22205

23242

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) 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) Define the term "Surveying".

(b) Write the classification of surveying based on Nature of field.

(c) Define Base line and check line.

(d) List the types of meridian.

(e) State the types of bench marks.

(f) Define Contour and Contour line.

(g) List any four component parts of digital planimeter.

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

(a) Explain principles of surveying.

(b) Draw conventional symbols for :

(i) Embankment

(ii) Cutting

(iii) Road Bridge

(iv) Level Crossing

(c) List any four component parts of Prismatic compass with their function in brief.

(d) Define the following terms :

(i) Datum

(ii) Change point

(iii) Profile levelling

(iv) Bench mark

3. Attempt any THREE of the following : 12

(a) Describe the procedure of adjustment of a closing error in compass traversing.

(b) Convert the following from WCB to RB.

(i) 330° 25'

(ii) 215° 65'

(iii) 145° 95'

(iv) 30° 60'

(c) List any four fundamental axis of dumpy level and write the relationship of them.

(d) Distinguish between H2 method and Rise & fall method w.r.t. four points.

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

(a) Explain the procedure of profile levelling and cross-sectional levelling.

(b) Following consecutive readings were taken with a dumpy level :

0.670, 1.555, 1.350, 2.400, 2.895, 3.560, 1.150, 1.855, 2.945, 3.750, 0.845, 1.065, 1.970, 2.540

RL of TBTq is 500.000 m. Calculate the RL's of all the points.

(c) Write any four uses of contour map.

(d) Describe the procedure for measurement of area by using digital planimeter.

(e) Explain in detail direct method of contouring.

5. Attempt any TWO of the following : **12**

(a) Plot the following cross staff survey of field and calculate area in "m^2".

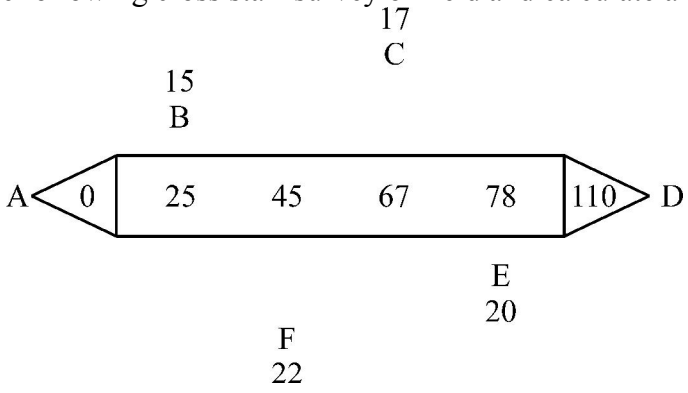

Fig. No. 1

(b) Calculate included angles for closed traverse and apply usual check.

Line	FB	BB
AB	46°30'	226°30'
BC	116°30'	297°
CD	169°	350°
DA	290°	112°30'

(c) Following consecutive readings were taken on levelling staff on sloping ground at a common interval 30 m.

0.760, 1.515, 1.940, 2.400, 2.980, 3.655, 1.020, 1.900, 2.495, 3.670, 0.870, 1.080, 1.700, 2.500

RL of first point is 150.000 m. Prepare a page of field book and enter the readings. Calculate the RL's by Rise and fall method. Also find gradient of first point and last point.

6. Attempt any TWO of the following : **12**

(a) On an old map, the bearing of a line is given as 150°0'. The declination at the time of survey was recorded as 3°45'E. If the present declination is 3°15'E, find the magnetic bearing to which this line has to be set now. Also find the BB of the same line. Express it in both WCB & QB system.

(b) The following figures were extracted from a level book, some of the readings are missing. Find them indicated by "×" and apply usual checks and complete it.

Stn.	BS	IS	FS	Rise	Fall	RL	Remark
01	2.285					232.460	BM_1
02	1.650		×	0.020			
03		2.105			×		
04	×		1.960	×			
05	2.050		1.925		0.300		
06		×		×		232.255	BM_2
07	1.690		×	0.340			
08	2.865		2.100		×		
09			×	×		233.425	BM_3

(c) Explain characteristics of contour with neat sketches. (Any six).