Code No. : 5162/M

FACULTY OF ENGINEERING
B.E. 4/4 (ECE) II Semester (Main) Examination, May/June 2012
GLOBAL POSITIONING SYSTEM (Elective – II)

Time : 3 Hours] [Max. Marks :-75

***Note**: Answer **all** questions from Part – **A**, Answer **any five** questions from Part – **B**.*

PART – A **(Marks : 25)**

1. Explain briefly about GPS Time. **2**
2. What is the significance of DOP in positioning estimation ? **3**
3. Calculate ionospheric group delay on L_1 frequency if the pseudo range measurements on the GPS frequencies $f_1 = 1575.45$ MHz and $f_2 = 1227.60$ MHz are $P_1 = 23525863.60400$ m and $P_2 = 23525871.73040$ m respectively. **3**
4. Distinguish between Global and Regional datum. **2**
5. Discuss briefly about GPS signal structure. **3**
6. What do you understand by the terms spoofing and antispoofing ? **2**
7. Explain why augmentation is necessary for GPS. Mention the names of any three augmentation systems being implemented around the world. **3**
8. List out the salient features of wide area DGPS. **2**
9. Explain about GPS/cellular integration. **3**
10. Discuss about future GPS satellites. **2**

PART – B **(Marks : 50)**

11. a) Explain in detail about various steps involved in determination of satellite position. **7**
    b) List out the features of GPS constellation. **3**

12. a) The error budgets from various sources for a C/A Code L_1 user without SA are as follows :
    i) Space/Control Segment/Reference Station : 3m,
    ii) Ionosphere : 8 m
    iii) Troposphere : 1.5 m
    iv) Multipath : 2.5 m
    v) Receiver noise and resolution : 1.5 m
    vi) Other : 0.5 m

    Calculate the system UERE. Determine the horizontal position error (2drms), if HDOP is 1.6. **5**

    b) Compare ephemeris and receiver clock errors. **5**

13. Discuss the application of GPS in the following areas :
    i) Transportation **2½**
    ii) Air navigation **2½**
    iii) Military **2½**
    iv) GIS **2½**

14. Explain the principle of operation of GAGAN with the help of a neat block diagram. **10**

15. Discuss in detail about the principle of operation GLONASS with respect to space, control and user segments. **10**

16. a) Explain the integration of GPS and INS, highlighting their advantages. **6**

    b) Discuss about the GPS navigation data format. **4**

17. Write short notes on **any two** of the following : **10**
    a) ECI
    b) DGPS errors.