

FACULTY OF ENGINEERING

B.E. IV/IV Year (ECE) II Semester (Main) Examination, May/June, 2011

GLOBAL POSITIONING SYSTEM

(Elective – II)

Time : 3 Hours]

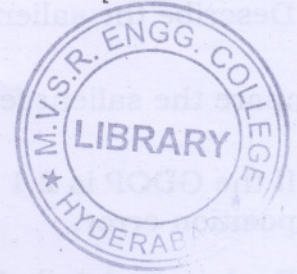
[Max. Marks : 75

*Answer all questions from Part A.**Answer any five questions from Part B.***Part A** – (Marks : 25)

1. Calculate the Julian day of January 1, 2000, 00 hrs. 2
2. Compare GDOP, VDOP and PDOP. 3
3. Calculate the ionospheric range delay, given the following parameters. 3
 $F_1 = 1575 \text{ MHz}$, $F_2 = 1227 \text{ MHz}$, $P_1 = 20,100 \text{ km}$, $P_2 = 20,050 \text{ km}$
4. Explain the term UERE. 2
5. Describe briefly the application of GPS in Precision farming. 3
6. What do you mean by GPS code and Carrier phase measurements. 2
7. List out the limitations of DGPS. 2
8. Compare code-base and Carrier based DGPS techniques. 3
9. Describe briefly the integration of GPS / cellular. 3
10. List out the salient features of Future GPS satellites. 2

Part B – (Marks : 50)

11. (a) Explain the principle of operation and architecture of GPS with the help of a neat diagram. 6
- (b) Calculate the angular velocity and speed of the GPS Satellite. Noting GPS SV altitude as 26,560 km, estimate its orbital period. 4
12. (a) Explain the salient features of WGS-84 and IGS. 4
- (b) Discuss in detail about the satellite and receiver clock errors and receiver measurement noise.. 6



13. (a) Discuss in detail about the GPS navigation and observation data formats. 6
(b) Explain with a neat diagram about the GPS signal structure. 4
14. (a) Discuss the relative advantages of LAAS with respect to WAAS. 4
(b) Describe the salient features and limitations of WAAS. 6
15. Compare the salient features of GLONASS and Galileo Satellite Constellation. 10
16. (a) If the GDOP is 2.1 and the rms ranging error is 22m, compute the rms position error. 3
(b) Explain in detail about various atmospheric errors with relevant equations. 7
17. Write short notes on :
(a) Geodetic reference system 5
(b) Time references. 5