Advanced Surveying (313321)

MSBTE Diploma · K-Scheme · Model Question Paper — Set C

Time: 3 Hours **Max. Marks: 70**

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. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following: **10**

a) State any two objects of tacheometric surveying.

b) Define horizontal curve and vertical curve.

c) Enlist any four modern surveying equipments.

d) State any four uses of EDM.

e) Define electromagnetic energy.

f) Define photogrammetry. State any one merit of it.

g) State any two salient features of drones.

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

a) Explain the principle of stadia tacheometry and write the distance equation for horizontal line of sight.

b) Explain four properties of a simple circular curve.

c) Write the procedure of setting out a simple circular curve by Rankine's method of deflection angles.

d) State the procedure to determine tacheometric constants in the field.

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

a) Two straights meet at a chainage of 2048.40 m with a deflection angle of 52°. The radius of the circular curve is 180 m. Calculate: i) Tangent length ii) Length of curve iii) Length of long chord iv) Apex distance v) Chainages of T_1 and T_2.

b) Explain the procedure of measurement of horizontal and vertical angles using a digital theodolite.

c) Explain the procedure of running a closed traverse with a total station.

d) State any four components of EDM and their functions.

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

a) State any four uses of aerial surveying.

b) Explain any two applications of remote sensing in civil engineering.

c) State and explain the key components of GIS.

d) Define GPS. Explain with a sketch how a GPS receiver finds its position.

e) State and explain any one method of aerial surveying.

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

a) A tacheometer was set up at station A and the following readings were taken on a staff held vertically. The constants of the tacheometer are 100 and 0.30 m.

Inst. station	Staff station	Vertical angle	Stadia readings (m)	Remark
A	B.M.	+5°48′	1.020, 1.235, 1.450	RL of B.M. = 312.450 m
A	C	−3°36′	0.825, 1.140, 1.455	

Determine the horizontal distance AC and the RL of C.

b) The following readings were taken with a tacheometer on a vertically held staff (line of sight horizontal). Find the tacheometric constants.

Distance (m)	75	175
Stadia readings (m)	0.978, 1.350, 1.722	0.828, 1.700, 2.572

c) Calculate the ordinates at 15 m intervals from the long chord to set out a simple circular curve of radius 220 m and long chord 90 m. Justify your answer with a neat sketch.

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

a) Describe the stepwise procedure for setting out the layout of a small building using a total station.

b) Write the sources of errors in GIS.

c) Explain any three applications of photogrammetry in civil engineering.

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in