

R16

Code No: 138CG

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. [9+6]
b) Explain the salient features of GPS Block II and Block II A-satellites.
- 2.a) With the help of neat diagram and relevant equations explain the GPS L1 signal generation. [8+7]
b) Compare GPS and GLONASS with respect to architecture and signal characteristics.
- 3.a) What is acquisition and tracking? Explain the signal processing functionalities of GPS receiver. [10+5]
b) How the multipath can be mitigated using the receiving antennas?
- 4.a) Derive the equation for ionospheric delay for code range measurement starting from refractive index. [10+5]
b) Find the ionospheric delay observed on L1 (1575.42 MHz) frequency, if the TEC observed on a GPS satellite is 50 TEC units.
- 5.a) With the help of neat diagram explain GPS /INS integration architecture. [9+6]
b) Briefly explain the static geometry of the GEO and ground stations.
- 6.a) What are augmentation systems? Explain LADGPS. [9+6]
b) How the performance of the Kalman filter is predicted using the Riccati equation?
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. [7+8]
b) Briefly explain pseudorange measurement and carrier doppler measurement.

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