

**GEOGRAPHIC INFORMATION SYSTEMS
GEOGRAPHIC INFORMATION CENTER
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***** EXAMINATION *****

NAVSTAR GLOBAL POSITIONING SYSTEM SURVEYING

1. **The NAVSTAR GPS is maintained by the:**
 - a) National Geodetic Survey
 - b) Coast Guard
 - c) Department of Defense
 - d) Department of Transportation

2. **The primary mission is to providing positioning for:**
 - a) strategic and tactical forces.
 - b) NGS survey network.
 - c) the CORE station network.
 - d) All of the above.

3. **The particular GPS operating and tracking modes include:**
 - a) absolute and differential
 - b) code and carrier
 - c) static and kinematic
 - d) All of the above.

4. **A level of absolute positioning accuracy is:**
 - a) Standard Positioning Service
 - b) Probable Positioning Service
 - c) Local Positioning Service
 - d) Least Squares Positioning Service

5. **The three distinct segments of NAVSTAR GPS are:**
 - a) satellites, timing, post-processing
 - b) space segment, control segment, and the user segment.
 - c) DGPS, kinematic, and static.
 - d) None of the above.

6. **The full constellation of satellites numbers:**
 - a) 12
 - b) 18
 - c) 24
 - d) 30

7. **The orbital planes of satellites number:**
- a) 2
 - b) 4
 - c) 6
 - d) 8
8. **The orbital planes are inclined to the equator at:**
- a) 30 degrees
 - b) 40 degrees
 - c) 45 degrees
 - d) 55 degrees
9. **The orbital period of each satellite is:**
- a) 6 hours
 - b) 11 hours 56 minutes
 - c) 24 hours
 - d) 48 hours
10. **The control segment contains:**
- a) 5 tracking stations
 - b) 9 tracking stations
 - c) 24 tracking stations
 - d) 48 tracking stations
11. **The tracking stations are located at:**
- a) Colorado, Texas, Maryland, Minnesota, and California.
 - b) United States, Europe, Australia, Africa, and Japan.
 - c) Hawaii, Colorado, Ascension Island, Diego Garcia, and Kwajalein.
 - d) None of the above.
12. **The L1 carrier frequency is:**
- a) 873.14 megahertz
 - b) 1227.60 megahertz
 - c) 1575.42 megahertz
 - d) 1844.32 megahertz
13. **The L2 carrier frequency is:**
- a) 1227.60 megahertz
 - b) 1575.42 megahertz
 - c) 1844.32 megahertz
 - d) None of the above.
14. **The L1 signal is modulated with a:**
- a) Precise Code
 - b) Coarse Acquisition Code
 - c) Both a and b.
 - d) None of the above.

15. **The L2 signal is modulated with a:**
- a) Precise Code
 - b) Coarse Acquisition Code
 - c) Both a and b.
 - d) None of the above.
16. **The navigation message of the satellites contain:**
- a) ephemerides
 - b) clock correction and coefficients
 - c) health and status of the satellites
 - d) All of the above.
17. **Pseudo-random noise refers to:**
- a) Precise Code
 - b) Coarse Acquisition Code
 - c) Both a and b.
 - d) None of the above.
18. **A pseudo-range is the time delay:**
- a) between the satellite clock and the receiver clock.
 - b) between the satellite clock and the tracking station.
 - c) between the C/A code and the receiver clock.
 - d) between the C/A code and the P-code pulse.
19. **The broadcast ephemerides are computed using:**
- a) current tracking data of the satellites.
 - b) real-time tracking data of the satellites.
 - c) past tracking data of the satellites.
 - d) None of the above.
20. **Precise ephemerides are:**
- a) based on past tracking data.
 - b) obtained only from the NGS.
 - c) less accurate than broadcast ephemerides.
 - d) more accurate than broadcast ephemerides.
21. **The absolute positions obtained from GPS pseudo-range measurements:**
- a) are based on the 3D, earth-centered WGS 84 ellipsoid
 - b) are based on the NAD27 coordinate system
 - c) are based on the Lambert state plane coordinate system
 - d) are based on the Transverse Mercator state plane coordinate system
22. **ECEF stands for:**
- a) Earth Centered ellipsoidal fix
 - b) earth coordinate eccentric fix
 - c) earth centered fixed rectangular coordinate system
 - d) earth centered eccentric fix

23. **The origin of the WGS 84 Cartesian systems is:**
- a) the equator
 - b) the earth's center of mass
 - c) the North pole
 - d) the South pole
24. **CTP stands for:**
- a) coordinate terrain position
 - b) coordinate terrestrial position
 - c) coordinate transit point
 - d) conventional terrestrial pole
25. **The reference ellipsoid for the NAD27 coordinate system is:**
- a) Clarke 1866
 - b) WGS 72
 - c) GRS 80
 - d) WGS 84
26. **The reference ellipsoid for the WGS 72 coordinate system is:**
- a) Clarke 1866
 - b) WGS 72
 - c) GRS 80
 - d) WGS 84
27. **The reference ellipsoid for the NAD83 coordinate system is:**
- a) Clarke 1866
 - b) WGS 72
 - c) GRS 80
 - d) WGS 84
28. **The reference ellipsoid for the WGS84 coordinate system is:**
- a) Clarke 1866
 - b) WGS 72
 - c) GRS 80
 - d) WGS 84
29. **The NAD27 coordinate system is the best fit for:**
- a) the continental US
 - b) Mexico
 - c) United States and South America
 - d) None of the above
30. **The reference units for NAD 27 are:**
- a) US meters
 - b) US Survey Feet
 - c) degrees
 - d) gons

31. **The reference units for NAD 83 are:**
- a) meters
 - b) US Survey Feet
 - c) degrees
 - d) gons
32. **HARN stands for:**
- a) High attenuation radial network
 - b) High accuracy radial network
 - c) High accuracy reference network
 - d) None of the above
33. **The state plane coordinate system is:**
- a) a geodetic representation of the earth's surface
 - b) a spherical representation of the earth's surface
 - c) a conic representation of the earth's surface
 - d) a planar representation of the earth's surface
34. **Orthometric elevations correspond to the earth's**
- a) irregular geoidal surface
 - b) conic surface
 - c) spherical surface
 - d) planar surface
35. **IGLD 55 stands for:**
- a) Inertial geodetic land datum of 1955
 - b) International Great Lakes datum of 1955
 - c) International geodetic land datum of 1955
 - d) None of the above
36. **The ellipsoidal height is equal to:**
- a) the orthometric elevation plus the geoid undulation
 - b) the orthometric elevation less the geoid undulation
 - c) the orthometric elevation times the geoid undulation
 - d) the geoid undulation less the orthometric elevation
37. **For small project areas, the geoid:**
- a) is very irregular
 - b) is a level surface
 - c) is fairly constant
 - d) None of the above
38. **The GPS determination of a position on the earth is:**
- a) similar to a triangulation
 - b) similar to a resection by EDM
 - c) similar to a resection by theodolite
 - d) All of the above

39. **The number of satellites required to compute a 3D position is:**
- a) two or more
 - b) three or more
 - c) four or more
 - d) five or more
40. **Absolute positioning is used for:**
- a) precise surveying
 - b) hydrographic surveying
 - c) construction surveying
 - d) military applications
41. **Absolute point positioning with carrier phase is accurate to:**
- a) 3 cm
 - b) 3 meters
 - c) 30 meters
 - d) 50 meters
42. **A source of GPS error is:**
- a) ephemeris error
 - b) atmospheric absorption
 - c) receiver noise
 - d) All of the above
43. **GPS signals are:**
- a) electromagnetic
 - b) linear
 - c) not refracted
 - d) All of the above
44. **Receiver noise errors includes:**
- a) signal processing
 - b) correlation methods
 - c) receiver resolution
 - d) All of the above
45. **HDOP stands for:**
- a) higher division of precision
 - b) higher dilution of precision
 - c) horizontal dilution of precision
 - d) horizontal dilution of position
46. **Differential positioning requires at least:**
- a) one receiver
 - b) two receivers
 - c) three receivers
 - d) four receivers

47. **Differential positioning does not determine:**
- a) absolute position until 1 receiver uses a known point
 - b) absolute position until 2 receivers use a known point
 - c) absolute position until 3 receivers use a known point
 - d) absolute position until 4 receivers use a known point
48. **Code pseudo-range tracking has an approximate accuracy:**
- a) of 1 cm to 5 cm
 - b) of 20 cm to 50 cm
 - c) of 0.5 m to 5 m
 - d) of 5 m to 20 m
49. **A acceptable technique for locating topography is:**
- a) static positioning
 - b) rapid static positioning
 - c) kinematic positioning
 - d) All of the above
50. **Loss of satellite lock for the rover is acceptable for:**
- a) RTK positioning
 - b) static positioning
 - c) stop and go kinematic
 - d) None of the above
51. **The carrier phase tracking technique used for continuous topo is:**
- a) static
 - b) rapid static
 - c) kinematic
 - d) All of the above
52. **The carrier phase tracking technique used for sub-centimeter**
- a) accuracy is static
 - b) accuracy is pseudo kinematic
 - c) accuracy is kinematic
 - d) All of the above
53. **The carrier phase tracking technique used for hydro surveys is:**
- a) static
 - b) OTF kinematic
 - c) stop & go kinematic
 - d) All of the above
54. **The carrier phase tracking technique used for elevation surveys is:**
- a) static
 - b) OTF kinematic
 - c) rapid static
 - d) None of the above

55. **The weakest elevation component using GPS is:**
- a) the orthometric elevation
 - b) the geoid undulation
 - c) the ellipsoidal height
 - d) the bench mark
56. **To model the geoid,**
- a) at least one station in a small project area is used
 - b) at least two stations in a small project area are used
 - c) at least three stations in a small project area are used
 - d) at least four stations in a small project area are used
57. **Selection of the correct GPS receiver depends on:**
- a) power consumption requirements
 - b) cost
 - c) signal processing requirements
 - d) All of the above
58. **The most common GPS data format is:**
- a) RINEX
 - b) C/A code
 - c) OTF
 - d) None of the above
59. **Survey equipment manufacturers should provide:**
- a) current specifications
 - b) cost
 - c) availability
 - d) All of the above
60. **The three basic types of GPS antennas are:**
- a) conic, parabolic, and choke ring
 - b) choke ring, no ground plane, and ground plane
 - c) parabolic, choke ring, and ground plane
 - d) swivel, parabolic, and conic

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