

***** EXAMINATION *****

LAND TREATMENT SYSTEMS OPERATION AND MAINTENANCE

1. **The basic land treatment systems differ**
 - a) in the rate at which the water is applied
 - b) in the flow path of the water after application
 - c) both a and b
 - d) None of the above

2. **A type of basic land treatment system is**
 - a) slow rate
 - b) overland flow
 - c) rapid infiltration
 - d) All of the above

3. **The typical load for a slow rate land treatment site in the northern US**
 - a) is 1.5 million gallons of wastewater per year per acre
 - b) is 2.5 million gallons of wastewater per year per acre
 - c) is 3.5 million gallons of wastewater per year per acre
 - d) is 4.5 million gallons of wastewater per year per acre

4. **The rapid infiltration land treatment system is applied**
 - a) at the top of gently sloping grassed fields
 - b) to an area covered by vegetation
 - c) to open basins in sandy soils
 - d) None of the above

5. **The overland flow land treatment system is applied**
 - a) at the top of gently sloping grassed fields
 - b) to an area covered by vegetation
 - c) to open basins in sandy soils
 - d) None of the above

6. **The slow rate infiltration land treatment system is applied**
 - a) at the top of gently sloping grassed fields
 - b) to an area covered by vegetation
 - c) to open basins in sandy soils
 - d) None of the above

7. **The acre-foot is a measure of**
- a) length
 - b) width
 - c) volume
 - d) area
8. **The wetted area where the treatment occurs in a land application**
- a) system is the field area
 - b) system is the field acreage
 - c) system is the field capacity
 - d) system is the wetted field
9. **The evaporation or change of a substance from liquid to vapor is**
- a) the condensation
 - b) volatilization
 - c) the convection
 - d) None of the above
10. **Surface application techniques for slow rate land treatment**
- a) systems include ridge
 - b) systems include furrow
 - c) systems include border strip flooding
 - d) Any of the above
11. **A major mechanical task for a slow rate land treatment system is**
- a) operating pumps
 - b) servicing pumps
 - c) operating valves
 - d) All of the above
12. **The primary treatment for a rapid-infiltration system is located**
- a) near residential gardens
 - b) near buildings with retention ponds
 - c) in restricted public access areas
 - d) All of the above
13. **Groundwater monitoring takes place at**
- a) the system boundaries
 - b) the area water treatment plant
 - c) at the nearest environmental engineers office
 - d) None of the above
14. **The water level in a storage pond should be measured at least**
- a) once a day
 - b) once a week
 - c) once a month
 - d) every two months

15. **The pH of the soil is monitored at an agricultural site to check**
- a) nitrogen deficiency
 - b) phosphorus deficiency
 - c) lime deficiency
 - d) All of the above
16. **Agricultural site soil is monitored for**
- a) cadmium, nitrogen, and iron
 - b) potassium, sodium, and calcium
 - c) sulfates and nitrates
 - d) None of the above
17. **Water applications to fields include control for**
- a) frequency of application
 - b) field to be used
 - c) startup and shutdown schedule
 - d) All of the above
18. **Vegetation is essential on a slow rate system to**
- a) remove nitrogen and phosphorus from the wastewater
 - b) prevent runoff and erosion
 - c) keep soils porous for water infiltration
 - d) All of the above
19. **The disadvantage of using corn in a slow rate system is**
- a) its lower annual nitrogen removal capability
 - b) its lower annual phosphorus removal capability
 - c) its lower annual calcium removal capability
 - d) its lower annual copper removal capability
20. **Turf grasses can remove nitrogen during**
- a) spring
 - b) summer
 - c) winter
 - d) the entire growing season

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

1-800-522-0139
 kh@acnet.net
 Copyright 2012

*** ANSWER SHEET *** U309 LAND TREATMENT SYSTEMS OPERATION AND MAINTENANCE	<u>STATE BOARD</u>	<u>COURSE NO.</u>	<u>VALUE</u>
			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				

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.

