Seat No.: _____      Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY
### BE - SEMESTER–IV EXAMINATION – SUMMER 2016

**Subject Code:140601**                                    **Date:03/06/2016**
**Subject Name:Advanced Surveying**
**Time:10:30 AM to 01:00 PM**                           **Total Marks: 70**
**Instructions:**
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

| | | | |
|---|---|---|---|
| **Q.1** | **(a)** | Discuss different types of Distomats. | **07** |
| | **(b)** | Discuss types of Total stations & briefly describe salient features of total station. | **07** |
| **Q.2** | **(a)** | Define remote sensing. Enlist types of remote sensing. List the applications of remote sensing. | **07** |
| | **(b)** | Discuss various resolutions of remote sensing data. | **07** |
| | | OR | |
| | **(b)** | What is GPS? Discuss three segments of GPS. | **07** |
| **Q.3** | **(a)** | Define: GIS. What are the objectives of GIS? Discuss the key components of GIS. | **07** |
| | **(b)** | Define the terms for photogrammetry: (i) Flight line, (ii) Isocentre, (iii) Tilt, (iv) Swing, (v) Crab, (vi) Drift and (vii) Principal point. | **07** |
| | | OR | |
| **Q.3** | **(a)** | Discuss Raster and Vector data format for GIS. | **07** |
| | **(b)** | The scale of an aerial photograph is 1 cm = 100 m and photograph size is 15 cm x 15 cm. Determine the number of photographs required to cover an area of 15 km x 15 km if longitudinal lap is 60% and side lap is 30%. | **07** |
| **Q.4** | **(a)** | What is tacheometry? Briefly discuss purposes of tacheometirc surveying and methods of tacheometry. | **07** |
| | **(b)** | Determine the gradient from point A to point B from the following observations made using techeometer fitted with anallatic lens at instrument station P for staff held vertically. | **07** |

|  Staff point | Bearing | Vertical angle | Staff reading |
|---|---|---|---|
| A | 130° | +10°40' | 1.360, 1.915, 2.470 |
| B | 220° | - 5°20' | 1.065, 1.885, 2.705 |

| | | | |
|---|---|---|---|
| | | OR | |
| **Q.4** | **(a)** | Explain the field procedure of finding out tacheometric constant and carrying out tacheometric contour survey on hilly terrain. | **07** |
| | **(b)** | Write purposes of field astronomy for civil engineers and write characteristics of spherical triangle. | **07** |
| **Q.5** | **(a)** | Discuss classification of triangulation systems w.r.t. control point establishment. | **07** |
| | **(b)** | The following observation were recorded for angle under identical conditions: | **07** |

| | | |
|---|---|---|
| 82⁰ 20' 00" | 82⁰ 21' 20" | 82⁰ 21' 40" |
| 82⁰ 20' 40" | 82⁰ 19' 40" | 82⁰ 21' 20" |

Calculate: (i) Probable error of a single observation,  (ii) Probable error of the mean, and (iii) Most probable value of the angles.

OR

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | Give comparison for mistakes, systematic errors and accidental errors, also give suitable examples. | **07** |

**(b)** The elevations of two proposed triangulation stations A and B, 100 km apart, are **07** 241 m and 417 m, above MSL respectively. The elevation of an intervening peak at P, 60 km from A is 151 m. Ascertain if A and B are inter-visible, and if not, find the height scaffold required at B so that the line of sight clears P by 3 m.

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