

AE 457/641 Navigation and Guidance

Insemester Test: 2:30pm – 3:30pm, 29/08/07

Total Marks – 10

Notes written in one's own handwriting may be used. Photocopies or printed matter may not be used.

1. The VOR equipment on board an aircraft reports that the amplitude modulated signal radiated by a VOR station lags the frequency modulated signal radiated by the same station by 23.5° . What is the bearing of the aircraft as seen by the station? What is the bearing of the station as seen by the aircraft? (1)
2. Today, August 29, 2007, the sun is directly overhead the latitude $9^\circ 24'$. If an observer measures the maximum elevation (true altitude) of the sun over the course of the day to be $33^\circ 23'$, what is the observer's latitude? (2)
3. In the problem above, what will be the elevation (true altitude) of the sun measured by an observer in Mumbai (latitude $18^\circ 56'N$, longitude $72^\circ 51'E$) on August 29, 2007, if the sun and the first point of Aries have a GHA of $269^\circ 43'$ and $67^\circ 4.3'$, respectively, at the time of the observation? (3)
4. A vessel moving in still waters at 5 knots along a true course of 23° measures the true bearing of a point A to be 302° at a certain instant. Thirty minutes later, the vessel measures the true bearing of a point B to be 33° . If the distance between points A and B is 8 nautical miles, and the true bearing of B as seen by A is 50° , then find the position of the vessel relative to A at the time of the second observation. (4)