

Scheme – I
Sample Question Paper

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Second
Course Title : Basic Surveying
Max. Marks : 70

22205

Time : 3 Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following.

10 Marks

- a. Define the term “surveying”
- b. List different instruments used for linear measurement.
- c. Define the term “bearing of a survey line”.
- d. List the types of bench marks.
- e. Define the term ‘horizontal equivalent’ and ‘contour interval’
- f. List component parts of a digital planimeter
- g. State the objectives of Surveying.

Q.2) Attempt any Three of the following.

12 Marks

- a. Define the following terms used in compass surveying –
 - i. Whole Circle Bearing System
 - ii. Quadrantal Bearing System,
 - iii. Fore bearing
 - iv. Back bearing.
- b. Explain the principles of surveying.
- c. Explain the procedure of fly levelling and state purpose of doing it.
- d. Convert following bearings from WCB to QB
i) $210^{\circ} 0'$ ii) $45^{\circ} 15'$ iii) $135^{\circ} 45'$ iv) $315^{\circ} 15'$

Q.3) Attempt any Three of the following.

12 Marks

- a. Draw survey map showing Base-line, Tie-line and Check line.
- b. Explain graphical method of adjustment of closing error of a traverse.
- c. Describe the method of Temporary Adjustment of a Dumpy level.
- d. Explain relationship between the fundamental axes for a dumpy level

Q.4) Attempt any Three of the following.

12 Marks

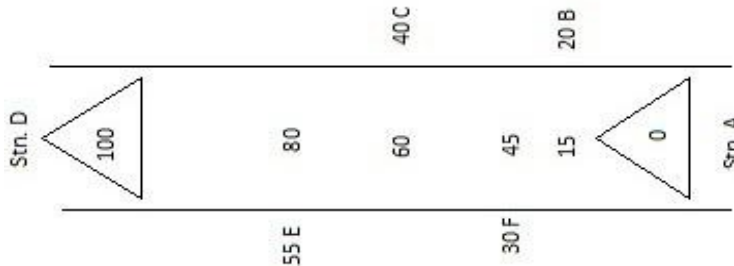
- a. Differentiate between ‘collimation plane method’ and ‘rise and fall method’ with reference to any four points.
- b. Explain with sketch four characteristics of Contours.

- c. Describe procedure for measuring the area using digital planimeter.
- d. Explain the procedure of computing the volume of reservoir from any contour map.
- e. The series of staff reading observed on a continuously sloping ground are- 0.850, 1.650, 2.450, 3.255, 0.655, 1.250, 1.955, 2.650, 3.250, 1.150, 1.655, 2.055 and 3.255. The first reading was taken on a B.M. of R.L 150.000. Prepare page of level field book and Calculate the R.L's of all points by collimation plane method. Apply usual checks on arithmetic calculations.

Q.5) Attempt any Two of the following.

12 Marks

- a. Plot the given cross staff survey of the field ABCDEFA given below and calculate its area in sq.m.



- b. Given below are the observed bearings of the traverse ABCDEA. Detect the Local attraction at stations and correct the bearings of lines. Also calculate included angles.

Line	F.B	B.B
AB	59°00'	239°00'
BC	139°30'	317°00'
CD	215°15'	36°30'
DE	208°00'	29°00'
EA	318°30'	138°45'

- c. The following consecutive readings were recorded with a dumpy level and a 4 m levelling staff :
2.505, 2.875, 3.150, 0.950, 3.515, 3.150, 0.870, 1.240, 1.450 and 0.810
The level was shifted after fourth and seventh reading. The first reading was taken on B.M. having R.L. as 200.000 m.
Calculate the reduced level of stations, using rise and fall method. Apply arithmetical check. Also calculate the difference of level between first station and last station.

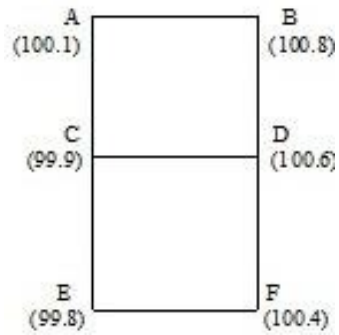
Q.6) Attempt any Two of the following.

12 Marks

- a. On an old map, the bearing of a line is given as 148°30'. The declination at the time of survey was recorded as 3°45'E. If the present declination is 2°15'E, Find the magnetic bearing to which this line has to be set now. Also find the BB of the same line.
Express it in both WCB and QB system (6)
- b. Find the missing readings indicated by * and apply usual checks in level book page given below.

Point	B.S	I.S	F.S	Rise	Fall	R.L.	Remark
1	3.125					*	B.M
2	*		*	1.325		125.005	C.P
3		2.32			0.055	*	
4		*		*		125.35	
5	*		2.655		*	*	C.P
6	1.62		3.205		2.165	*	C.P
7		3.625			*	*	
8			*	*		122.59	T.B.M

- c. Contour survey data of a field is shown in figure given below. Draw 100.2 m contour line by linear interpolation method. Show all the calculations. Grid size is 10 m x 10 m.



Scheme – I
Sample Test Paper - I

(40% of 5-Unit curriculum and 50% of 6-Unit curriculum)

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Second
Course Title : Basic Surveying
Max. Marks : 20

22205

Time : 1 Hour.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

08 Marks

- a) State any two uses of survey.
- b) Define Base line and Check line
- c) Define magnetic declination.
- d) Convert the following R.B. to W.C.B. i) $N40^{\circ}30'W$ ii) $S 49^{\circ}30'E$.
- e) Draw conventional signs for i) Bridge ii) Temple
- f) Define the term true bearing.

Q.2 Attempt any THREE.

12 Marks

- a) Draw conventional symbols for i) Cutting ii) Banking iii) Railway Double Line iv) Road Bridge
- b) Explain the types of offsets.
- c) List four fundamental axes of dumpy level & state relationship between them.
- d) The following bearings were taken in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected. Plot the traverse. At what stations do you suspect local attraction? Find corrected fore bearings and back bearings of the lines.

Line	Fore bearing	Back bearing
AB	$156^{\circ} 0'$	$335^{\circ} 30'$
BC	$237^{\circ} 30'$	$57^{\circ} 30'$
CD	$335^{\circ} 0'$	$153^{\circ} 45'$
DA	$54^{\circ} 15'$	$236^{\circ} 0'$

Scheme – I
Sample Test Paper - II

(60% of 5-Unit curriculum and 50% of 6-Unit curriculum)

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Second
Course Title : Basic Surveying
Max. Marks : 20

22205

Time : 1 Hour.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

08 Marks

- a) Define i) Bench mark, ii) Datum surface
- b) Define fly levelling
- c) Define Contour interval
- d) Draw contour map to represent i) Lake ii) Hill
- e) List the component parts of Digital Planimeter
- f) Define Change Point.

Q.2 Attempt any THREE.

12 Marks

- a) Differentiate between collimation plane method and rise and fall method
- b) The following consecutive reading were taken with a dumpy level and 4 m levelling staff on continuously sloping ground A to B at every 30 m interval. 0.355 m on A, 0.730, 1.055, 2.690, 3.950, 0.485, 1.020, 1.895, 2.535. The R.L. of A was 560.250 m. Prepare page of level book and check your calculation by usual method. Determine the gradient of the line AB.
- c) Explain with sketch four characteristics of Contour
- d) Describe the procedure of measurement of area of a irregular figure using digital planimeter