

22205

11920

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) State the classification of surveying based on the nature of field.
- (b) State the object of surveying.
- (c) List any four instrument used for linear measurement.
- (d) State any four types of tapes.
- (e) State the types of benchmarks.
- (f) Define :
 - (i) Back sight reading
 - (ii) Height of instrument
- (g) Write down any two precautions to be taken while using planimeter.

2. Attempt any THREE of the following :**12**

- (a) A road actually 1420 m long was found 1414 m when measured by a defective 30 m chain. How much correction does the chain need ?
- (b) Explain 'Stepping Method' of measuring horizontal distance of sloping ground with sketch.
- (c) Draw a conventional symbols for
 - (i) Embankment
 - (ii) Pond
 - (iii) Temple
 - (iv) Bridge
- (d) Following are the observed fore bearing of the line. Find their back bearings.
 - (i) $40^{\circ} 30'$
 - (ii) $N 38^{\circ} 30' W$
 - (iii) $169^{\circ} 30'$
 - (iv) $N 25^{\circ} 30' E$

3. Attempt any THREE of the following :**12**

- (a) Differentiate between WCB & RB.
- (b) Convert the following WCB to RB. Give quadrant of the line.
 - (i) $60^{\circ} 30'$
 - (ii) 298°
 - (iii) $128^{\circ} 30'$
 - (iv) $269^{\circ} 30'$
- (c) State the functions of any four component parts of prismatic compass.

- (d) The following bearing were taken in a closed compass traverse survey. Determine the correct bearing. Find station affected by local attraction.

Line	FB	BB
AB	48° 25'	230°
BC	177° 45'	356°
CD	104° 15'	284° 55'
DE	165° 15'	345° 15'
EA	259° 30'	79°

4. Attempt any **THREE** of the following :

12

- Distinguish between closed traverse and open traverse.
- Explain the procedure of profile levelling and cross-sectioning.
- State and explain the temporary adjustment of dumpy level.
- Explain fly levelling and also state its purpose.

5. Attempt any **TWO** of the following :

12

- The following consecutive reading were taken with a dumpy level and 4 m levelling staff on a continuously sloping ground at a common interval of 30 metre.

3.820 on A, 3.125, 2.350, 1.580, 0.830, 3.500, 2.830, 2.010, 1.400, 0.550, 3.650, 2.650, 1.850, 0.965 on B.

The R.L. of A was 500 m, make up a level book page and apply usual checks.

Use rise and fall method.

P.T.O.

- (b) Determine the gradient of line 'AB' if the following reading were taken from A to B at a 30 m interval. 0.578, 0.933, 1.768, 2.450, 3.005, 0.567, 1.181, 1.888, 3.679, 0.612, 0.705 and 1.810.

The instrument was shifted after 5th and 9th reading. The R.L. of first station was 100 m. Use H.I. method.

- (c) Draw a contour lines representing different features :
- (i) A gentle slope
 - (ii) A hill
 - (iii) A pond
 - (iv) Overhanging cliff
 - (v) A valley lines
 - (vi) A ridge lines

6. Attempt any TWO of the following :

12

- (a) Explain the characteristics of contour with suitable sketch.
- (b) Explain the procedure of finding area of irregular figure by polar planimeter. Also draw sketch of polar planimeter.
- (c) The following reading were taken when area was measured by a polar planimeter, the tracing arm being set to 100 sq. cm. Determine the area of fig.

IR	FR	Position of Anchor point	Remarks
7.825	3.425	Outside the fig.	The zero of disc passed fixed index marks once in clockwise direction
1.250	4.370	Inside the fig.	Index marks passes twice in reverse direction