**'I' Scheme**

# Sample Question Paper

**Program Name**      : Civil Engineering Program Group

**Program Code**      : CE/CR/CS

**Semester**              : Third

**Course Title**          : Advanced Surveying

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

| 22301 |
|---|

**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)  Preferably, write the answers in sequential order.

**Q.1 Attempt any FIVE of the following.**                                            **10 Marks**
   a.   State the principle of plane table survey.
   b.   Define-Transiting and Swinging of telescope.
   c.   What is face left and face left observation?
   d.   Recall the formula for calculating horizontal distance by using tacheometer when line of sight is inclined and staff held vertical.
   e.   List different types of curves used in road and railway alignments.
   f.   State uses of total station.
   g.   State uses of GIS.

**Q.2 Attempt any Three of the following.**                                          **12 Marks**
   a.   Describe the function of following accessories used in plane table survey
        i)   Telescopic Alidade.
        ii)  Trough Compass.
        iii) Plumbing fork.
        iv)  Spirit level.
   b.   Explain the function s of lower clamping, upper clamping, lower tangent and upper tangent screw while measuring horizontal angle using theodolite.
   c.   Describe the field method of determining constants of tacheometer.
   d.   Draw labeled sketch of simple circular curve.

**Q.3) Attempt any Three of the following.**                                         **12 Marks**
   a.   Explain the procedure of measurement of horizontal angle using transit theodolite.
   b.   Explain the procedure of measurement of horizontal angle using one second micro optic theodolite.

c. Describe the procedure to measure distances and coordinates of the given points using Total Station instrument.

d. Explain the use of GIS and GPS in civil engineering.

**Q.4) Attempt any Three of the following.**                                      **12 Marks**

a. Compare Radiation and intersection method of plane tabling on any four points.

b. A traverse survey was conducted and the data obtained is given in table below. Find the magnitude and direction of closing error.

| Line | Length (m) | Bearing |
|------|-----------|---------|
| AB | 156.5 | $78^0 40'$ |
| BC | 178.2 | $152^0 32'$ |
| CD | 234.8 | $251^0 18'$ |
| DA | 202.6 | $356^0 15'$ |

c. The survey data of a traverse is given in table below. The length and bearing of one side were not recorded during the survey. Find the missing measurement.

| Line | Length (m) | Bearing |
|------|-----------|---------|
| AB | 201.8 | $315^0 0'$ |
| BC | 288.4 | $60^0 30'$ |
| CD | 192.6 | $145^0 15'$ |
| DA | missing | missing |

d. The following observation were made by tacheometer. Find the constants of tacheometer.

| Distance | 50m | 100m |
|----------|-----|------|
| Stadia Readings | 1.235, 1.483, 1.731 | 1.345, 1.843, 2.341 |

e. Explain the procedure for Setting out a simple circular curve from following data by offsets from long chord method
Radius =100m
Deflection Angle=$30^0$
Chainage at point of intersection=1250m

**Q.5) Attempt any Two of the following.**                                      **12 Marks**

**a.** Calculate independent coordinates of all the survey lines of following traverse

| Line | Length in m | WCB |
|------|-------------|-----|
| AB | 161.2 | $121^0 30'$ |
| BC | 141.28 | $18^0 09'$ |
| CD | 201.4 | $218^0 31'$ |
| DA | 121.2 | $332^0 27'$ |

b. A traverse was run with transit theodolite , the length , bearing of first line and included angles are observed . Apply step wise procedure for preparation of Gale's traverse table

c.  A tacheometer fitted with anallatic lens was set up at 'A' and the following readings were obtained on vertically held staff. Assume multiplying constant 100 and R.L of B.M = 500m

| Inst. station | Staff Station | Vertical Angle | Stadia Readings in m |
|---|---|---|---|
| A | B.M | $+6^00'$ | 1.0, 1.27, 1.52 |
| A | B | $-3^00'$ | 1.13, 1.135, 1.230 |

Find –i) The distance AB
    ii) R.L of B.

**Q.6) Attempt any Two of the following.**                                    **12 Marks**
   a.  Apply the step wise procedure for preparation of layout of small building by Total Station
   b.  Describe step wise procedure of contouring with Total Station
   c.  Identified the areas where remote sensing and GPS is applicable. Justify your answer with suitable example.

**'I' Scheme**

# Sample Test Paper - I

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|---|---|---|
| **Program Name** | : Civil Engineering Program Group | |
| **Program Code** | : CE/CR/CS | |
| **Semester** | : Third | **22301** |
| **Course Title** | : Advanced Surveying | |
| **Max. Marks** | : 20 | **Time : 1 Hour** |

**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) Preferably, write the answers in sequential order.

**Q.1 Attempt any FOUR.**                                      **08 Marks**
    a) List Accessories used in Plane Table survey
    b) State the principle of plane tabling.
    c) State the uses of Transit Theodolite
    d) List the fundamental axes of Theodolite
    e) Define Latitude and Departure.
    f) State the principle of tacheometry.

**Q.2 Attempt any THREE.**                                     **12 Marks**
    a) Explain the orientation of plane table by back sighting
    b) Explain the procedure of measurement of horizontal angle by using transit Theodolite.
    c) Explain the procedure of measuring bearing of a line using theodolite.
    d) A traverse survey was conducted with theodolite and the data obtained is given in table below. Find the missing length and bearing of line DA.

| Line | Length (m) | Bearing |
|---|---|---|
| AB | 156.5 | $78^0 40'$ |
| BC | 178.2 | $152^0 32'$ |
| CD | 234.8 | $251^0 18'$ |
| DA | missing | missing |

    e) The following observation were made by tacheometer. Find the constants of tacheometer.

| Distance | 75m | 125m |
|---|---|---|
| Stadia Readings | 2.245, 2.470, 2.755 | 2.345, 3.100, 3. 550 |

**'I' Scheme**

# Sample Test Paper - II

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|---|---|---|
| **Program Name** | : Civil Engineering Program Group | |
| **Program Code** | : CE/CR/CS | |
| **Semester** | : Third | **22301** |
| **Course Title** | : Advanced Surveying | |
| **Max. Marks** | : 20 | **Time : 1 Hour** |

**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) Preferably, write the answers in sequential order.


**Q.1 Attempt any FOUR.**                                     **08 Marks**

   a) State the relation between radius of curve and degree of curve for 30m chord length

   b) State the principle of EDM

   c) State the uses of total station

   d) List the function keys of total station

   e) State the uses GPS

   f) Define Active and Passive system of remote sensing.


**Q.2 Attempt any THREE.**                                    **12 Marks**

   a) The chainage of the point of intersection and tangent point of curve are 1083m and 829m respectively. The deflection angle of the curve is $48^0$. Compute the radius, length of long chord, apex distance and versine distance.

   b) Explain the procedure of measurement of horizontal angle by using total station.

   c) Compare total station and micro optic theodolite on any four points.

   d) Explain the procedure of measurement of horizontal distance by using total station.

   e) Explain with appropriate example application of GIS.