	Principle and types of E.D.M		1	COB-2 &COT- 2,3	Surveying Vol 1&2 B.C.Punmia	K3
	Total station- advantages and Applications		1	COB-2 &COT- 2,3	Surveying Vol 1&2 B.C.Punmia	K3

	Global Positioning System		1	COB-2 &COt- 2,3	Surveying Vol 1&2 B.C.Punmia	K3
	Global Positioning System		1	COB-2 &COt- 2,3	Surveying Vol 1&2 B.C.Punmia	K1
	Global Positioning System		1	COB-1 &COt- 4	Surveying Vol 1&2 B.C.Punmia	K3

Signature of HOD

Signature of faculty

Date:

Date:



GokarajuRangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
SCHEDULE OF INSTRUCTIONS
UNIT PLAN

Academic Year : 2021-2022

Semester : I UNIT NO.: V

Name of the Program: B.TechCivil Engineering Year: I Section: A

Course/Subject: SurveyingCourse Code: GR20A2013

Name of the Faculty: Dr K SrikanthDept.: Civil Engineering

Designation: ASSOCIATE PROFESSOR

Unit No.	Topics/Sub Topics	Date	No. of Periods	Objectives & Outcomes No.	References (Text book, Journal...)	Blooms taxonomy level
UNIT V	Introduction, Basic concepts, perspective geometry of aerial photograph		1	COB-4,5 &COt-3,5,7	Surveying Vol 1 B.C.Punmia	K2
	relief and tilt displacements		1	COB-4,5 &COt-3,5,7	Surveying Vol 1 B.C.Punmia	K3
	flight planning; Stereoscopy, ground control extension for photographic mapping		1	COB-4,5 &COt-3,5,7	Surveying Vol 1 B.C.Punmia	K3
	aerial triangulation, radial triangulation, methods		1	COB-4,5 &COt-3,5,7	Surveying Vol 1 B.C.Punmia	K3
	photographic mapping- mapping using paper prints		1	COB-4,5 &COt-3,5,7	Surveying Vol 1 B.C.Punmia	K2
	mapping using		1	COB-4,5	Surveying	K1

	stereo plotting instruments			&COt-3,5,7	Vol 1,3 B.C.Punmia	
	mosaics, map substitutes. Digital Photogrammetry		1	COB-4,5 &COt-3,5,7	Surveying Vol 1,3 B.C.Punmia	K3
	Introduction, Basic concepts, perspective geometry of aerial photograph		1	COB-4,5 &COt-3,5,7	Surveying Vol 1,3 B.C.Punmia	K3
	relief and tilt displacements		1	COB-4,5 &COt-3,5,7	Surveying Vol 1,3 B.C.Punmia	K3

Signature of HOD

Signature of faculty

Date:

Date:



GokarajuRangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
EVALUATION STRATEGY

Academic Year : 2020-21

Semester : I

Name of the Program: B. Tech Year: I YEAR Section: A

Course : Surveying Theory Course Code: GR20A2013

Name of the faculty : Dr K Srikanth Dept: Civil Engineering

Designation : Associate Professor

1. Target:

- A. Percentage for pass :90%
- B. Percentage of the class : 70%

Total Strength of the class: 130

S.No.	Class / Division	No. of students
1	First class with distinction	64
2	First class	55
3	Pass class	09

2. COURSE PLAN & CONTENT DELIVERY

S.No.	Plan	Brief Description
1	Practice classes	50 classes for A section, 48 classes for B section
2	Design of Lecture classes	Bringing instruments to classes and giving demonstration. Chain, compass and autolevel and Detailed lecture on Theodolite surveying, Tachometry survey and Total Station. Explanation of temporary adjustments like levelling, centering etc using examples. Explanation of measuring angles in theodolite, finding out all basic items like creating job, finding out areas, height etc
3	Design of Practice classes	Exercises in each module are practiced based on real time projects meeting industrial standards

4		Presentations on topics like 1) Levelling, Centering 2) Finding height using Theodolite 3) Setting of curves. 4) Presentations and video tutorial on working of Total Station
5	Assignments	Assignments are designed mostly on problematic and understanding basis
6	Demonstration	Designing, assembling and analyzing real time projects

3. METHOD OF EVALUATION

3.1. Continuous Assessment examinations (CAE-I, CAE-II)

1. **Assignments:** Assignments are mainly regarding problems on corrections while doing chain surveying, leveling, tachometry and final marks will be 40% based on procedure and 60% on output
2. **Practical projects:** Assessing the skills of the students in applying their knowledge to practical application
3. **Viva:** Assessing the overall knowledge of the student in Surveying
4. **Internal Examination:** Internal Examination to assess their overall knowledge on Theodolite and Total Station.

3.2. Semester / End Examination: To test their abilities in using Theodolite and Total Station and to approve their abilities learnt during lab sessions.

Signature of HOD

Signature of Faculty

Date:

Date:



GokarajuRangaraju Institute of Engineering and Technology
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Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
Assessments in Relation to CO's and COB's

Assessments: 1. ASSIGNMENT

2. INTERNAL EXAMINATION

3. EXTERNAL EXAMINATION

4. PRACTICAL PROJECTS

5. VIVA

Course outcomes \ Assessments	1	2	3	4	5	6	7
1	X			X			X
2			X	X			
3		X			X		
4					X		
5	X		X			X	

Mappings of COBs, COs vs POs, POBs

Course Objectives – Course Outcomes Relationship Matrix

Course -outcomes \ Course Objectives	1	2	3	4	5	6	7
1	X		X			X	X
2		X			X		
3	X		X				
4				X			X
5		X			X	X	

Course Outcomes – Program Outcomes Relation (Contributions: High, Medium and Low)

		Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	g	h	i	j	k	l
GR20 A2013	Surveying and Geomatics	Apply the knowledge, techniques, skills, and applicable tools of the discipline to Engineering and surveying activities.		M			H			H	M		H	H
		To be able to calculate, design and layout of horizontal and vertical curves, Understand,	M	H				M	M					
		Understand the advantages of electronic surveying over conventional surveying methods			M	H				M	H	M		
		Acquire knowledge about photogrammetry principles, methods and product generation strategies in both Analytical and digital Photogrammetry system	M		H	M		M				M	M	H
		Acquire knowledge about the principles and physics of Remote sensing and data acquisition and getting familiarized with various data analysis techniques.			M	M		M				M		

Course Objectives – Program Outcomes (POs) Relationship Matrix

Program -Outcomes	a	b	c	d	e	f	g	h	i	j	k	l
Course Objectives												
1	X		X				X			X		
2					X						X	
3			X				X					
4		X				X			X			
5					X						X	

Course Outcomes – Program Outcomes (POs) Relationship Matrix

Program -Outcomes Course-Outcomes	a	b	c	d	e	f	g	h	i	j	k	L
1		X								X		
2				X				X				X
3	X										X	
4					X		X					
5									X			X

Courses (with title & code) – Program Outcomes (POs) Relationship Matrix

Course: Surveying

Program -Outcomes Courses	a	b	c	d	e	f	g	h	i	j	k	L
1	X		X		X	X			X			X

Program Educational Objectives (PEOs) – Program Outcomes Relationship Matrix

PEOs Course Outcomes	1	2	3
1	X		X
2		X	
3		X	X
4	X		
5		X	



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DEPARTMENT OF CIVIL ENGINEERING
ASSIGNMENT SHEETS

Academic Year : 2020-2021

Semester : I

Name of the Program: B.Tech Civil Engineering Year: II Section: A

Course/Subject: Surveying and Geomatics Course Code: GR20A2013

Name of the Faculty: Dr K Srikanth Dept.: Civil Engineering

Designation: ASSOCIATE.PROFESSOR.

This assignment corresponds to Unit No. I

Q1. Distinguish the plane surveying and geodetic surveying

Q2. A steel tape 20m long and having an area of 0.02cm^2 was used to measure a line, the apparent length which was found to be 1986.96m. The tape was standardized for a temperature of 20°C and for a pull of 12kg but after the line was measured the pull measured during the measurement was 18kg at a temperature of 35°C . What is the correct length of the line, if the tape material has a coefficient of expansion of 3×10^{-6} per $^\circ\text{C}$ and modulus of elasticity of $2.2 \times 10^6 \text{ Kg/cm}^2$

Q3. The length of a survey line was measured with a 30 m tape and was found to be 1000 m. As a check, the length was again measured with another 20 m tape and was found to be 1010 m. On comparing the 30 m tape with a test gauge, it was found to be 0.10 m too long. Find the actual length of the 20 m tape.

Q4. The following bearings were taken in traversing with a compass. Locate the local attraction and determine corrected bearings.

Line	F.B	B.B
AB	$45^0 45'$	$226^0 10'$
BC	$96^0 55'$	$277^0 5'$
CD	$29^0 45'$	$209^0 10'$
DE	$324^0 48'$	$144^0 48'$

Signature of HOD

Signature of faculty

Date:

Date:



GokarajuRangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
ASSIGNMENT SHEETS

Academic Year : 2020-2021

Semester : I

Name of the Program: B.TechCivil Engineering Year: II Section: A

Course/Subject: Surveying Course Code: GR20A2013

Name of the Faculty: Dr K SrikanthDept.: Civil Engineering

Designation: ASSOCIATE.PROFESSOR.

This assignment corresponds to Unit No. I

Q1.The following consecutive readings were taken with a dumpy level .1.895, 1.500, 1.865, 2.570, 2.990, 2.020, 2.410, 2.520, and 2.960. The level was shifted after 4th, 6th, readings. The R.L of the first point was 30.500. Rule out a page of level book and fill all columns. Use rise and fall method. Indicate the highest and lowest points.

Q2. Define contour and discuss the characteristics of contour lines with suitable sketches

Signature of HOD

Signature of faculty

Date:

Date:



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Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
ASSIGNMENT SHEETS

Academic Year : 2021-2022

Semester : I

Name of the Program: B.TechCivil Engineering Year: II Section: A

Course/Subject: Surveying Course Code: GR20A2013

Name of the Faculty: Dr K Srikanth Dept.: Civil Engineering

Designation: ASSOCIATE.PROFESSOR.

This assignment corresponds to Unit No. II

Q1.Explain the principles of EDM

Q2. The latitudes and departures of lines of a closed traverse ABCDE are given below. Calculate the area of the traverse using 1. Meridian Distance method and 2. Double Meridian Distance Method

Line	Northing (m)	Southing (m)	Easting (m)	Westing (m)
AB	-	152.3	159.6	-
BC	219.3	-	220.3	-
CD	172.1	-	-	158.6
DE	-	164.2	163.8	-
EA	-	168.4	-	156.4

Q3.Explain Surveying with GPS

Signature of HOD

Signature of faculty

Date:

Date:



GokarajuRangaraju Institute of Engineering and Technology
(Autonomous)
Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
ASSIGNMENT SHEETS

Academic Year : 2021-2022

Semester : I

Name of the Program: B.TechCivil Engineering Year: I Section: A

Course/Subject: Surveying and GeomaticsCourse Code: GR20A2013

Name of the Faculty: Dr K SrikanthDept.: Civil Engineering

Designation: ASSOCIATE.PROFESSOR.

This assignment corresponds to Unit No. IV

Q1.Basic Concepts of aerial geometry

Q2. Discuss Relief and Displacement

Q3. Explain mosaics, map substitutes.

.

Signature of HOD

Date:

Signature of faculty

Date:



GokarajuRangaraju Institute of Engineering and Technology
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DEPARTMENT OF CIVIL ENGINEERING
ASSIGNMENT SHEETS

Academic Year : 2021-2022

Semester : I

Name of the Program: B.TechCivil Engineering Section: A

Course/Subject: Surveying Course Code: GR20A2013

Name of the Faculty: Dr K SrikanthDept.: Civil Engineering

Designation: ASSOCIATE.PROFESSOR.

This assignment corresponds to Unit No. V

Q1. Explain the principle and working of total station

Q2. Expand G.P.S and G.I.S, Mention the applications of G.P.S & G.I.S

Signature of HOD

Date:

Signature of faculty

Date:



GokarajuRangaraju Institute of Engineering and Technology
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Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
Rubrics

Academic Year : 2021-2022

Semester : I

Name of the Program : B. Tech Civil

Year: II

Section: A&B

Course/Subject: Surveying

Course Code: GR20A2013

Name of the Faculty: Mr. Dr K Srikanth Dept.: Civil Engineering

Name of the Student	Performance Criteria	Beginning	Developing	Reflecting Development	Accomplished	Exemplary	Score
		1	2	3	4	5	
	Level of knowledge on basics of surveying.	Low level of knowledge on different basic concepts such as determining relative positions	Able to understand the different method of surveying	Finding the precision of the particular method in comparison to the others	Checking out the corrections to be applied	Coming up with a correct output with utmost accuracy	5
	Level of knowledge on the application of the learnt method	Identify the purpose of the instrument	Selecting the method appropriately	Able to apply the principle of the appropriate method	Able to follow the complete step by step procedure	Obtaining the correct solution without errors	4
	Level of knowledge on Interpreting the solutions in the data book	Able to recognize the data given the problem	Taking care of units for each and every entity given in the data	Doing proper calculations to get the end result	Accuracy of the results. Corrected values up to three decimals	Final interpretation of the values in a tabular column	3
Average Score							4

DESIGNATION: ASSOCIATE PROFESSOR

Name of the Student	Performance Criteria	Beginning	Developing	Reflecting Development	Accomplished	Exemplary	Score
		1	2	3	4	5	
	Level of knowledge on basics of surveying.	Low level of knowledge on different basic concepts such as determining relative positions	Able to understand the different method of surveying	Finding the precision of the particular method in comparison to the others	Checking out the corrections to be applied	Coming up with a correct output with utmost accuracy	5
	Level of knowledge on the application of the learnt method	Identify the purpose of the instrument	Selecting the method appropriately	Able to apply the principle of the appropriate method	Able to follow the complete step by step procedure	Obtaining the correct solution without errors	4
	Level of knowledge on Interpreting the solutions in the data book	Able to recognize the data given the problem	Taking care of units for each and every entity given in the data	Doing proper calculations to get the end result	Accuracy of the results. Corrected values up to three decimals	Final interpretation of the values in a tabular column	3
Average Score							4

Name of the Student	Performance Criteria	Beginning	Developing	Reflecting Development	Accomplished	Exemplary	Score
		1	2	3	4	5	
	Level of knowledge on basics of surveying.	Low level of knowledge on different basic concepts such as determining relative positions	Able to understand the different method of surveying	Finding the precision of the particular method in comparison to the others	Checking out the corrections to be applied	Coming up with a correct output with utmost accuracy	4
	Level of knowledge on the application of the learnt method	Identify the purpose of the instrument	Selecting the method appropriately	Able to apply the principle of the appropriate method	Able to follow the complete step by step procedure	Obtaining the correct solution without errors	3
	Level of knowledge on Interpreting the solutions in the data book	Able to recognize the data given the problem	Taking care of units for each and every entity given in the data	Doing proper calculations to get the end result	Accuracy of the results. Corrected values up to three decimals	Final interpretation of the values in a tabular column	2
Average Score							3

Name of the Student	Performance Criteria	Beginning	Developing	Reflecting Development	Accomplished	Exemplary	Score
		1	2	3	4	5	
	Level of knowledge on basics of surveying.	Low level of knowledge on different basic concepts such as determining relative positions	Able to understand the different method of surveying	Finding the precision of the particular method in comparison to the others	Checking out the corrections to be applied	Coming up with a correct output with utmost accuracy	3
	Level of knowledge on the application of the learnt method	Identify the purpose of the instrument	Selecting the method appropriately	Able to apply the principle of the appropriate method	Able to follow the complete step by step procedure	Obtaining the correct solution without errors	2
	Level of knowledge on Interpreting the solutions in the data book	Able to recognize the data given the problem	Taking care of units for each and every entity given in the data	Doing proper calculations to get the end result	Accuracy of the results. Corrected values up to three decimals	Final interpretation of the values in a tabular column	1
Average Score							2



GokarajuRangaraju Institute of Engineering and Technology
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Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
MODEL PAPER-1

I B Tech I Semester Regular Examinations, September 2019
Surveying and Geomatics
(Civil Engineering)

Time: 3 hours

Max Marks: 70

PART-A

Answer ALL questions, All questions carry equal marks

10*2 Marks=20 Marks

1). a	Discuss briefly about the primary classification of Surveying.	[2]
b	Distinguish prismatic compass and surveyors compass	[2]
c	Describe all the instruments that are used in plane table surveying	[2]
d	What is Magnetic Declination and its significance on bearings	[2]
e	Write short notes on Curvature and Refraction	[2]
f	What are latitudes and departures and what are their sign conventions	[2]
g	With the help of a suitable sketch describe a simple circular curve	[2]
h	In the equation $D=KS+C$, what are the representations of D,K,S and C.	[2]
i	What are the temporary adjustments of a Theodolite	[2]
j	What is the difference between a theodolite and tachometer	[2]

PART-B

Answer any FIVE questions, All questions carry equal marks

5*10 Marks=50 Marks

<p>1). a</p>	<p>A closed compass traverse ABCDEA was run and the observed bearings of the line were obtained as under. Identify the stations which are affected by local attraction and determine the correct bearings of lines.</p> <table border="1" data-bbox="566 457 1078 877"> <thead> <tr> <th>Line</th> <th>FB</th> <th>BB</th> </tr> </thead> <tbody> <tr> <td>AB</td> <td>72⁰45'</td> <td>252⁰0'</td> </tr> <tr> <td>BC</td> <td>349⁰0'</td> <td>167⁰15'</td> </tr> <tr> <td>CD</td> <td>298⁰30'</td> <td>118⁰30'</td> </tr> <tr> <td>DE</td> <td>229⁰0'</td> <td>48⁰0'</td> </tr> <tr> <td>EA</td> <td>135⁰30'</td> <td>319⁰0'</td> </tr> </tbody> </table>	Line	FB	BB	AB	72 ⁰ 45'	252 ⁰ 0'	BC	349 ⁰ 0'	167 ⁰ 15'	CD	298 ⁰ 30'	118 ⁰ 30'	DE	229 ⁰ 0'	48 ⁰ 0'	EA	135 ⁰ 30'	319 ⁰ 0'	<p>[5]</p>
Line	FB	BB																		
AB	72 ⁰ 45'	252 ⁰ 0'																		
BC	349 ⁰ 0'	167 ⁰ 15'																		
CD	298 ⁰ 30'	118 ⁰ 30'																		
DE	229 ⁰ 0'	48 ⁰ 0'																		
EA	135 ⁰ 30'	319 ⁰ 0'																		
<p>b</p>	<p>What is Resection and explain the Two-point problem with the help of illustrative diagram?</p>	<p>[5]</p>																		
<p>2). a</p>	<p>Define Contour and illustrate the characteristics of contour lines.</p>	<p>[5]</p>																		
<p>b</p>	<p>The following consecutive readings were taken with a dumpy level 1.895, 1.500, 1.865, 2.570, 2.990, 2.020, 2.410, 2.520, and 2.960. The level was shifted after 4th, 6th, readings. The R.L of the first point was 30.500. Rule out a page of level book and fill all columns. Use rise and fall method and Height of instrument method. Indicate the highest and lowest points.</p>	<p>[5]</p>																		
<p>3).</p>	<p>A railway embankment is 10m wide with side slopes 1.5 to 1. Assuming the ground to be level in a direction transverse to the centre line, calculate the volume contained in a length of 120m, the centre heights at 20m intervals being in meters 2.2, 3.7, 3.8, 4.0, 3.8, 2.8 and 2.5.</p>	<p>[10]</p>																		
<p>4).</p>	<p>In order to determine the elevation of top of a pole on a hill, observations were made from two stations P and R. If the angles of elevation of top of the pole measured at P and R were 25⁰35' and 15⁰5' respectively, determine the elevation of the foot of the pole if the height of the pole was 4m. The staff readings upon the bench mark (R.L 105.42) were 2.755m and 3.855m respectively when the instrument was at P and R. The distance between P and R was 120m.</p>	<p>[10]</p>																		
<p>5). a</p>	<p>Explain the Principle and working of a Total Station.</p>	<p>[5]</p>																		
<p>b</p>	<p>Mention any 4 applications of G.P.S and 4 applications of G.I.S.</p>	<p>[5]</p>																		
<p>6). a</p>	<p>The length of a survey line was measured with a 30 m chain and was found to be 900 m. As a check, the length was again measured with another 20m chain and was found to be 940 m. On comparing the 30 m chain with a test gauge,</p>	<p>[5]</p>																		

	it was found to be 0.20 m too long. Find the actual length of the 20 m chain.																			
b	What are the Temporary adjustments of a prismatic compass discuss in detail	[5]																		
7). a	Explain the Principle of Electronic Digital Theodolite	[5]																		
b	<p>The following observations were made using a tachometer fitted with an analectic lens the multiplying constant being 100.</p> <table border="1"> <thead> <tr> <th>Inst. Station</th> <th>H.I</th> <th>Staff Station</th> <th>Bearing</th> <th>Vertical Angle</th> <th>Inst. Readings.</th> </tr> </thead> <tbody> <tr> <td>O</td> <td>1.550</td> <td>A</td> <td>30°30'</td> <td>4° 30'</td> <td>1.155, 1.755, 2.355</td> </tr> <tr> <td></td> <td></td> <td>B</td> <td>75° 30'</td> <td>10°15'</td> <td>1.250, 2.0, 2.750</td> </tr> </tbody> </table> <p>R.L of O is 150m. Calculate the distance AB and the R.L of A and B.</p>	Inst. Station	H.I	Staff Station	Bearing	Vertical Angle	Inst. Readings.	O	1.550	A	30°30'	4° 30'	1.155, 1.755, 2.355			B	75° 30'	10°15'	1.250, 2.0, 2.750	[5]
Inst. Station	H.I	Staff Station	Bearing	Vertical Angle	Inst. Readings.															
O	1.550	A	30°30'	4° 30'	1.155, 1.755, 2.355															
		B	75° 30'	10°15'	1.250, 2.0, 2.750															

MODEL PAPER-2

I B. Tech I Semester Regular Examinations, Nov/Dec 2017

Surveying

(Civil Engineering)

Time: 3 hours

Max Marks: 70

PART – A

Answer ALL questions

All questions carry equal marks

10 * 2 Marks = 20 Marks

Q.No	Questions	Marks																
1). a	Mention the purpose and uses of Surveying	2																
b	Define: i) Base Line I) Check Line	2																
c	Define : i) Bench Mark I) R.L	2																
d	Mention the characteristics of Contour.	2																
e	Mention the temporary adjustments of Theodolite.	2																
f	Mention the principle of Trigonometric Levelling.	2																
g	Mention the use of Tacheometry.	2																
h	What is the role of Analytic Lens in Stadia Method?	2																
i	Define the functions of Total Station.	2																
j	Define GIS	2																
2	a) A 20 –m tape was tested before starting the day’s work and found to be 0.02 m short. At the end of the day it was tested again and found to be 0.06 m too long. If the total length measured during the day was 1243.5. find the true length.	5																
2	b) The bearing of line AB of a closed traverse ABCDEA is $26^{\circ} 35'$. The interior angles of the traverse are $\angle A = 68^{\circ} 45'$, $\angle B = 138^{\circ} 30'$, $\angle C = 131^{\circ} 30'$, $\angle D = 90^{\circ}$ and $\angle E = 111^{\circ} 15'$. Find the whole circle bearings of the lines of the traverse.	5																
3	Eight readings were taken with a level in sequence as follows: 1.585, 1.315, 2.305 , 1.225, 1.325, 1.065 , 1.815 and 2.325. The level was shifted after the third and sixth readings. The second change point was a bench mark of elevation 186.975. Find the reduced levels of the remaining stations. Use the rise and fall method.	10																
4	Calculate the volume of embankment of which the cross sectional areas at 20 m interval are as follows	10																
	<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="text-align: center;">Distance(m)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">20</td> <td style="text-align: center;">40</td> <td style="text-align: center;">60</td> <td style="text-align: center;">80</td> <td style="text-align: center;">100</td> <td style="text-align: center;">120</td> </tr> <tr> <td style="text-align: center;">Area (m²)</td> <td style="text-align: center;">10</td> <td style="text-align: center;">40</td> <td style="text-align: center;">64</td> <td style="text-align: center;">72</td> <td style="text-align: center;">160</td> <td style="text-align: center;">180</td> <td style="text-align: center;">260</td> </tr> </table>	Distance(m)	0	20	40	60	80	100	120	Area (m²)	10	40	64	72	160	180	260	
Distance(m)	0	20	40	60	80	100	120											
Area (m²)	10	40	64	72	160	180	260											

	Use (i) Trapezoidal Rule (I) Prismoidal Rule	
5	What purpose do Curves serve? What are the elements of a Simple Circular Curve? Explain how a Simple Circular Curve is designated.	10
6	a) Write a brief note on the applications of GPS in Surveying.	5
	b) What On - Board Software's are available in Total Stations? Discuss briefly.	5
7	The following consecutive readings were taken with a level and 4 – m leveling staff on a continuously sloping ground at common interval of 40m.	10
	0.905 (on A), 1.745, 2.345, 3.125, 3.725, 0.545, 1.390, 2.055, 2.955, 3.455,	
	0.595, 1.015, 1.850, 2.655 & 2.945 (B).	
	The RL on A was 545.450. Calculate the RLs of different points and find the gradient of the line AB.	
8	A leveling staff is held vertical at distances of 100 m and 300 m from the axis of a Tacheometer and the staff intercept for horizontal sights are 0.99 m and 3.00 m, respectively. Find the constants of the instrument. The instrument is set up at station A and the staff is held vertical at a point B. With telescope inclined at an angle of depression of 10° to the horizontal, the readings on the staff are 2.670, 1.835, 1.000 m. Calculate the R.L. of B and its horizontal distance from A. The H.I. is 1.42 m and R.L. is 450.5 m.	10



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING & TECHNOLOGY

(Autonomous)

II B.Tech I Semester Mid- I Examinations

06-12-2021

Surveying & Geomatics

(Civil Engineering)

Time: 90 Minutes

Max Marks: 15

SUBJECTIVE														
(Answer ALL questions. All questions carry equal marks)														
Time: 75 Minutes		3 * 5 = 15 Marks												
1	Explain the principles of survey with neat sketches	[5]	1	2										
OR														
2	Describe in detail about classification of survey	[5]	1	2										
3	Data from a differential levelling have been found in the order of B.S., I.S., F.S. etc. starting with the initial reading on B.M. (elevation 151.485 m) are as follows: 1.205, 1.860, 0.125, 1.915, 0.395, 2.615, 0.880, 1.760, 1.960, 0.920, 2.595, 0.915, 2.255, 0.515, 2.305, 1.170. The final reading closes on B.M. Put the data in a complete field note form and carry out reduced levels by Height of instrument method. All units are in meters.	[5]	2	3										
OR														
4	The following consecutive readings were taken with a dumpy level .1.895, 1.500, 1.865, 2.570, 2.990, 2.020, 2.410, 2.520, and 2.960. The level was shifted after 4th, 6th, readings. The R.L of the first point was 30.500. Rule out a page of level book and fill all columns.	[5]	2	3										
5	A distance of 2000m was measured by a 30m chain. Later, it was measured and it was detected that the chain was 0.1 m too long. Another 500m was measured it was detected that the chain was 0.15m too long. If the chain corrects initially, determine the exact length of the chain	[5]	1	3										
OR														
6	Determine the values of included angles in a closed compass ABCB conducted in clockwise direction, given the following bearings of the respective line.	[5]	1	3										
<table border="1"><thead><tr><th>Line</th><th>F.B</th></tr></thead><tbody><tr><td>AB</td><td>40°</td></tr><tr><td>BC</td><td>70°</td></tr><tr><td>CD</td><td>210°</td></tr><tr><td>DA</td><td>280°</td></tr></tbody></table>		Line	F.B	AB	40°	BC	70°	CD	210°	DA	280°			
Line	F.B													
AB	40°													
BC	70°													
CD	210°													
DA	280°													

10. Which among the following methods is easy in
a) Remote sensing b) Plane table photogrammetry



computing photographs? []
c) Terrestrial photogrammetry d) GIS

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
II YEAR B.TECH II MID EXAMINATION 2020-21 AY

Name of the subject: Surveying and Geomatics
Course Code: GR20A2013

Date: 07/02/2022(FN)
Time: 30 minutes

Answer any two questions:

Marks: 2X5= 10M

1. Explain in detail about aerial and terrestrial photogrammetry (5 M)
2. Explain the principles and types of EDMs (5 M)
3. Describe in detail about methods of traversing

GokarajuRangaraju Institute of Engineering and Technology
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Bachupally, Hyderabad-500090

DEPARTMENT OF CIVIL ENGINEERING
I Year I Semester I- Mid Examination
Subject: Surveying and Geomatics

Surveying and Geomatics GR20A2013
Session Plan (2021-2022)

S.no	Unit No	Date	Topic
1	I	07-10-2021	Introduction, Objectives, classification and principles of surveying
2	I	12-10-2021	Scales, Shrinkage of Map
3	I	14-10-2021	Conventional symbols and Code of Signals
4	I	19-10-2021	Surveying accessories, phases of surveying
5	I	21-10-2021	Approximate methods, Direct Methods- Chains- Tapes, ranging, Tape corrections.
6	I	26-10-2021	Bearings, included angles, Local Attraction
7	I	28-10-2021	Magnetic Declination and dip
8	II	28-10-2021	Basic definitions; Types of levels and levelling staves
9	II	01-11-2021	classification of methods of leveling
10	II	03-11-2021	Sources of errors in leveling
11	II	08-11-2021	Curvature and Refraction
12	II	10-11-2021	Areas and Volumes
13	II	15-11-2021	planimeter; level section
14	II	17-11-2021	capacity of a reservoir
15	II	22-11-2021	volume from contour plan
16	III	24-11-2021	Types of Theodolites, Fundamental Lines
17	III	24-11-2021	temporary adjustments and Permanent adjustment
18	III	29-11-2021	measurement of horizonta
19	III	01-12-2021	epetition method and reiteration method
20	III	06-12-2021	epetition method and reiteration method
21	III	08-12-2021	Trigonometric leveling when base is accessible and inaccessible
22	III	13-12-2021	Methods of traversing
23	III	15-12-2021	Problems
24	IV	20-12-2021	Types of curves
25	IV	22-12-2021	Problems on curves
26	IV	27-12-2021	Principles of Tacheometry
27	IV	29-12-2021	stadia and tangential methods of Tachometry
28	IV	03-01-2022	Principle and types of E.D.M
29	IV	05-01-2022	Total station- advantages and Applications
30	IV	17-01-2022	Global Positioning System
31	V	18-01-2022	Introduction, Basic concepts, perspective geometry of aerial photograph
32	V	22-01-2022	relief and tilt displacements

33	V	24-01-2022	flight planning; Stereoscopy, ground control extension for photographic mapping
34	V	25-01-2022	aerial triangulation, radial triangulation, methods
35	V	29-01-2022	photographic mapping- mapping using paper prints
36	V	31-01-2022	mapping using stereo plotting instruments
37	V	01-02-2022	mosaics, map substitutes. Digital Photogrammetry