

**GEOGRAPHIC INFORMATION SYSTEMS  
GEOGRAPHIC INFORMATION CENTER  
PO BOX 5839  
MC ALLEN, TEXAS 78502-5839**

**1-800-522-0139**

**kh@acnet.net  
Copyright 2012**

---

**\*\*\* 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 move
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) receive 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

GEOGRAPHIC INFORMATION SYSTEMS  
 GEOGRAPHIC INFORMATION CENTER  
 PO BOX 5839  
 MC ALLEN, TEXAS 78502-5839

1-800-522-0139

kh@acnet.net  
 Copyright 2012

<b>*** ANSWER SHEET *** U6</b>  <b>NAVSTAR GLOBAL POSITIONING SYSTEM SURVEYING</b>	<b>STATE BOARD</b>	<b>COURSE NO.</b>	<b>VALUE</b>
	TX RPLS	494-086	8 PDH
	MO LS		8 PDU
	TN LS	CER-469-10-R	8 PDH
	Office Use Only		

FILL IN ONE BOX FOR EACH ANSWER.

	A	B	C	D
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

	A	B	C	D
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

	A	B	C	D
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

I hereby certify that I studied the course materials, and the above answers are my own. No other person has helped me to complete this exam.

\_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Printed or typed name

\_\_\_\_\_  
 Seal or Number

**GEOGRAPHIC INFORMATION SYSTEMS  
GEOGRAPHIC INFORMATION CENTER  
PO BOX 5839  
MC ALLEN, TEXAS 78502-5839**

**1-800-522-0139**

**kh@acnet.net  
Copyright 2012**

---

**Name** \_\_\_\_\_

**Company** \_\_\_\_\_

**Address** \_\_\_\_\_

**City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

**Telephone** \_\_\_\_\_ **E-Mail** \_\_\_\_\_

**Fax** \_\_\_\_\_  **24-Hour Fax**

**Yes**  **No**     **If fax and telephone are the same number, shall we call first?**

**Mail certificates to** above address \_\_\_\_\_ **check address** \_\_\_\_\_ **envelope address** \_\_\_\_\_

**State + Specialty + PE Registration number (i.e. TX EE 12389)** \_\_\_\_\_

**State + Professional Land Surveying registration number** \_\_\_\_\_

**NC (North Carolina) + Specialty + PE Registration number** \_\_\_\_\_

**NC (North Carolina) + Land Surveying Registration Number** \_\_\_\_\_

**Professional Affiliations** \_\_\_\_\_

Return this page with your answer sheet and a check or money order for \$100 per course. Use one check for each registrant (in your company) taking one or more courses. We accept company checks (if they are your employer's). We do not accept third-party checks or checks outside of your city of residence. Using third-party checks that do not include your name or company name may invalidate your professional development hours being reviewed by an audit process. Add \$5 for same day processing and priority shipping.

Make checks or money orders payable to Geographic Information Systems.

