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***** EXAMINATION *****

MONITORING WELL DESIGN AND CONSTRUCTION
FOR HYDROGEOLOGIC CHARACTERIZATION

1. **Monitoring wells provides a means to:**

   a) assess ground water quality
   b) estimate ground water flow direction
   c) calculate aquifer hydraulic properties
   d) All of the above

2. **A factor to be considered in borehole construction is:**

   a) annular space
   b) borehole diameter
   c) drilling method
   d) All of the above

3. **The recommended annular space width**

   a) between casing and borehole wall is 2.0 inches minimum
   b) between casing and borehole wall is 2.5 inches minimum
   c) between casing and borehole wall is 3.0 inches minimum
   d) between casing and borehole wall is 5.0 inches minimum

4. **The maximum recommended annular space is:**

   a) 2.0 inches minimum
   b) 2.5 inches minimum
   c) 3.0 inches minimum
   d) 5.0 inches minimum

5. **Large annular space widths:**

   a) increase contamination
   b) reduce contamination
   c) reduce the ability to develop a well
   d) None of the above

6. **Borehole alignment can be assessed by a:**

   a) borehole deviation survey
   b) a seismic survey
   c) a soil test
   d) None of the above

7. **A borehole may be backfilled with a low-permeability material like:**

a) architectural concrete
b) gunite
c) cement-bentonite grout
d) Any of the above

8. **Borehole samples should be classified according to their:**

a) chemical composition
b) lithology
c) permeability
d) All of the above

9. **Monitoring well casing and screen materials should not:**

a) chemically alter ground-water samples
b) chemically alter 25% of the ground-water samples
c) chemically alter 50% of the ground-water samples
d) chemically alter 75% of the ground-water samples

10. **The selection of monitoring well casing materials should consider:**

a) the anticipated well depth
b) the geologic environment
c) the design life of the monitoring well
d) All of the above

11. **When evaluating well casing strength parameters, the**

a) tensile strength is an important consideration
b) elastic strength is an important consideration
c) torsional strength is an important consideration
d) expansive strength is an important consideration

12. **The resistance of casing to collapse is determined by:**

a) outside diameter only
b) wall thickness only
c) outside diameter and wall thickness
d) inside diameter and wall thickness

13. **Drilling a straight, clean borehole will:**
a) maximize the possibility of collapse
b) minimize the possibility of collapse
c) not be factor in the possibility of collapse
d) strengthen the walls

14. **Controlling negative pressures inside the well during development**

a) will maximize the possibility of collapse
b) will minimize the possibility of collapse
c) will not be factor in the possibility of collapse
d) will weaken the walls

15. **To choose chemically resistant well casing materials,**

a) the ground water chemistry should be anticipated
b) the type of drilling equipment should be analyzed
c) the soil conditions should be studied
d) None of the above

16. **A type of casing material is:**

a) fluoropolymer
b) a metallic material such as galvanized steel
c) a thermoplastic
d) All of the above

17. **An advantage of polytetrafluoroethylene casing is:**

a) ease of machining and molding
b) non-stick nature
c) low strength per unit length
d) All of the above

18. **Dezincification is a type of:**

a) general oxidation
b) bi-metallic corrosion
c) selective corrosion
d) pitting corrosion

19. **An advantage of stainless steel well casing is:**

a) its availability
b) low strength
c) flexibility
d) All of the above

20. **An advantage of polyvinyl chloride well casing is:**

a) low maintenance
b) high abrasion resistance
c) its availability
d) All of the above

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