

KATHMANDU UNIVERSITY  
End Semester Examination  
March/April, 2017

Level : B. Tech.  
Year : II

Course : ENVE 209  
Semester : I

Exam Roll No. :

Time : 30 mins.

F. M. : 10

Registration No. :

Date :

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Tick (✓) the most appropriate answers. Assume suitable data.

1. Working from whole to parts is
  - a) only convention of surveying.
  - b) methodology of surveying.
  - c) principle of surveying.
  - d) not always necessary to follow.
2. The angle made by a line w.r.t north in anticlockwise direction is
  - a) called the bearing of the line.
  - b) called back bearing of the line.
  - c) always  $90^0$ .
  - d) always a none zero value.
3. The true length between two points is
  - a) same as that obtained from taping.
  - b) never known.
  - c) same as that obtained from theodolite.
  - d) same as that obtained from EDM.
4. One of the following is not a necessary accessory of chain surveying.
  - a) Field Book
  - b) Ranging Rod
  - c) Compass
  - d) Chain
5. 1.00 sq. ft. is equal to
  - a) 0.209 sq.m
  - b) 0.092 sq.m
  - c) 0.920 sq.m
  - d) 0.009 sq.m
6. The vertical direction in stepping method of chain surveying is obtained from
  - a) spirit level
  - b) plumb bob
  - c) ranging rod
  - d) measuring tape
7. The effect of local attraction is observed in
  - a) theodolite surveying
  - b) leveling
  - c) chain surveying
  - d) compass surveying
8. In a map, if scale is given as 1:42000, its unit is
  - a) m
  - b) cm
  - c) ft
  - d) unitless
9. The bearing of a line AB is  $N45^0E$ . Its Whole Circle Bearing is
  - a)  $45^0$
  - b)  $90^0$
  - c)  $135^0$
  - d)  $180^0$
10. \_\_\_\_\_ are the lateral measurements from the base line to fix the positions of the different objects of the work with respect to base line.
  - a) Check line
  - b) Offsets
  - c) Main station
  - d) Tie stations
11. Closed contours, with higher value inwards, represent a
  - a) depression
  - b) hill
  - c) plain surface
  - d) valley

12. Contour interval is  
a) the vertical distance between two consecutive contours.  
b) the horizontal distance between two consecutive contours.  
c) the vertical distance between two points on same contour.  
d) the horizontal distance between two points on same contour.
13. One of the following is not the source of error in survey.  
a) sunny day  
b) rainy day  
c) very precise instrument  
d) location of bench mark
14. \_\_\_\_\_ is a process of surveying in which the portion of the earth being surveyed is considered a plane.  
a) Geodetic surveying  
b) Plane surveying  
c) Mine surveying  
d) Route surveying
15. In any field survey operation, measurements are derived by the application of some form of  
a) mathematical computation.  
b) statistical analysis.  
c) geographical analysis.  
d) random measurement.
16. The numerical value 0.000047 has \_\_\_\_\_ significant figures.  
a) six  
b) five  
c) three  
d) two
17. Bowditch rule is applied to  
a) an open traverse for graphical adjustment.  
b) a closed traverse for adjustment of closing error.  
c) determine the effect of local attraction.  
d) find out the angle of the slope
18. \_\_\_\_\_ of a theodolite can be rotated around horizontal axis for direct and reverse readings.  
a) Levels  
b) Angles  
c) Telescope  
d) Plates
19. Area of a geometric figure  
a) can be measured directly in the field  
b) is equal to length times breadth  
c) can be obtained only through calculations  
d) exists only if it has volume
20. \_\_\_\_\_ errors are referred to mistakes or blunders by either the surveyor or his assistants due to carelessness or incompetence.  
a) Gross  
b) Systematic  
c) Random  
d) Forced

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MAR 30 2017

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

Course : ENVE 209  
Semester : I  
F. M. : 40

SECTION "B"

Assume necessary data. Attempt *ALL* questions.

1. Explain all the sources of errors that can occur in surveying with the ways to minimize the errors. [5]
2. Define chain surveying. A 20 m long chain was found to be 4 cm too long after chaining 1400 m. It was 8 cm too long at the end of the day's work, after chaining a total distance of 2420 m. If the chain was correct before the work, find the true distance. [1+4]
3. a. The 30 cm chain was found to be 10 cm too short after chaining 1500 m. Calculate the corrected length of total distance chained. [2]  
b. A surveyor student walked along a given line that was known to be 200 ft long in order to determine her average unit pace. She paced the line five times recording 78, 76.5, 77, 87, 76 paces respectively in her field book.
  - i. Determine her average pace. [1.5]
  - ii. If the surveyor then counted an average of 123.5 paces while pacing off the line of unknown distance, what is the distance in m? [1.5]
4. A plot of land required for a factory site measures 25 cm  $\times$  25 cm on village map drawn on a scale 1 cm = 100 m. What is its area in ha.? What will be its area on a toposheet on 1:50000 scale? [2.5+2.5=5]
5. Write briefly about the topographic surveying. A river is flowing from west to east. For determining the width of the river, two points A and B are selected on southern bank such that the distance AB = 75 m. Point A is westward and the bearing of a tree C on the northern bank are observed to be 380 and 3380 respectively from A and B. Calculate the width of the river with diagram. [2+3=5]
6. Define contour line. What are the importances of contour map for engineers? Explain the characteristics of contour line with suitable sketch. [1+2+2=5]
7. Write short notes on (*ANY TWO*) [2.5+2.5=5]
  - Principle of surveying
  - Factors affecting fieldwork
  - Theodolite

8. While performing closed traverse, a surveyor has recorded the following observations. Balance the traverse using Bowditch rule method and compute the adjusted 2D coordinate of the station. [5]

<b>Line</b>	<b>Length(m)</b>	<b>Bearing</b>
AB	130	S88°E
BC	158	S6°E
CD	145	S40°W
DE	308	N81°W
EA	337	N48°E