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Examination for Chemical Grouting Part 2

1. Hoses, valves, fittings, piping, blow-off relief valves, headers, and standard drill rods are _____ for chemical grouting operations.
 - a) maintenance equipment
 - b) necessary equipment
 - c) un-necessary equipment
 - d) accessory equipment

2. This system normally permits only one predetermined gel time.
 - a) single-tank gravity-feed system
 - b) triple-tank gravity feed system
 - c) two-tank gravity feed system
 - d) two-tank pressure feed system

3. The ultimate goal of grouting is to place an unspecified amount of grout at some predetermined location.
 - a) true
 - b) false
 - c) not enough information for a specific answer
 - d) too many variables for a specific answer

4. This selective grout placement method entails using a tube with a smooth interior that is perforated at intervals and sealed into the grout hole.
 - a) “tubes à manchettes”
 - b) “tubes à clorettes”
 - c) perforated tubes
 - d) none of the above

5. In the past 10 years, a number of chemical grouts have been removed from the market because of _____ problems.

- a) polluting
- b) cost effectiveness
- c) performance
- d) toxicity

6. The planning of a chemical-grouting program consists of procedures different to those for any other grouting operation.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

7. Certain background information is needed to determine the feasibility of chemical grouting. Which of the following considerations does not apply in determine the feasibility of chemical grouting?

- a) data on characteristics of the medium to be grouted
- b) chemical composition of groundwater and of the medium to be grouted
- c) determination of the permeability of the in situ soil or rock
- d) Perform a geological survey of the area to be chemically grouted in order to determine if any natural resources such as natural gas or oil exist it the area.

8. Which of the following are factors that affect grouting operations?

- a) physical characteristics of medium to be grouted
- b) physical and chemical properties of grout solutions
- c) grout hole size and spacing
- d) all of the above

9. Viscosity, not performance, should be used as the final criterion for selecting one grout over the other.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

10. The _____ permeability of rocky soil after stabilization depends upon the resistance of the gelled grout to extrusion from the pores in the mass.

- a) decrease in
- b) increase in
- c) resistance to
- d) amount of

11. Laboratory tests should be conducted prior to commencing any field operations including small-scale field tests. This can eliminate delays in completing the grouting job.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

12. Chemical grouts are generally more expensive than portland-cement grouts; however, some of them will develop a greater tensile strength, a better bond, and a higher compressive strength, depending upon the medium being grouted.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

13. Chemical grouts generally do not have the ability to penetrate smaller openings than cementitious grouts.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

14. In the grouting of granular materials, the injection locations should be based on the average diameter of a stabilized column, computed from the volume to be pumped and the ____ ratio.

- a) void
- b) expanse
- c) density
- d) none of the above

15. With short gel times, the gelation occurs above the bottom of the pipe at all elevations, which eliminates the possibility of pumping all the solution from one injection into one stratum because the gel time and the location of the bottom of the pipe are known.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

16. In estimating chemical quantities and costs for a grouting operation, the physical dimensions of the volume of medium to be grouted and its _____ can be used to compute the volume of the grout needed for an application.

- a) porosity or void ratio
- b) density or void ratio
- c) density or porosity ratio
- d) none of the above

17. In fractured rock formations, only the larger channels may accept grout.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

18. There are only two factors used to compute a cost estimate for purchasing a chemical grout solution: the total known volume, and the known groutable void ratio.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

19. _____ can be helpful in distinguishing the chemical grout from water or some other solution.

- a) Dyes
- b) Acids
- c) Trace elements
- d) Radio nuclides

20. The desired results of a field grouting program are most readily obtained if the _____ of a grouted mass can be predicted.

- a) mass and weight
- b) volume and density
- c) size and shape
- d) production costs

21. In general, granular materials or rock masses with overall permeabilities of 1×10^{-7} cm/sec or less can be economically grouted.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

22. Chemical grouting will not improve the original properties of the grouted material.

- a) true
- b) false
- c) not enough information for a specific answer
- d) too many variables for a specific answer

23. In general, _____ with groundwater is detrimental only when the dilution is such as to bring a quantity of grout below the concentration at which it will gel.

- a) dilation
- b) distillation
- c) detoxification
- d) none of the above

24. Grouts that have a viscosity of _____ will penetrate at half the rate of water (1 cP) at equal pressure or require double the pressure to obtain rates equal to that of water.

- a) 0.5 cP
- b) 2 cP
- c) 4 cP
- d) 5 cP

25. Chemical grouting is a rapidly changing field due to both _____ advances.

- a) technological and manufacturing
- b) manufacturing and technological
- c) manufacturing and regulatory
- d) regulatory and technological



Answer Sheet for Chemical Grouting Pt 2
 TPDH-00016

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