

KATHMANDU UNIVERSITY
End Semester Examination
July/August 2024

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

29 JUL 2024

Course : GEOM 201
Semester : I
F. M. : 40

SECTION "B"

Attempt *ALL* questions. Assume the suitable value if necessary.

1. Explain about the classification and principles of surveying with relevant examples. [3+3]
2. Clarify the concept of chain surveying using the operations involved for it. [4]
3. Define tacheometric surveying. Derive an expression for Distance and Elevation Formula for Staff Vertical and Inclined line of Sight. [1+4]
4. Determine the correct length of line reduce to the mean sea level when the recorded length with a tape hanging in catenary at a tension of 85N and temperature of 22 degree Celsius is 30.071m. The difference between ends is 0.42m and the site is 2000m above the MSL. The tape had been previously standardized in Catenary at a tension of 50 N and a temperature of 27 degree Celsius and distance between zeros was 30.035m. (Given: Weight of tape = 7N, Cross Section area=3.9mm², Coefficient of Expansion = 2×10^{-5} per degree Celsius, Young's Modulus = 2×10^5 N/mm², Radius of earth = 6370 km) [5]
5. Explain the various methods of representation of scale with example. Differentiate between metric system and Imperial system of measurement. [3+3]
6. Explain about the permanent adjustment of theodolite with diagram. [3]
7. The following fore bearings and back bearings were observed in traversing with the compass.

Traverse legs	Fore bearing	Back bearing
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'

Determine which stations are suffering from local attraction and correct the bearings. [5]

8. Write short notes on:
 - a. Contour and its characteristics
 - b. Source and types of error

[3+3]

1911



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Marks Scored:

Level : B.E.

Year : II

Exam Roll No. :

Time: 30 mins.

Course : GEOM 201

Semester : I

F. M. : 10

Registration No.:

Date **29 JUL 2024**

SECTION "A"

[20Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

1. Which of the following is not a type of surveying?
a. Geodetic surveying
b. Topographical surveying
c. Photogrammetric surveying
d. Thermal surveying
2. What is the least count of a vernier theodolite?
a. 1 minute
b. 10 seconds
c. 20 seconds
d. 5 seconds
3. In angular measurement, what is the term for the process of aligning the instrument with a reference direction?
a. Centering
b. Sighting
c. Orienting
d. Focusing
4. Which error occurs due to the sag of the tape while measuring distances?
a. Instrumental error
b. Natural error
c. Personal error
d. Systematic error
5. What is the primary use of a contour line on a topographic map?
a. To show elevation changes
b. To indicate property boundaries
c. To mark roads
d. To show water bodies
6. In the WCB (whole circle bearing) system, a line is said to be free from local attraction if the difference between Fore bearing and Back bearing is
a. 270°
b. 90°
c. 0°
d. 180°
7. The magnetic bearing of a survey line at any place
a. Remains constant
b. Changes systematically
c. Varies differently in different months of the year
d. Always greater than true bearing
8. Check lines (proof lines) in chain surveying are essentially required
a. to plot the chain line
b. to plot the offsets
c. to indicate the correctness of the survey work
d. to increase the efficiency of the surveyor

9. Choose the **CORRECT** statement.
- The graduations (figures) are inverted in a surveyor compass.
 - A prism in a prismatic compass is provided to magnify the graduations in addition to erecting the figures.
 - East and west are interchanged in prismatic compass.
 - The 0° graduation is placed at north in prismatic compass.
10. Which one of the following statements is **CORRECT**?
- The axis of plate level should be parallel to the vertical axis.
 - The axis of striding level must be parallel to the horizontal axis.
 - The axis of the altitude level must be perpendicular to the line of collimation.
 - The line of collimation must be perpendicular to the plate level axis.

Fill in the blanks with appropriate answer.

11. S $49^\circ 12'$ E is equal to _____ in WCB.
12. A line which passes through the optical center of the objective and also through the intersection of the cross hair is called _____
13. A planimeter is used for measuring _____ of the irregular shapes.
14. The difference between a measurement and the true value of the quantity measured is _____
15. A 50 m tape is 2m out of line. The true length is _____
16. One hectare of an area is equivalent to _____ - m^2 .
17. Graduated ring is attached with needle in _____ Compass.
18. Area of a circle having radius 35 metre is _____ Ropani.

Write T for TRUE and F for FALSE statement.

19. Accuracy of work does not depend upon the types of instruments used. []
20. A non-transit theodolite is one in which the line of sight can be reversed by revolving the telescope through 180° in horizontal plane. []