Code No: 138CG **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, July - 2021
GLOBAL POSITIONING SYSTEM
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Explain GAGAN architecture with the help of block diagram.
b) Explain the salient features of GPS Block II and Block II A satellites. [9+6]

2.a) With the help of neat diagram and relevant equations explain the GPS L1 signal generation.
b) Compare GPS and GLONASS with respect to architecture and signal characteristics. [8+7]

3.a) What is acquisition and tracking? Explain the signal processing functionalities of GPS receiver.
b) How the multipath can be mitigated using the receiving antennas? [10+5]

4.a) Derive the equation for ionospheric delay for code range measurement starting from refractive index.
b) Find the ionospheric delay observed on L1 (1575.42 MHz) frequency, if the TEC observed on a GPS satellite is 50 TEC units. [10+5]

5.a) With the help of neat diagram explain GPS /INS integration architecture.
b) Briefly explain the static geometry of the GEO and ground stations. [9+6]

6.a) What are augmentation systems? Explain LADGPS.
b) How the performance of the Kalman filter is predicted using the Riccati equation? [9+6]

7. Explain the steps involved in GPS receiver position (x_u, y_u, z_u) using Least Squares Approximation method. [15]

8.a) Explain rapid static surveying and RTK surveying.
b) Briefly explain pseudorange measurement and carrier dopppler measurement. [7+8]

--ooOoo--