VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
B.E. (ECE) IV Year II-Semester Makeup Examinations, June-2019

Global Positioning Systems
(Elective-III)

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

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A *(10 × 2 = 20 Marks)*

1. Define Trilateration concept.
2. Why spread spectrum technology is used in GPS?
3. Define the term Ephemeris and give its significance.
4. Explain the significance of User equivalent range error (UERE).
5. Calculate the vertical ionospheric delay and slant factor for the satellite vehicle observed with an elevation angle of 300 and slant delay of 12.5m.
6. Calculate the Julian day of Jan 1st, 2000, 12.00 pm.
7. Briefly Explain Wide Area Differential GPS (WADGPS).
8. Compare the important characteristics of Local Area Augmentation System (LAAS) and Wide Area Augmentation System (WAAS).
9. List the merits and demerits when GPS integrated with Inertial Navigation System (INS).
10. What are the Future GPS satellite and new signals?

Part-B *(5 ×10 = 50 Marks)*

11. a) Explain the basic principle of operation of GPS with the help of suitable architecture block diagram. [6]
    b) Discuss about various types of Dilution of Precisions and also write the factors affecting the DOP. [4]

12. a) List out the features of World Geodetic System (WGS-84) and Indian Geodetic System (IGS). [8]
    b) Explain about Ionospheric and Tropospheric errors in GPS signal calculations. [2]

13. a) Describe GPS observation and navigation data formats. [6]
    b) Discuss the GPS signal structure using relevant diagrams. [4]

14. a) Describe code based and carrier based Differential Global Position System (DGPS) techniques. [6]
    b) What is the necessity of GAGAN system? [4]

15. a) Compare the constellations of GPS, GLONASS and Galileo systems. [5]
    b) Discuss about integration of GPS / cellular and bring out its advantages. [5]

16. a) Explain the different Coordinate systems used in GPS to calculate the range and position. [5]
    b) Differentiate between Global and Regional Datum's. [5]

17. Answer any *two* of the following:
    a) Write about code phase measurements. [5]
    b) Compare Space based Augmentation system (SBAS) and Ground based Augmentation system (GBAS). [5]
    c) Mention military and space applications of GPS. [5]

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