

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV(New) • EXAMINATION – WINTER 2016

Subject Code:2140601

Date:22/11/2016

Subject Name:Advanced Surveying

Time:02:30 PM to 05:00 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 Attempt following objective questions

(14)

- (1) An anallatic lens is provided to make the additive constant equal to
(a) 25 (b) 00 (c) 100 (d) 55
- (2) The multiplying constant of the tacheometer is given by
(a) f/i (b) $f-i$ (c) $f+d$ (d) $f+2d$
- (3) In second order or secondary triangulation, length of sides is
(a) 16 to 150 km (b) 10 to 25 km (c) 2 to 10 km (d) None of above
- (4) The optimal angle of a triangle for triangulation is
(a) $75^{\circ} 30' 20''$ (b) $60^{\circ} 15' 30''$ (c) $66^{\circ} 45' 40''$ (d) $56^{\circ} 13' 40''$
- (5) Errors arising from carelessness of the observer are known as
(a) Systematic errors (b) Compensating errors (c) mistakes (d) discrepancy
- (6) The weight of an observation is
(a) Its probable value
(b) A number indicating the trustworthiness of measurements
(c) The average value from a number of observation
(d) The value indicating least error in the value
- (7) One nautical mile is equal to
(a) 1 k.m (b) 1.5 k.m (c) 2 k.m (d) 1.853 k.m
- (8) GST means
(a) Green Sidereal Time (b) Greenwich Sidereal Time
(c) Grey Side Time (d) None of above
- (9) When opposite edges of photographs are not parallel to flight lines is known as
(a) Crab (b) Drift (c) Tilt (d) None of above
- (10) The normal longitudinal overlap is generally kept
(a) 60 % (b) 15 % (c) 80% (d) 35%
- (11) EDM means
(a) Electrical data management (b) Electronic data management
(c) Electronic distance meter (d) Electronic distance measurement
- (12) Tellurometer was invented by
(a) Wild Heerbrugg (b) Dr. Eric Bergstrand (c) Dr.T L Wadley (d) None of above
- (13) A global positioning system operated by US department of defense uses
(a) 6 satellites (b) 12 satellites (c) 18 satellites (d) 24 satellites
- (14) GPS means
(a) Green Position System (b) Global position Satellites
(c) Geographical Public System (d) Global Positioning System

Q: 2 (a) Explain principle of tacheometry.

(03)

(b) Enlist characteristics of tacheometer

(04)

(c) A tacheometer was set up at a station C & the following readings were obtained on a staff vertically held.

(07)

Inst. Station	Staff station	Vertical angle	Hair readings	Remark
C	B.M	$-5^{\circ} 20'$	1.150,1.80,2.450	R.L of B.M= 750.5 m
C	D	$+8^{\circ} 12'$	0.75,1.5,2.25	

Calculate the horizontal distance CD & R.L of D when the constant of instrument are 100 & 0.15.

OR

- (c) Describe the expression for horizontal and vertical distances by the fixed hair method when the staff is held vertically & the measured angle is that of elevation. (07)

- Q: 3 (a) Define geodetic surveying, base line, well-conditioned triangles (03)
(b) Explain use of triangulation system. (04)
(c) What are the factors that affect the selection of site for base line? (07)

OR

- Q: 3 (a) Define in-direct observation, weight of a quantity, accidental error (03)
(b) Explain any four laws of weight. (04)
(c) Determine the most probable value of the angles A, B & C of a triangle from the following observed angles & the respective probable errors of measurements. (07)
 $\angle A = 64^{\circ} 12' 40'' \pm 3''$ $\angle B = 55^{\circ} 14' 23'' \pm 2''$ $\angle C = 60^{\circ} 33' 21'' \pm 4''$
Q: 4 (a) Define longitude, hour angle, nadir (03)
(b) Explain main purposes of field astronomy (04)
(c) Enlist the methods of determination of latitude & explain any one in detail. (07)

OR

- Q: 4 (a) Define photogrammetry & explain uses of photogrammetry. (03)
(b) Define overlap & explain importance of overlaps. (04)
(c) The scale of an aerial photograph is 1 cm = 100 m. The photograph size is 23 cm x 23 cm. Determine the number of photographs required to cover an area of 100 sq.km if the longitudinal lap is 60 % & the side lap is 30 %. (07)
Q: 5 (a) Write short note on electromagnetic spectrum (03)
(b) What is total station? Explain the uses of Total station (04)
(c) Explain uses of GPS (07)

OR

- Q: 5 (a) Define remote sensing. Enlist types of remote sensing (03)
(b) List applications of remote sensing (04)
(c) Write application of GIS in civil engineering (07)