RE-TEST EXAMINATION, 2021

Semester: 3rd

Subject code: CT-302

Subject: Surveying-I

Full Marks: = (part A-25 + Part B-45)

Duration: 3 hours

Instructions:

1. Questions on Part A are compulsory
2. Answer any five questions from Part B

Part A

1. Fill in the blanks: (1x10=10)

(a) Bearing of a line is measured in _____ direction in WCB system.

(b) Elimination of parallax is done by focussing the _____ and _____.

(c) Representative fraction of the scale 1cm = 50 m is _____.

(d) Bearing of a line is always measured with reference to a _____.

(e) The back bearing of line AB is 145° 40′, its fore bearing is _____.

(f) A series of straight, parallel and equally spaced contour lines represent a _____.

(g) A point on which both fore sight and back sight are taken is called _____.

(h) A relatively permanent point of reference whose reduced level is known is called _____.

(i) The operation of levelling to determine the elevation of points at some distance apart is called _____.

(j) A closed contour lines with one or more higher ones inside it represents a _____.

2. Write true or false (1x10=10)

(a) Datum is a reference surface to which elevations are referred.
(b) In levelling, a station is a point where the level is set up.
(c) Fore sight is always taken at a point of unknown elevation.
(d) In whole circle bearing system, difference between fore bearing and back bearing is always 180°.

(e) Local attraction in compass surveying may exist due to bad weather.
(f) Chain surveying is the most accurate method of making direct linear measurements.
(g) Prismatic compass gives bearing of a line in quadrantal bearing system.
(h) Parallax is a condition in which the image of an object is formed parallel to the cross hairs.
(i) Focussing the eye-piece of a level makes the cross-hairs clear and distinct.
(j) In prismatic compass graduations are engraved inverted.

3. Choose the correct answer (1x5=5)

(a) The magnetic bearing of a line is
(i) The horizontal angle between any lines
(ii) The vertical angle of a line from the horizontal plane
(iii) The horizontal angle between the magnetic meridian and the line
(iv) The vertical angle between the magnetic meridian and the line

(b) A reading is taken on a staff held on a B.M. The staff reading is recorded as 1.875 m and height of instrument is 125.325 m. What is the elevation of B.M.?
(i) 123.54 m (ii) 123.57 m
(iii) 123.45 m (iv) 125.25 m

(c) A 30 m chain was used to measure a line AB which was found to be 205 metres long. The actual length of the line AB was 205.14 m. What was the error in the chain?
(i) 1 cm (ii) 2 cm
(iii) 3 cm (iv) 4 cm

(d) If the reduced bearing of a line is N 57° 45′ 30″ W, its whole circle bearing is
(i) 302° 45′ 3″ (ii) 302° 4′ 30″
(iii) 302° 14′ 30″ (iv) 302° 41′ 30″

(e) The magnetic bearing of a line is 52° 46′, what is the true bearing if the magnetic declination is 4° 28′ west?
(i) 48° 18′ 20″ (ii) 46° 16′ 10″
(iii) 48° 18′ 10″ (iv) 48° 18′ 00″

Part B

4. (a) Define the following: (2x2=4)
(i) Contour interval
(ii) Line of sight

4. (b) What is temporary adjustment? Explain the steps involved in temporary adjustment of a level.
(5)

5. (a) Define the following: (2x2=4)
(i) Contour interval

(ii) Cadastral surveying

5. (b) Fore bearings of the lines AB, BC, CD and DA are 42° 18′, 123° 15′, 205° 30′ and 287° 45′ respectively. Find the interior angles A, B, C and D. (5)

6. (a) Define the following: (2x2 4)
(i) Magnetic meridian
(ii) Levelling

6. (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 1.266 and 2.874 m respectively. The level was then moved and set up near B and the respective readings on A and B were 0.785 and 2.356 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 45°25′, 122°15′, 210°30′ and 285°45′ respectively. Find the included angles A, B, C and D. (5)

7. (b) Define the following: (2x2–4)
(i) Whole circle bearing
(ii) Compensating error

8. (a) Explain five characteristics of contours. (5)

8 (b) Define: (2x2–4)
(i) Plane surveying
(ii) Geodetic surveying

9. The whole circle bearings of the lines of a closed traverse are given below. Calculate the included angles and check for any observational and instrumental error. Considering the bearings of line AB to be correct, compute the correct bearings of other lines. (9)

Lines	*Forebearings*	*Backbearings*
AB	41°20′	221°20′
BC	114°30′	293°50′
CD	164°40′	364°20′
DA	275°30′	94°30′

10. The following consecutive readings were taken with a level: (9)
6.34, 5.16, 5.22, 8.18, 9.82, 6.74, 7.93, 8.60, 9.92, 10.20
The level was shifted after 3rd, 5th and 9th readings. The R.L. of the first point was 250.456 m.

(a) Enter the readings in a level field book-form and reduce the levels by rise and fall method.

(b) Apply the arithmetic check.