GEOGRAPHIC INFORMATION SYSTEMS **1-800-522-0139**
GEOGRAPHIC INFORMATION CENTER
PO BOX 5839 **kh@acnet.net**
MC ALLEN, TEXAS 78502-5839

***** EXAMINATION *****

HYDROGRAPHIC SURVEYING - PLANNING AND PROCESSING SURVEYS FOR CIVIL WORKS PROJECTS

1. **A general planning consideration includes:**

   a) project funding
   b) response time
   c) project scope and location
   d) All of the above

2. **A hydrographic survey crew should be able to provide**

   a) a finished drawing in one day
   b) a finished drawing in two days
   c) a finished drawing in three days
   d) a finished drawing in four days

3. **A full-bottom coverage survey is referred to as:**

   a) photogrammetric
   b) LIDAR
   c) multibeam
   d) All of the above

4. **The disadvantage of deep draft vessels is:**

   a) bad sonar signals
   b) not usable in shallow water
   c) speed of vessel
   d) not able to obtain stable positions

5. **Important water conditions affecting the selection of**

   a) equipment are fresh or salt water
   b) equipment are channel width and weather
   c) equipment are water current strength and wave conditions
   d) All of the above

6. **Consideration in the purchase of expensive multibeam systems is:**

   a) workload
   b) type of work
   c) safety
   d) All of the above

7. **A multiple transducer swath system would not be used in:**

a) rough open seas
b) light rain
c) deep channels
d) within two miles of an offshore rig

8. **Echo sounders are affected by:**

a) salt water
b) fresh water
c) turbid water
d) None of the above

9. **The usual output of a hydrographic survey is a:**

a) aerial photo
b) digital file
c) plotted cross-sections
d) plotted profiles

10. **Computer systems on hydrographic survey vehicles must:**

a) have a sealed cabin environment to resist salt water
b) have solar cells due to power requirements
c) have padding to negate the effect of ocean waves
d) All of the above

11. **Hydrographic survey vessels should have at least:**

a) 50 HP
b) 75 HP
c) 125 HP
d) 150 HP

12. **The survey vessel should be able to house:**

a) the survey equipment
b) the vessel operator
c) the equipment operator
d) All of the above

13. **The maximum roll for survey vessel operations is:**

a) two degrees
b) five degrees
c) seven degrees
d) nine degrees

14. **The pilot's view of other boat traffic should be:**

a) 90 degrees or more
b) 180 degrees or more
c) 240 degrees or more
d) 360 degrees

15. **High heat and humidity conditions will require:**

a) dehumidifiers
b) air-conditioners to keep computer equipment running
c) temporary suspension of operations
d) All of the above

16. **Fast mobilization requires that a boat:**

a) have a trailer
b) have a motor with at least 75 HP
c) have a motor with at least 125 HP
d) None of the above

17. **All boat personnel should be trained in:**

a) OSHA Category 1 Life Safety
b) OSHA Category 2 Life Safety
c) simple first aid and CPR
d) None of the above

18. **The data collected on the boat is processed by:**

a) the client
b) a CAD technician
c) the same person who collected the data
d) Any of the above

19. **Data requirements:**

a) should use NOAA standards
b) should use US Army Corp of Engineers standards
c) should use Coast Guard standards
d) should meet the needs of the particular client

20. **Notification of a survey should be made in advance to:**

a) the Coast Guard
b) OSHA
c) NOAA
d) None of the above

21. **Survey lines for multi-beam surveys should:**

a) be at right angles to the contours of the harbor bottom
b) follow the contours of the harbor bottom
c) follow the tide
d) be at right angles to the tide

22. **Survey lines for single beam surveys should:**

a) be at right angles to the contours of the harbor bottom
b) follow the contours of the harbor bottom
c) follow the tide
d) be at right angles to the tide

23. **The longest survey line in an entrance channel should be:**

a) 1,000 feet
b) 2,000 feet
c) 10,000 feet
d) 20,000 feet

24. **The most common navigation datum is:**

a) MLLW
b) MHHW
c) MHW
d) None of the above

25. **Data density depends on:**

a) method of survey
b) water depth
c) client needs
d) All of the above

26. **Data density is:**

a) the number of soundings per unit area
b) the same as data redundancy
c) the same as data overlap
d) None of the above

27. **Data management relates to:**

a) transporting
b) processing
c) presentation
d) All of the above

28. **The FGDC mandates the Corps to make their hydrographic data**

a) available to local harbormasters
b) available to state departments of natural resources
c) available to Internet users
d) All of the above

29. **A method of construction payment is:**

a) computed tonnage
b) computed triangulated irregular network
c) average side-scan end area
d) None of the above

30. **Revetment construction is a type of:**

a) construction project
b) survey data collection equipment
c) subsurface relief
d) None of the above

31. **A lead line is a type of:**

a) construction project
b) survey data collection equipment
c) subsurface relief
d) None of the above

32. **HYPACK MAX is a type of:**

a) echo sounder
b) electronic sounder
c) LIDAR equipment
d) data acquisition package

33. **An acoustic multi-beam sonar system:**

a) provides full-bottom coverage
b) uses multiple acoustic transducers
c) generates a maximum of one cross section every five seconds
d) generates a maximum of one cross section every ten seconds

34. **Quantity computations from multi-beam data are most accurate using:**

a) average end area
b) profiles
c) full digital terrain models
d) Any of the above

35. **The primary application for multi-beam systems:**

a) is shallow draft projects
b) is deep-draft navigation projects
c) is narrow channels
d) is only for projects greater than 200 feet in depth

36. **Multi-beam swath widths typically range from:**

a) twice to seven times the water depth
b) six to eight times the water depth
c) seven to nine times the water depth
d) nine to fifteen times the water depth

37. **For multi-beam computations the letter L represents:**

a) latitude
b) length
c) line spacing
d) Any of the above

38. **For multi-beam computations the letter N represents:**

a) the number of latitudinal lines
b) the number of longitudinal lines
c) an unknown in the computations
d) None of the above

39. **For multi-beam computations the letter s represents:**

a) the sidelap
b) the number of passes by the survey vessel
c) the sensing interval
d) None of the above

40. **If there were no steering misalignment, duplicate coverage would be:**

a) provided by a 5% sidelap
b) provided by a 15% sidelap
c) provided by a 30% sidelap
d) provided by a 50% sidelap

41. **To calculate the number of lines, divide the width by:**

a) the nominal line spacing and subtract one
b) the nominal line spacing and add one
c) the nominal line spacing and divide by two
d) the nominal line spacing and multiply by two

42. **Doubling the multi-beam swath angle will:**

a) increase the line spacing
b) double the line spacing
c) halve the line spacing
d) will have not effect on the line spacing

43. **Starting a new project with twice the depth and using multi-beam:**

a) will increase the line spacing
b) will double the line spacing
c) will halve the line spacing
d) will not effect on the line spacing

44. **If the depth of a new project doubles using multi-beam,**

a) the multi-beam swath angle will double
b) the multi-beam swath angle will have to increase
c) the multi-beam swath angle will have to decrease
d) the multi-beam swath angle will not be affected

45. **If the percentage of sidelap increases from twenty to forty:**

a) the number of lines will increase 10%
b) the number of lines will increase 25%
c) the number of lines will increase 33%
d) the number of lines will increase 50%

46. **Sounding equipment shall be configured to record depths at:**

a) 25% of the maximum possible rate
b) 50% of the maximum possible rate
c) 75% of the maximum possible rate
d) the maximum possible rate

47. **Data for an automated hydrographic survey is collected in two formats:**

a) vertical and horizontal
b) seismic and COGO
c) dense and plan
d) Any of the above

48. **The dense depth information is collected at a rate of:**

a) 5 soundings per second
b) 10 soundings per second
c) 20 soundings per second
d) 40 soundings per second

49. **A common cause of an incorrect sounding is:**

a) air bubbles in the water column
b) debris in the water column
c) temperature inversions
d) All of the above

50. **Volume computations may be used for:**

a) payment to dredging contractors
b) beach and dike design
c) channel design
d) All of the above

51. **An example of a contour plotting error is:**

a) smooth contours
b) contour crossing
c) contours with labels
d) All of the above

52. **The biggest advantage of layering in a CADD system for surveying is:**

a) the file size can be reduced
b) different line types can be used
c) different hydrographic surveys of the same area can be overlaid
d) All of the above

53. **A type of plotting format for hydrographic surveys is:**

a) profile
b) ALTA survey
c) TIN network
d) All of the above

54. **The standard drawing size is:**

a) 8 1/2 by 11 inches
b) 8 1/2 by 14 inches
c) 24 by 36 inches
d) specified in the bid or client documents

55. **Coordinate grids should not exceed:**

a) 2-inch spacing
b) 5-inch spacing
c) 7-inch spacing
d) 9-inch spacing

56. **Thinning data sets for dredge volume computations is:**

a) recommended for over one megabyte of data
b) recommended for plotting purposes only
c) recommended when needed
d) None of the above

57. **Current standards used in hydrographic surveys are made by:**

a) NIST
b) FGDC
c) ANSI
d) All of the above

58. **To interpret terrain models, the computer operator may use:**

a) traverse lines
b) aerial photography
c) color-coded elevation displays
d) All of the above

59. **A stereo display appears to be:**

a) a 3-D raised model
b) a 2-D profile
c) similar to a cross-section
d) non-rectified orthophoto

60. **The source of metadata standards is:**

a) FGDC
b) NOAA
c) NGS
d) USFS

GEOGRAPHIC INFORMATION SYSTEMS **1-800-522-0139**
GEOGRAPHIC INFORMATION CENTER
PO BOX 5839 **kh@acnet.net**
MC ALLEN, TEXAS 78502-5839

	STATE BOARD	COURSE NO.	VALUE
*** ANSWER SHEET *** U148	NJ LS	cc100030	8 PDH
HYDROGRAPHIC SURVEYS – PLANNING AND PROCESSING SURVEYS FOR CIVIL WORKS PROJECTS			
	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 **1-800-522-0139**
GEOGRAPHIC INFORMATION CENTER
PO BOX 5839 **kh@acnet.net**
MC ALLEN, TEXAS 78502-5839

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.

GEOGRAPHIC INFORMATION SYSTEMS **1-800-522-0139**
GEOGRAPHIC INFORMATION CENTER
PO BOX 5839 **kh@acnet.net**
MC ALLEN, TEXAS 78502-5839

Our clients have suggested some of the best topics for courses.
Here is your chance to select a topic for a course.
If the course material has a web site address, please note below:

TOPIC	**WEB SITE**