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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, MAY 2013

GEOINFORMATIC ENGINEERING BRANCH

SIXTH SEMESTER (Regulation 2008)

GI9351 Satellite Geodesy

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What is Geodetic Satellite? Name any six Geodetic Satellites.
2. Compute the MSL for a station whose GPS height is -59.865m, if geoidal undulation in the area is 71.523m.
3. List the advantages of CCD camera over optical camera in the field of determination of satellite direction.
4. Write short notes on TRANSIT satellite.
5. How many number of healthy NAVASTAR GPS satellites are available for users as on date in Block II, IIA, IIR, IIR-M, IIF series?
6. Differentiate parallel channel receiver and fast sequencing receiver.
7. List the different methods used for solving ambiguity.
8. How many number of possible baselines generated, if 7 GNSS receivers are simultaneously used for survey work for a session?
9. Write short notes on Dilution of Precision.
10. How many pseudo range observations to be stored, if GNSS receiver switched on between 11h 25^m 13^s AM to 01^h 04^m 58^s PM and the epoch stored at an interval of 5sec for 14 GNSS satellites?

Part – B (5 x 16 = 80 marks)

11. i. Describe Three-axis mounting satellite camera and Equatorial mounting satellite camera. (4)
ii. Derive an expression for observation equation of position by Doppler shift. (12)
 - 12a. i. Discuss the basic concept of satellite geodesy. (6)
ii. Explain Kepler's laws of planetary motion. (6)
iii. Why different time systems are employed in satellite Geodesy? (4)
- (OR)
- 12b. i. The geodetic survey held at Gulf of Guinea for establishment of geodetic connection between Sao Tome island and Saint Helena island. The base station coordinate at Sao Tome island is X 6336809.578m, Y 725057.216m and Z 4011.396m and the base station coordinate at Saint Helena island is Latitude 15° 55' 20.81" S, Longitude 5° 42' 13.95" W and height 637.126m. Compute the horizontal distance between the two base stations. (12)
ii. Distinguish between Global Navigation System and Regional Navigation system. (4)

- 13a. i. Explain the Space segment in NAVASTAR GPS system. (8)
 ii. Describe the components of GPS receiver (8)
 (OR)
- 13b. i. Explain NAVASTAR GPS signal structure in detail. (12)
 ii. Discuss sources of errors in GPS work (4)
- 14a. i. The precise geodetic static survey carried out at Chennai, Bangalore and Hyderabad using GNSS receiver and Choke ring antenna. The GNSS survey work conducted at Chennai from 6.25AM (IST) on 28.03.2013 to 4.45PM (IST) on 01.04.2013. In Bangalore the GNSS survey work conducted from Julian day 89 of year 2013 and GPS week of 709 and time 567000 to GPS week 710 and time 453600. The GNSS survey work conducted at Hyderabad from GPS week of 709 and time 495000 to 5.45AM (IST) on 02.04.2013. Compute the common observation time for each baseline. (12)
 ii. What is cycle slips? List the reasons for cycle slips. (2)
 iii. What are errors reduced or eliminated by single difference and double difference? (2)
 (OR)
- 14b. i. What are the different survey techniques employed in GNSS survey? Explain all methods in detail. (10)
 ii. Write functional flow diagram of GPS software package. (6)
- 15a. i. Explain the trilateration adjustment procedure for braced quadrilateral. (14)
 ii. Discuss basic principles of VLBI. (2)
 (OR)
- 15b. List the application of GPS in various fields. Explain any three applications in detail. (16)