KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2018

Marks Scored:

Level : B. E.
Year : II

Course : GEOM 205
Semester: I

Exam Roll No.:

Time: 30 mins.

F. M. : 10

Registration No.:

MAR 1 1 2018

Date :

SECTION "A"

[20 Q. × 0.5 =10 marks]

1. The accuracy with which the instrument station can be established is called:
   a. Strength of fix
   b. Strength of accuracy
   c. Strength of solution
   d. Dilution of precision

2. The method usually adopted to contour a rough country where ordinary leveling is tedious and chaining is slow and inaccurate is:
   a. Spirit leveling
   b. Differential leveling
   c. Plane tabling
   d. Tacheometry

3. Substense bar is used for:
   a. Levelling
   b. Measurement of horizontal distance in almost flat areas
   c. Measurement of horizontal distance in undulated areas
   d. Measurement of horizontal angles

4. The parallactic angle for a tacheometer with a multiplying constant of 100 is:
   a. 17'11" b. 11'17" c. 34'22" d. 13°18'

5. Which of the following is correct regarding topographic map of Lumbini Area prepared by JICA?
   a. The scale of map is 1:50000
   b. Contour interval is 40 meters
   c. It is five colored
   d. Satellite images were used

6. During intersection in plane tabling, angle formed between rays at the intersection point:
   a. Can be of any magnitude
   b. Should be exactly 90°
   c. Should not be less than 30° and greater than 120°
   d. Should not be exactly 90°

7. Choose the incorrect statement
   a. Two contour lines overlap in case of a vertical cliff
   b. A watershed crosses the contours at right angle
   c. The direction of the steepest slope is along the longest distance between the contours
   d. In direct method of contouring, contours are not interpolated

8. If the focal length of objective of tachometer is 25 cm, stadia interval is 1.25 mm and the distance from objective to the trunnion axis is 15 cm, the additive constant is:
   a. 200 m b. 0.4 m c. 0.6 m d. 0.2625 m

9. In a plan, a 10 cm scale drawn shrunks to 9.7 cm. If the scale of the given plan is written as 1:250, determine the actual length of a line on the ground which at present shows 10 cm on the map.
a. 2.577 m b. 2.425 m c. 24.25 m d. 25.77 m

10. Ridge line crosses contour making an angle of:
a. 0° b. 30° c. 45° d. 90°

11. If the plotted position of an instrument station is not known, the most accurate orientation of plane table can be achieved by:
a. A trough compass b. Backsighting
c. Observation of two well-defined points d. Observation of three well-defined points

12. The most rapid method of contour interpolation is:
a. By estimation b. By arithmetic method
c. By graphical method d. All methods are equally rapid

13. A series of gradually decreasing closed contours on a map indicate:
a. A closed traverse b. A depression c. A summit d. A river

14. The dimension of normal plane table board is:
a. 50 cm × 50 cm b. 60 cm × 50 cm c. 70 cm × 60 cm d. 75 cm × 60 cm

15. A total station displays:
a. Slope distance b. Gradient c. Contours d. Horizontal distance

16. What is the value of multiplying constant and additive constant of a substense tacheometer?
a. 100 and 0 b. 0 and 100 c. Variable d. 0 and 50

17. The purpose of centring of plane table is to:
a. Make drawing plane of plane table truly horizontal
b. Cause the instrument station and its corresponding map point lie on a vertical line
c. Make line on plan parallel to its corresponding line on ground
d. Orientation of plane table board to north direction

18. The drawing edge of telescopic alidade is called:
a. Fiducial edge b. Beveled edge c. Working edge d. Alidatic edge

19. Which of the following statements is true?
a. Anallactic lens can be fitted in both internal focusing and external focusing telescope
b. In movable hair method of tacheometry, staff intercept is varied
c. Five values are observed at a staff position in tachometry
d. In tangential system of tachometry, the target is always kept normal to the line of sight

20. Which of these functions in a Total Station measures the distance AB by positioning reflector at points B and C?
a. REM b. Stake out c. MLM d. EDM

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Year : II
Time : 2 hrs. 30 mins.

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F. M. : 40

SECTION "B"
(Short answer questions)
[6Q.×4=24 marks]

Attempt *ANY SIX* questions.

1. What do you mean by contour line? List four characteristics of contour line. What kind of contour lines can you expect in a waterfall? Illustrate with diagram.

2. On what basis can you determine the contour interval for the survey of an area? Explain. What are the methods for locating contours in any area?

3. Briefly explain the different types of tachometric measurements. What are the essential instruments for tachometric measurements?

4. Show that the horizontal distance between the instrument axis and the staff is directly proportional to the staff intercept when a tachometer with anallactic lens is used.

5. What are the various methods of plane table works? Explain with diagrams the tracing paper method of plane table resection.

6. Explain the various methods of relief representation in a topographic map. Which would be the most suitable method for use in a map to explain the topography of Nepal to an artist? Justify your answer.

7. The readings given below were made with a tachometric theodolite having a multiplying constant of 100 and no additive constant. The reduced level at station A was 100.0 m and the height of the instrument axis 1.35 m above the ground. Calculate the gradient expressed as the horizontal distance one meter rise or fall vertically between the stations B and C.

Station	To	Whole circle bearing	Vertical Angle	Stadia readings
A	B	48°00'	+11°30'	2.048,1.524,1.000
A	C	138°00'	-17°00'	2.112,1.356,0.600

SECTION "C"

(Long answer questions)

[2Q.×8=16 marks]

Attempt *ANY TWO* questions.

8. Briefly explain the different methods for computing area of irregular boundaries by division into regular intervals. In a hydro-electric project, the reservoir provides storage of 5.9 million cubic meter between the lowest draw down and the top water level. The areas contained within the stated contours and the upstream face of the dam are as follows :

Contour(metres)	200	195	190	185	180	175	170	165
Area(hectares)	44	34	28	23	20	16	11	8

If the R.L. of the lowest draw down is 167 m, find the reduced level of water at the full storage capacity of the reservoir. Use of trapezoidal rule is mandatory.

9. Explain the instrumental errors and their sources that may occur in plane table surveying. How would you approach the survey of an area using plane table? Explain in detail.

10. Write short notes on:
    a. Various functions of a Total Station
    b. Topographic maps of Nepal made with the aid of FINNIDA