PART—A 10 × 3=30

Instructions : (1) Answer **all** questions.

      (2) Each question carries **three** marks.

      (3) Answers should be brief and straight to the point and shall not exceed *five* simple sentence.

1. State any three purposes of surveying. 3

2. State the stages of survey operations. 3

3. What is a well-conditional triangle? Why is it necessary to use? 1+2

4. Sketch the conventional signs for the following : 1×3=3

    (a) Chain lime *(b)* Beachmark *(c)* Wire fencing

5. What precautions a surveyor should observe in booking the field work in field book of a chain survey? 3

6. The length of a line measured with a chain having 20 meters was found to be 400 meters' the chain was found to be 10 cms too short. Find the true length of line. 3

7. Convert the following whole circle bearings into quadrantal bearings.

    (a) 283º 45′ *(b)* 150º 15′ *(c)* 283º 45′ 1×3=3

8. List any three instrumental errors in compass survey.   1×3=3

9. The magnetic bearing of a line is 56° 34′. Calculate true bearing if magnetic declination is 5° 16′ East.   1×3=3

10. State any three uses 'Abney level'.

<div align="center">

PART–B   10 × 5=50

</div>

Instructions : (1) Answer *any* **five** questions
                      (2) Each question carries **ten** marks.
                      (3) Answer should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. (a) Discuss in brief the principles of surveying.   4

    (b) State the classifications of survey based on instruments used.   6

12. (a) Explain the method of chaining on sloping ground.   4

    (b) List out the instruments used in a chain survey and explain briefly the use of each instrument.   6

13. In passing an obstacle in the form of a pond, stations *A* and *D*, on main line, were taken on the opposite sides of the pond. On the left of *AD*, a line *AB*, 225 meter long was laid down, and second line *AC*, 275 meter long, was ranged on the right of *AD*, the points *B*, *D* and *C* being in the same straight line. *BD* and *DC* were then chained and found to be 125 meters and 137.5 meters respectively. Find the length of *AD*.   10

14. The following offsets were taken from a survey line to a curved boundary line.

Distance (in m)	0	20	40	60	80	120	160	200	240	270	300
Offset (in m)	12	10	8	6	4	5	7	8	10	11	13

Find the area between survey line, the curved boundary line and the first and last offsets by —

(a) Trapezoidal rule

(b) Simpson's rule   5+5

15. (a) Define the following the terms :   2+2

    (i) True and magnetic bearings

    (ii) Whole circle and reduced bearings

(b) Define local attraction. How do you detect it?   6

16. The following bearings were observed in running a closed traverse. Sketch and compute the interior angles of the traverse and apply the usual check: 10

Line	F.B.	B.B
AB	110° 15′	290° 15′
BC	35° 15′	215° 15′
CD	276° 30′	96° 30′
DE	195° 30′	15° 30′
AE	132° 15′	312° 15′

17. The following bearings were observed in running a closed traverse: 10

Line	F.B.	B.B
AB	74° 00′	254° 00′
BC	91° 00′	271° 00′
CD	166° 00′	343° 00′
DE	177° 00′	00° 00′
AE	189° 00′	9° 00′

At what stations do you suspect the local attraction? Determine correct bearings.

18. (a) What is pantagraph? Explain the working principle of a pantagraph with a neat sketch.   6

(b) What is the use of Planimeter?   2

* * *