

Unit 5 - week 3

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Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-02-19, 23:59 IST.

- Which of the following is a faulty design consideration of intake structures?

 - Should be of sufficient structural strength, designed to withstand all forces
 - Should not obstruct navigation pathways
 - Wire mesh or trash racks should be provided at the inlets
 - Must always have shallow foundation

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: d.
- Ports are provided in the intake structures to _____.

 - Provide structural stability to the structure
 - Regulate the flow
 - Avoid accumulating sediments and debris
 - Provide migration path

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- Dry intake towers are typically:

 - Lighter in construction (than wet intake tower of same capacity)
 - Offers easy operation of control valves
 - Withdrawal conduit always remains empty irrespective of entry port openings
 - All of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- Aquifers bounded by impervious strata at bottom and free surface (water table) at top is known as:

 - Confined Aquifer
 - Unconfined Aquifers
 - Leaky Aquifers
 - Idealized Aquifers

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- Which of the following geological formations can yield appreciable quantity of water easily?

 - Aquifer
 - Aquitard
 - Aquiclude
 - Aquifuge

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- Specific yield of an aquifer is 0.05 with a porosity of 0.5. What is the type of material and specific retention of the aquifer?

 - sand, 0.20
 - clay, 0.30
 - shale, 0.60
 - clay, 0.45

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: d.
- An aquifer situated under an area of 100,000 square meters with a thickness of 5 meters releases 100 cubic meter of water with a change in head of 2 meter. The specific storage of the aquifer would be:

 - $10^{-4}/m$
 - $10^{-2}/m$
 - $10^{-5}/m$
 - $10^{-3}/m$

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- The transmissivity of a confined aquifer for a pumping rate of Q, having drawdown, s_1 and s_2 at radial distances, r_1 and r_2 from the well, is given by:

 - $\frac{Q}{2\pi} \frac{\ln(r_2 - r_1)}{s_1 - s_2}$
 - $\frac{Q}{2\pi} \frac{\ln r_2}{s_1 - s_2}$
 - $\frac{Q}{2\pi} \ln \left(\frac{r_2/s_2}{r_1/s_1} \right)$
 - $2\pi Q \frac{r_2 - r_1}{\ln \left(\frac{s_2}{s_1} \right)}$

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- For two or more closely spaced wells (within the radii of influence of each other), the efficiency of each well is:

 - Increases
 - Decreases
 - Remains unaffected
 - Fluctuates

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- Non-linear component of well losses is primarily due to:

 - Head loss during penetration into mud-invaded zone
 - Head loss in gravel pack
 - Head loss due to screen entry velocity
 - Head loss due to turbulent flow in well casing

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: d.
- For well near an impermeable (no flow) boundary, the drawdown can be estimated using the principle of superposition with an:

 - Image recharge well having same flow and distance on the opposite side of the boundary from the real well.
 - Image discharge well having same flow and distance on the opposite side of the boundary from the real well.
 - Image recharge well having same flow and twice the distance on the opposite side of the boundary from the real well.
 - Image discharge well having same flow and twice the distance on the opposite side of the boundary from the real well.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- Using a smaller diameter pipe (compared to estimated economic diameter pipe) for raw water rising main for pumping same discharge:

 - May increase the capital cost but reduces operation cost as less power is needed for pumping
 - May decrease the capital cost but increases operation cost as more power is needed for pumping
 - Increases both, capital and operational cost
 - Decreases both, capital and operational cost

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- Well losses are typically experimentally estimated using:

 - Step-drawdown test
 - Cooper-Jacob Straight-Line Time-Drawdown Method
 - Jacob Straight-Line Distance-Drawdown Method
 - Neuman's Method

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- The performance of typical centrifugal pumps at different speeds are represented through:

 - Operating Characteristic Curves
 - Muschel curves
 - Main Characteristic Curves
 - None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- Rotary pumps and reciprocating pumps are different types of:

 - Buoyancy pumps
 - Velocity pumps
 - Positive displacement pumps
 - None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- For a discharge of 4 m³/s, the range for the economic diameter of rising mains in a water network would be:

 - 1.94 to 2.44 m
 - 0.97 to 2.44 m
 - 0.97 to 1.22 m
 - 1.22 to 1.94 m

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- A well of 300 mm diameter is located in a confined aquifer of 40 m thick. The aquifer has a hydraulic conductivity of 25 m/day and the radius of influence is 300 m. Determine the approximate discharge in m³/h, if the drawdown is 3m.

 - 110.45
 - 53.67
 - 103.33
 - 401.65

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- In the previous question, with all other conditions remaining the same determine the percentage increase in discharge if the diameter is increased to 450 mm.

 - 10 %
 - 4 %
 - 6 %
 - 12.50 %

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- Find the friction factor for a pipe of length 1500 m, diameter 60 cm, carrying a flow of velocity 2 m/s with a headloss of 20 m.

 - 0.039
 - 3.9
 - 0.45
 - 1.15

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- Determine the power required for pumping water if total head to be supplied by the pump is 13.8 m, discharge is 0.25 m³/s, for a pump with an efficiency of 65 %. Use specific weight of water $\gamma = 9.810 \text{ kN/m}^3$.

 - 52 kW
 - 105 kW
 - 63 kW
 - 115 kW

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.