K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109
DEPARTMENT OF CIVIL ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
I SESSIONAL TEST QUESTION PAPER
SET-A

USN | | | | | | | | | |

Degree	:	B.E	Semester	:	III
Branch	:	Civil Engineering	Course Code	:	BCV302
Course Title	:	Engineering Survey	Date	:	03/01/2024
Duration	:	75 Minutes	Max Marks	:	25

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**List** and **Explain** types of tapes used in Surveying.	5	K2 Understanding	CO1
(b)	**Define** Plane surveying and Geodetic surveying. **List** the principles of surveying.	5	K1 Remembering	CO1
(c)	**Explain** the types of control survey.	5	K2 Understanding	CO1
	OR			
2(a)	**Explain** laser distance meter.	5	K2 Understanding	CO1
(b)	**Define** Surveying. **List** the objectives of Surveying.	5	K1 Remembering	CO1
(c)	**Explain** the importance of surveying.	5	K2 Understanding	CO1
	PART-B			
3(a)	**Define** Bench mark. **Explain** the types of Bench Mark.	5	K2 Understanding	CO2
(b)	The following consecutive readings were taken with a level and a 4m levelling staff on continuously sloping ground at a common interval 30m. 0.580 on A, 0.936, 1.953, 2.846, 3.664, 3.998, 0.962, 1.035, 1.689, 2.534, 3.844, 0.956, 1.579, 3.016 on B The elevation of A was 520.400m make up a level book by line of collimation method and apply usual checks. **Determine** the gradient of line AB.	5	K3 Applying	CO2
	OR			
4(a)	**Define** Datum. **Explain** the types of Datum.	5	K2 Understanding	CO2
(b)	The following consecutive readings were taken with a dumpy level 5m levelling staff on continuously sloping ground at a common interval of 15m. the first point is having an elevation of 185.275m. **Calculate** the reduced level and gradient of the line for the following	5	K3 Applying	CO2

	readings. 0.415, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.405m			

Course Incharge **HOD** **IQAC- Coordinator** **Principal**

Professor & Head
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Bangalore-560 062.

Dr. K. RAMA NARASIMHA
Principal/Director
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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109

DEPARTMENT OF CIVIL ENGINEERING

SESSION: 2023-2024 (ODD SEMESTER)

I SESSIONAL TEST QUESTION PAPER

SET-B

USN										

Degree	:	B.E	Semester	:	III
Branch	:	Civil Engineering	Course Code	:	BCV302
Course Title	:	Engineering Survey	Date	:	03/01/2024
Duration	:	75 Minutes	Max Marks	:	25

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Define** surveying. **Explain** the principles of surveying.	5	K2 Understanding	CO1
(b)	**Differentiate** between plane surveying and geodetic surveying	5	K2 Understanding	CO1
(c)	**List** the importance of surveying.	5	K1 Remembering	CO1
	OR			
2(a)	**Explain** different types of tapes used in surveying	5	K2 Understanding	CO1
(b)	**Explain** the types of control survey.	5	K2 Understanding	CO1
(c)	**Define:** 1. Hydrographic Surveys 2. Mine Surveys 3. Compass Surveying 4. Plane Table Survey 5. Distance Measuring Wheel	5	K1 Remembering	CO1
	PART-B			
3(a)	Following reading were taken with a dumpy level with a 4m staff on a continuously sloping ground 1.680, 2.470, 3.550, 0.680, 1.200, 2.050, 3.800, 1.200, 1.600, 1.850, 3.600, 1.800, 2.500, 3.500. **Calculate** the R.L of all the points and apply usual check using H.I method. The first reading was taken on a bench mark of RL 100.000m	5	K3 Applying	CO2
(b)	**Define** the following terms: 1. Level Surface 2. Differential Levelling 3.Reduced level 4. Back Sight 5. Fore Sight	5	K1 Remembering	CO2
	OR			
4(a)	The following consecutive readings were taken with a dumpy level 3.865, 3.345, 2.930, 1.950, 0.855, 3.790, 2.630, 1.540, 1.935, 0.865, 0.665 The level was sifted after 5th and 8th readings. The first reading was taken on the BM of R.L 150.250M.	5	K3 Applying	CO2

	Calculate the R.L of the change points and difference of level between first and last points using H.I method.			
(b)	**Define** the following terms: 1. Swinging of Telescope 2. Face Left Observation 3. Transiting 4. Theodolite 5. Telescope Inverted	**5**	**K1 Remembering**	**CO2**

(S)

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DEPARTMENT OF CIVIL ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
II SESSIONAL TEST QUESTION PAPER
SET-A

USN | | | | | | | | | | |

Degree	:	B.E	Semester	:	III
Branch	:	Civil Engineering	Course Code	:	BCV302
Course Title	:	Engineering Survey	Date	:	08/02/2024
Duration	:	75 Minutes	Max Marks	:	25

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Define** Total Station. **List** the uses of Total Station.	5	K1 Remembering	CO2
(b)	**Explain** the measurement of vertical angle using total station.	5	K2 Understanding	CO2
	OR			
2(a)	**List** the advantages and disadvantages of total station	5	K1 Remembering	CO2
(b)	**Explain** the measurement of horizontal angle using total station.	5	K2 Understanding	CO2
	PART-B			
3(a)	**Define** Vertical angles. **Explain** the types of vertical angles	5	K2 Understanding	CO3
(b)	**Calculate** the necessary data for setting out the curve by Rankine's method and prepare the curve table. Two tangents intersect at chainage 59+60, the deflection angle being $50^0 30'$. Radius of the curve 15 chains peg interval 100 links length of chain being 20m (100 links). Theodolite least count is 20".	5	K3 Applying	CO3
(c)	A road at constant RL 115.000m runs from north to south. The ground from east to west is horizontal. The ground levels along the centre line of the road as follows: Chainage in 'm': 0, 50, 100, 150, 200, 250, 300 R.L in 'm': 117.500, 116.250, 115.950, 116.650, 117.200, 117.850, 115.750 **Calculate** the volume of the earthwork by trapezoidal rule for a road 8m wide at formation with side slopes 1:1.	5	K3 Applying	CO3
	OR			
4(a)	**With a neat sketch explain** compound curve and reverse curve.	5	K2 Understanding	CO3
(b)	**Calculate** the necessary data for setting out of a circular curve with the following data: Angle of Intersection = 144^0, chainage of P.I = 1390m, Radius of Curve = 300m. The curve is to be set	5	K3 Applying	CO3

	out by Rankien's method with an peg interval of 20m chainage.			
(c)	The following perpendicular offsets were taken at an interval of 10m from a survey line to an irregular boundary. 3.8, 4.5, 6.72, 5.20, 7.62, 8.99, 9.53, 8.40 and 6.42m **Calculate** the area enclosed between the survey line, irregular boundary and first and last offset by Simpson's rule	5	K3 Applying	CO3

(5)

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DEPARTMENT OF CIVIL ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
II SESSIONAL TEST QUESTION PAPER
SET-B

USN | | | | | | | | | | |

Degree	:	B.E	Semester	:	III
Branch	:	Civil Engineering	Course Code	:	BCV302
Course Title	:	Engineering Survey	Date	:	08/02/2024
Duration	:	75 Minutes	Max Marks	:	25

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Explain** the measurement of horizontal angle using total station.	5	K2 Understanding	CO2
(b)	**List** the applications of Total Station.	5	K1 Remembering	CO2
	OR			
2(a)	**Explain** the measurement of vertical angle using total station.	5	K2 Understanding	CO2
(b)	**List** the disadvantages of total station	5	K1 Remembering	CO2
	PART-B			
3(a)	**Define** the following terms: a. Tangent length b. Point of Tangency c. Point of Curve d. Length of Curve e. External Distance	5	K1 Remembering	CO3
(b)	**Calculate** the necessary data for setting out of a circular curve with the following data: Angle of Intersection = 144^0, chainage of P.I = 1390m, Radius of Curve = 300m. The curve is to be set out by Rankien's method with a peg interval of 20m chainage.	5	K3 Applying	CO3
(c)	**Calculate** the earthwork of a road in embankment having formation width of 10m and length of 75m. the side slopes and height at center are 2:1 and 3m respectively. The slope of the ground in the traverse direction is 1 in 10.	5	K3 Applying	CO3
	OR			
4(a)	**Define** the following terms: a. Simple Curve b. Valley Curve c. Compound Curve d. Transition Curve e. Convex Curve	5	K1 Remembering	CO3
(b)	Two straights BA and AC intersect at the chainage 1190m, the deflection angle being 36^0. **Calculate** all the data necessary for setting out a curve with the radius of 300m by deflection angle method. The peg interval is 30m.	5	K3 Applying	CO3

(c)	The following perpendicular offsets were taken at an interval of 10m from a survey line to an irregular boundary. 3.8, 4.5, 6.72, 5.20, 7.62, 8.99, 9.53, 8.40 and 6.42m **Calculate** the area enclosed between the survey line, irregular boundary and first and last offset by Trapezoidal rule	5	K3 Applying	CO3

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DEPARTMENT OF CIVIL ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
III SESSIONAL TEST QUESTION PAPER
SET-A

USN | | | | | | | | | | |

Degree	:	B.E	Semester	:	III
Branch	:	Civil Engineering	Course Code	:	BCV302
Course Title	:	Engineering Survey	Date	:	04/03/2024
Duration	:	60 Minutes	Max Marks	:	25

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Explain** the characteristics of contours in civil engineering.	5	K2 Understanding	CO4
(b)	**Describe** the following terms: a. Contouring b. Longitudinal & cross-section levelling	5	K2 Understanding	CO4
(c)	**Explain** the applications of remote sensing & GIS is surveying.	5	K2 Understanding	CO4
	OR			
2(a)	**Explain** the applications of contours in civil engineering.	5	K2 Understanding	CO4
(b)	**Discuss** the importance of L/S & C/S levelling.	5	K2 Understanding	CO4
(b)	**Explain** the importance of backsight data in total station.	5	K2 Understanding	CO4
	PART-B			
3(a)	**Differentiate** between absolute and differential positioning with GPS.	5	K2 Understanding	CO5
(b)	**Explain** the applications of drone surveying.	5	K2 Understanding	CO5
	OR			
4(a)	**Discuss** the uses of remote sensing and GIS in surveying.	5	K2 Understanding	CO5
(b)	**Explain** the types of drones used in surveying.	5	K2 Understanding	CO5

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DEPARTMENT OF CIVIL ENGINEERING
SESSION: 2023-2024 (ODD SEMESTER)
III SESSIONAL TEST QUESTION PAPER
SET-B

USN | | | | | | | | | | |

Degree	:	B.E	Semester	:	III
Branch	:	Civil Engineering	Course Code	:	BCV302
Course Title	:	Engineering Survey	Date	:	04/03/2024
Duration	:	60 Minutes	Max Marks	:	25

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
	PART-A			
1(a)	**Explain** the importance of backsight data in total station.	5	K2 Understanding	CO4
(b)	**Explain** the measurement of coordinates using total station	5	K2 Understanding	CO4
(c)	**Discuss** the importance of L/S & C/S levelling.	5	K2 Understanding	CO4
	OR			
2(a)	**Explain** the applications of contours in civil engineering.	5	K2 Understanding	CO4
(b)	**Discuss** the characteristics of contours in civil engineering.	5	K2 Understanding	CO4
(b)	**Describe** the following terms: a. Contouring b. Longitudinal & cross-section levelling	5	K2 Understanding	CO4
	PART-B			
3(a)	**Define** Drone surveying. **Explain** the applications of drone surveying.	5	K2 Understanding	CO5
(b)	**Explain** the types of drones used in surveying	5	K2 Understanding	CO5
	OR			
4(a)	**Define** GPS. **Explain** the overview of GPS systems.	5	K2 Understanding	CO5
(b)	**Explain** the applications of remote sensing and GIS in engineering surveying.	5	K2 Understanding	CO5

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KSSEM

BLUE BOOK

Name of the student Archana. U

Class / Sem : III sem **Branch :** Civil

USN : 1 K G 2 2 C V 0 0 1

SUBJECT : Engineering Survey **Subject Code :** BCV302

MAXIMUM MARKS : I.A + A + P = T
25 + 10 + 25 = 50

Test	I	II	III	Average Marks Obtained
Date	3/02/2024	8/02/2024		Best of 2 + A + P = T
Marks Obtained	25	22		$\frac{15}{15} + \frac{10}{10} + \frac{25}{25} = \frac{50}{50}$
Signature of the Student	Archana. U	Archana. U	AB	$= \frac{25}{25} + \frac{25}{25} = \frac{50}{50}$
Initials of Room Supervisor				
Initials of Faculty				

NAME OF FACULTY : SHASHI PRASAD N

SIGNATURE : 11/3/24

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SIGNATURE OF H.O.D.

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT

First Internal Test

Q.No.	Marks	CO	Q.No.	Marks	CO	CO	Total
1(a)	05	01	3(a)	05	02	01	15
1(b)	05	01	3(b)	05	02		
1(c)	05	01	3(c)			02	10
OR			OR				
2(a)			4(a)				
2(b)			4(b)				
2(c)			4(c)			Grand Total	25

Second Internal Test

Q.No.	Marks	CO	Q.No.	Marks	CO	CO	Total
1(a)			3(a)			02	10
1(b)			3(b)				
1(c)			3(c)			03	14
OR			OR				
2(a)	05	02	4(a)	05	03		
2(b)	07+1.5	02	4(b)	05	03		
2(c)			4(c)	04	03	Grand Total	24

Third Internal Test

Q.No.	Marks	CO	Q.No.	Marks	CO	CO	Total
1(a)			3(a)				1
1(b)			3(b)				
1(c)			3(c)				AB
OR			OR				
2(a)			4(a)				1
2(b)			4(b)				
2(c)			4(c)			Grand Total	AB

Signature of the Staff

CONTENTS AND EVALUATION

Sl. No.	Date of Conducting Experiment	Page No.	Title of the Experiment	Assessment for conducting experiment (10 marks)	Signature of Staff with Date
01	25/11/2023	01	Differential Levelling by dumpy level by plane of Collimations method	10	29/1/24
02(A)	17/01/2024	02	Measurement of horizontal angles by Repetition Method	10	19/1/24
(B)	17/01/2024	04	Measurement of Vertical angles by Theodolite	10	19/1/24.
03	25/01/2024	07	Setting out simple circular curve by Rankine's method	10	25/1/24
04	27/02/2024	11	Horizontal distance and angle, vertical angle, slope using total station.	10	25/1/24.
				05/05	5/3/24.

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KSSEM

Laboratory Certificate

This is to certify that

Mr. / Ms. Archana.U

has satisfactorily completed the course of experiment in Engineering Survey *Laboratory. Code* BCV302

Prescribed by Visvesvaraya Technological University, Belagavi for the III *Semester B.E.* Civil *branch in this college during in the academic year 20*23 *- 20*24

Name of the Candidate : Archana.U

USN : 1KG22CV001 Lab (with code) BCV302

Marks	
Maximum	Obtained
25	25

Signature of the Teacher

Date : 11.03.2024

Head of the Department

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Particulars of the Experiments Performed

CONTENTS

Expt. No.	Date	Title of the Experiment	Page No.	Marks Awarded	Remarks
~~04~~	25/11/23	INTRODUCTION	01	10	
~~02~~	25/11/23	LEVELLING	07	10	
01	25/11/23	DIFFERENTIAL LEVELLING BY			
		DUMPY LEVEL BY PLANE OF		09	
		COLLIMATION METHOD	16		
	17/1/24	THEODOLITE	18	10	
02-A	17/1/24	MEASUREMENT OF HORIZONTAL			
		ANGLES BY REPETITION METHOD		10	
		USING THEODOLITE.	26		
02-B	17/1/24	MEASUREMENT OF VERTICAL			
		ANGLES BY THEODOLITE	28	10	
	25/1/24	CURVES	30	10	
03	25/1/24	SETTING OUT SIMPLE CURVE		10	
		- RANKINE'S METHOD	36		
	27/2/24	TOTAL STATION	41	10	
04	27/2/24	HORIZONTAL DISTANCE AND ANGLE			
		VERTICAL ANGLE ; SLOPE USING		10	
		TOTAL STATION	43		
		R + O + I.A. - T			

$\frac{10}{10} + \frac{05}{05} + \frac{10}{10} = \frac{25}{25}$

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PRACTICAL EXAMINATION / PROJECT VIVA- VOCE

Course/Branch: CIVIL

University Seat Number: 1 K G 2 2 C V 0 0 1

Subject: Engineering Survey Subject Code: B C V 3 0 2

Total number of supplements tied together: 1 + 0 = 1 Date: 1 1 0 3 2 0 2 4 (D D M M Y Y Y Y)

Archana. U

Signature of the Candidate

Entries to be made by the examiners

SCHEME OF AWARDING MARKS

Practical Examination

a. Procedure & write up : 15% of Max. Marks

b. Conducting the practicals, Calculations, Graphs, Results, etc., : 70% of Max. Marks

c. Viva-voce : 15% of Max. Marks

Project viva -voce

a. Project Work : 40% of Max .Marks

b. Presentation : 30% of Max .Marks

c. Viva-voce : 30% of Max .Marks

Question Number	Marks Awarded			
	a	b	50	10 d
1			7.5	1.5
2			3.5	07
3			7.5	1.5
4	Total —		50	10

Total Maximum Marks: 10 Total Marks obtained: 10

Marks awarded in words: Zero | Zero | 10

Total Maximum Marks: Total Marks obtained:

Marks awarded in words:

Examiner I

Name : Shanu Prasad .D.

Signature with Date :

Examiner II

Name :

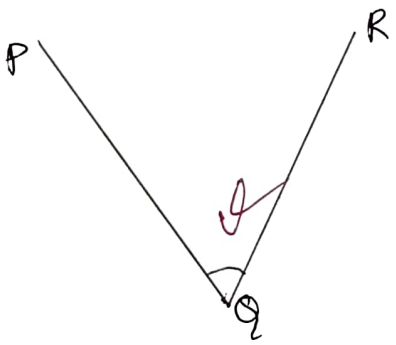
Signature with Date :

(21) To measure the horizontal angle by Repetition Method between two points.

Aim:- To determine the ~~angle~~ horizontal angle between 2 points

Instruments used:- Theodolite, Tripod.

Diagram:-



Procedure:-

1) Setting up a tripod legs ~~as the line of sight~~ accurately by keeping pens on the tripod.
2) Instrument is fixed on the tripod.
3) Levelling up instrument by temporary adjustments
4) Temporary adjustments includes,

1st the plate of bubble is made parallel to any 2 foot screws, then bubble should be centered by operating screws ~~using~~ inwards or outwards.

Then the plate of bubble is made perpendicular other foot screw, then centre the bubble by operating 3rd screw inwards or outwards.

5) After levelling the instrument, vernier A should be set to zero by unclamping the upper clamp. Then the instrument bisects point P and the lower clamp & upper clamp is clamped.

6) Then unclamp the upperclamp and bicect point R and clamp the upper clamp. Note down the reading, in tabular column from vernier A & B

7) Turn the instrument clock wise by releasing lower clamp and again bisect point P. We should be careful that the reading shouldn't be changed because upper clamp is not released.

8) Again release upperclamp and turn the instrument clockwise to bisect point R. Clamp ~~the upper clamp~~ by using tangent screw. clamp the upper clamp and note down the readings in tabular Column.

9) Repeat all the steps above, to required times (usually 4)

10) Note down all the 4 values for vernier A & B.

11) Repeat this process for other face

12) Take the Average of both the faces.

Tabular Column:

Station No.	Face left												Face Right											
	Vernier A			Vernier B			Mean			angle			Vernier A			Vernier B			Mean			Angle		
P	0	1	11	0	1	11	0	1	11	0	1	11	0	1	11	0	1	11	0	1	11	0	1	11
R	84	40	20	0	6	20	84	23	20				84	40	10	00	10	00	84	25	00			
R	169	20	15	0	10	40	169	15	27.5	84	33	50"	169	40	00	00	5	20	169	22.5	20	84°	35'	25"
R	254	20	40	0	14	20	254	17	30				254	40	20	00	12	40	253	26	30			
R	338	20	0	0	10	20	338	15	20				338	20	10	00	20	00	338	20	10			

$$\frac{84°33'50'' + 84°35'2.5''}{2}$$

$$= 84°34'26.25''$$

Result: The Horizontal Angle of PQR, average of both faces is $84°34'26.25''$