

Total No. of printed pages = 8

RETEST EXAMINATION - 2019

Semester : 3rd

Subject Code : CT-302

SURVEYING - I

Full Marks - 70

Time - Three hours

The figures in the margin indicate full marks for the questions.

Instructions :

1. All questions of PART - A are compulsory.
2. Answer any *five* questions from PART - B.

PART - A

Marks - 25

1. Fill in the blanks : 1×10=10
 - (a) The difference of true meridian and magnetic meridian is called _____.
 - (b) In levelling, the first reading is taken on a levelling staff kept on a _____.

[Turn over

- (c) Bearing of a line measured with reference to a magnetic meridian is called _____.
- (d) A closed contour lines with one or more higher ones outside it represents a _____.
- (e) An imaginary line joining points of equal elevations on earth surface is called _____.
- (f) The height of instrument is obtained by adding _____ and _____.
- (g) Elimination of parallax is done by focussing the _____ and _____.
- (h) The process of setting up the instrument exactly over a point on the ground is called _____.
- (i) The two methods of booking and reducing the levels are _____ and _____.
- (j) The back bearing of line AB is $164^{\circ} 45'$, its fore bearing is _____.



2. Write true or false : $1 \times 10 = 10$

- (a) Chain surveying can also be used for accurate angular measurements.
- (b) In prismatic compass the south direction is marked with 0° .
- (c) Parallax is the phenomenon in which the line of sight is parallel with the object.
- (d) Local attraction can disturb the magnetic needle from pointing towards north direction.
- (e) Focussing the eye-piece of a level makes the cross-hairs clear and distinct.
- (f) Surveyor's compass gives the reading in reduced bearing system.
- (g) In reduced bearing system, difference between fore bearing and back bearing is always 180° .
- (h) In levelling back sight is always taken at a point of known elevation.
- (i) In levelling, a station is a point where the level is set up.
- (j) Mean sea level cannot be considered as a datum.



3. Choose the correct answer : $1 \times 5 = 5$

(a) If the fore bearing of a line AB is $N 67^\circ 55' 30'' W$, its back bearing is

- (i) $N 247^\circ 55' 30'' W$
- (ii) $N 247^\circ 55' 30'' E$
- (iii) $S 67^\circ 55' 30'' W$
- (iv) $S 67^\circ 55' 30'' E$

(b) If the magnetic bearing and true bearing of a line AB is $52^\circ 35'$ and $58^\circ 40'$ respectively, the magnetic declination is

- (i) $6^\circ 2' 0'' East$
- (ii) $6^\circ 5' 0'' West$
- (iii) $6^\circ 5' 0'' East$
- (iv) $6^\circ 5' 30'' West$

(c) A 30 m chain was used to measure a line AB which was found to be 242 metres long. The chain was found to be 20 cm too small. What is the actual length of the line AB ?

- (i) 240.20m
- (ii) 240.39m
- (iii) 240.29m
- (iv) 240.30m

(d) A reading is taken on a staff held on a B.M. The staff reading is recorded as 1.250 m and height of instrument is 123.456 m. What is the elevation of B.M. ?

- (i) 124.706 m
- (ii) 124.704 m
- (iii) 122.205 m
- (iv) 122.206 m

(e) The advantage of working from whole to part

- (i) requires less time
- (ii) less observations are needed
- (iii) plotting of maps are easier
- (iv) minimises the accumulation of errors.

PART - B

Marks - 45

4. (a) Differentiate between contour interval and contour gradient. 4

(b) What is parallax ? How will you eliminate parallax in a level ? 5



5. (a) Differentiate between Topographical surveying and Cadastral surveying. 4

(b) A closed traverse ABCDA is formed in the form of a square in anti-clockwise direction. The fore bearings of line AB is $152^{\circ}30'$. Compute the bearings of other lines. 5

6. (a) Differentiate between magnetic bearing and arbitrary bearing. 4

(b) In levelling between two points A and B on opposite banks of a river, the level was set up near A, and the staff readings on A and B were 2.214 and 2.987 m respectively. The level was then moved and set up near B and the respective readings on A and B were 1.645 and 2.587 m. What is the true difference of level between A and B? 5

7. (a) In a closed traverse, the fore bearings of the lines AB, BC, CD and DA are $52^{\circ}30'$, $132^{\circ}20'$, $250^{\circ}30'$ and $320^{\circ}35'$ respectively. Find the included angles A, B, C and D. 5

(b) Differentiate between WCB and RB system. 4

8. (a) Explain the different sources of error in compass survey. 5

(b) Differentiate between plane and geodetic surveying. 4

9. The following bearings were taken in running a compass :

Lines	FB	BB
AB	$124^{\circ}30'$	$304^{\circ}30'$
BC	$68^{\circ}15'$	$246^{\circ}0'$
CD	$310^{\circ}30'$	$135^{\circ}15'$
DA	$200^{\circ}15'$	$17^{\circ}45'$

At what stations do you suspect local attraction? Find the correct bearings of the lines and also compute the included angles. 9

10. The following consecutive readings were taken with a level :

5.23, 6.24, 5.48, 8.16, 9.84, 6.54, 7.23, 8.54, 9.82, 11.20



The level was shifted after 3rd, 5th and 9th readings. The R.L. of the bench mark was 150.456 m.

(a) Enter the readings in a level field book-form and reduce the levels by height of instrument method.

(b) Apply the arithmetic check. 9


