

KATHMANDU UNIVERSITY
End Semester Examination
June/July, 2023

Marks Scored:

Level : B.Arch.

Year : II

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : CIEG 232

Semester : I

F. M. : 10

Date

1.3 JUL 2023

SECTION "A"

[20Q. \times 0.5 = 10 marks]

Encircle the most appropriate answer.

1. Systematics error are those errors
 - a. Which cannot be recognize
 - b. Whose character is not understood
 - c. Whose effect are cumulative and can be eliminated by adopting suitable methods
 - d. Which changes rapidly
2. The whole circle bearing of a line is 300° . Its Quadrantal bearing is
 - a. $S30^{\circ}E$
 - b. $N60^{\circ}W$
 - c. $N60^{\circ}E$
 - d. $N30^{\circ}W$
3. The correction for sag is
 - a. always additive
 - b. always subtractive
 - c. always zero
 - d. sometimes additive and sometimes subtractive
4. The well condition triangle should not have angles more than
 - a. 120°
 - b. 30°
 - c. 130°
 - d. 75°
5. A building is an obstacle to
 - a. Chaining not to ranging
 - b. ranging but not to chaining
 - c. Both chaining and ranging
 - d. neither ranging nor chaining
6. A survey line was measured with a 30 m chain and was found to be equal to 300 m. Upon comparing the 30 m chain with a test gauge, it was found to be a 10 cm too short. What is the true length of the line?
 - a. 300.1 m
 - b. 300 m
 - c. 301 m
 - d. 299 m
7. The annual variation of the magnetic declination at a place is caused because of the rotation of
 - a. Moon about earth
 - b. earth about its own axis
 - c. Earth about sun
 - d. moon about sun
8. Accurate centering in plane table surveying is necessary for
 - a. Small scale maps
 - b. large scale maps
 - c. Filling in details
 - d. to solve triangles of error rapidly

9. The fore bearing of the line AB is 209° . The included angle ABC is 341° . The fore bearing of the line BC is
 a. 10° b. 330° c. 550° d. 190°
10. What is the commonly used length of a telescopic staff?
 a. 6 m b. 5 m c. 4 m d. 3 m
11. The difference between the face left and the face right observation of a theodolite is $3''$. The error is
 a. $45''$ b. $0'$ c. $3'$ d. $1'30''$
12. If N is the number of sides of a traverse, while traversing clockwise the sum of the included angles should be
 a. $(2n-4) \times 90$ b. $(2n+4) \times 90$ c. $(2n-3) \times 90$ d. 360°
13. An open traverse can be checked by
 a. Included angle b. Deflection angle
 c. Astronomical observations d. Linear measurement
14. In a two-peg test, when the instrument is at midway between A and B, the reading at A is 1.682 m and at B is 1.320 m. When the instrument is kept nearby A, the new staff readings are 1.528 m at A and 1.178 m at B. What is the apparent elevation difference?
 a. 0.362 m b. 0.142 m c. 0.154 m d. 0.350 m
15. What will be the correction for the curvature for a distance of 1000 m?
 a. 0.0673 m b. 0.0785 m c. 78.50 m d. 6.73 m
16. The error that have the same magnitude and direction when measured in similar conditions is
 a. Instrumental Error b. Accidental Error
 c. Cumulative Error d. Human Error
17. Determine the closing error when total latitude sums to +0.66 and departure sums to -0.88?
 a. 1.10 b. 0.22 c. 1.54 d. 1.24
18. A line has a length of 100 m and the bearing is measured as $S40^{\circ}W$. What is its latitude?
 a. 64.27 b. 76.61 c. -64.27 d. -76.61
19. To calculate the amount of cut and fill
 a. Only profile levelling is sufficient
 b. Only cross sectioning is sufficient
 c. Barometric levelling is required
 d. Both profile and cross section levelling is required
20. Which of the scale is the largest one?
 a. 1 cm = 50 m b. 1:42000 c. RF=1/300000 d. 1 cm=50 km

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13 JUL 2023

Level : B.Arch.
Year : II
Time : 2 hrs. 30 mins.

Course : CIEG 232
Semester : I
F. M. : 40

SECTION "B"
[4Q. × 4 = 16 marks]

Attempt *ANY FOUR* questions. Assume suitable data if necessary.

1. What is surveying? Explain the principal of surveying in details. [1+3]
2. What is the difference between accuracy and precision? Explain the various sources of the error during surveying? [2+2]
3. How can you measure the horizontal angle using theodolite? A surveyor measured the distance between two points marked on the plan drawn to a scale of 1cm = 1m and found it to be 60m. Later he detected that he used a wrong scale of 1 cm = 50 cm for the measurement. Determine the correct length. What would be the correct area if the measured area is 70 m²? [2+2]
4. A big pond obstructs the chain line AB. The line AL was measured on the left of the line AB for circumventing the obstacle. The length of AL was 901 m. Similarly the line AM of length 1100 m was measured right of the line AB. Find the length of AB if the points M, B and L lies on the same straight line and length of BL and BM are 502 m and 548 m respectively
5. Explain in details the instruments used in the plane table surveying.

SECTION "C"
[4Q. × 6 = 24 marks]

Attempt *ANY FOUR* Questions. Assume any necessary data if necessary.

6. The following bearings were observed in running a closed traverse. Determine the correct magnetic bearings of the lines using internal angle method.

Line	F.B.	B.B
AB	191°30'	13°00'
BC	69°30'	246°30'
CD	32°15'	210°30'
DE	262°45'	80°45'
EA	230°15'	53°00'

7. Write Short notes on (ANY TWO) [3+3]
- Reciprocal Ranging
 - Fly levelling
 - Difference between Surveyor's and Prismatic Compass
8. A line was measured with a steel tape which was exactly 30 m at 18°C and a pull of 50 N and the measured length was 459.242 m. Temperature during measurement was 28°C and the pull applied was 100 N. The tape was uniformly supported during the measurement. Find the true length of the line if the cross-sectional area of the tape was 0.02 cm², the coefficient of expansion per °C = 0.0000117, and the modulus of elasticity = 21 × 10⁶ N per cm².
9. The following are the lengths and bearings of traverse legs of a traverse ABCDEA. Correct the given lines for its closing error using Transit Method of balancing a traverse. Also determine the total closing error in the traverse.

Line	Length [m]	Bearing
AB	300	75°35'
BC	174	116°35'
CD	136	165°35'
DE	174	224°50'
EA	440	305°35'

10. Following is the page of the level field book. The Readings in the level book were written with the pencils and some of the data got erased. The erased data are marked with the questions marks. Calculate the missing data. Also perform the necessary checks.

Station	BS	IS	FS	Rise	Fall	RL	Remarks
1	?					150	BM
2		2.457			0.827	?	
3		2.400		0.057		?	
4	2.697		?		?	148.070	CP
5	?		2.051	0.646		148.716	CP
6		2.500		1.068		149.784	
7		2.896			?	149.388	
8		?			0.124	?	
9			2.62	0.348		149.612	