

Total No. of printed pages = 4

43(2) SULE 2'6

2013

SURVEYING AND LEVELLING

Paper : ENG 2'6

Full Marks - 100

Pass Marks - 40

Time - Three hours

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

Answer question Nos. 5 and 6 and any *eight* from the rest.

1. Define surveying and write down the primary divisions of surveying in brief. 2+8=10

2. (a) Write down the principles of surveying.
(b) Write down the principle of chain surveying. 5+5=10

3. (a) Write in brief on the work of a surveyor.
(b) The length of a survey line was measured with a 20m chain and found to be equal to 1200 metres. As a check, the length was again measured with a 25m chain and was found to

[Turn over

be 1212m. On comparing the 20m chain with the test gauge, it was found to be 1 decimetre too long. Find the actual length of the 25m chain used. $5+5=10$

4. (a) What do you mean by true meridian and magnetic meridian ?

(b) The magnetic bearing of a line is $62^{\circ}30'$. What is the true bearing of the line if the magnetic declination is

(i) $3^{\circ}45'$ W

(ii) $4^{\circ}10'$ E

$5+5=10$

5. (a) Write down on local attraction.

(b) The following fore and back bearings were observed in traversing with a compass in place where local attraction was suspected.

<u>Line</u>	<u>F.B</u>	<u>B.B</u>
AB	$38^{\circ}30'$	$219^{\circ}15'$
BC	$100^{\circ}45'$	$278^{\circ}30'$
CD	$25^{\circ}45'$	$207^{\circ}15'$
DE	$325^{\circ}15'$	$145^{\circ}15'$

Find the corrected fore and back bearings and the true bearings of each of the lines given that the magnetic declination was 10° W.

$2+8=10$

6. The following staff readings were observed successively with level, the instrument having been moved forward after the second, fourth and eighth readings :

$0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030, 3.765$

The first reading was taken with the staff held upon a benchmark of elevation 182.135 . Enter the readings in level book from and reduce the levels. Apply the usual checks. Find the difference in level between the first and the last points. 10

7. Write down the difference between surveyors and prismatic compass. 10

8. Write down the characteristics of contours with diagram. 10

9. (a) Convert the following R.C.Bs to W.C.Bs : $5+5=10$

(i) N $22^{\circ}30'$ E

(ii) S $9^{\circ}48'$ E

(iii) S $31^{\circ}54'$ W

(iv) N $32^{\circ}36'$ W

(v) S $86^{\circ}12'$ E

(b) Convert the following W.C.Bs to R.C.Bs :

(i) $192^{\circ}24'$

(ii) $299^{\circ}48'$

(iii) $86^{\circ}30'$

(iv) $174^{\circ}18'$

(v) $200^{\circ}10'$

(c) An observer standing on the deck of a ship just sees a lighthouse. The top of the lighthouse is 42 metres above the sea-level and the height of the observer's eye is 6 metres above the sea-level. Find the distance of the observer from the lighthouse.

10. What are the working operations in plane table surveying ? Explain in brief. 10
11. What are the two main methods of orienting the plane table ? 10
12. Write down the advantages and disadvantages of plane table, surveying ? 10