

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

- Lecture 11 : Rainfall, Runoff and Ground Water
- Lecture 12 : Groundwater Properties and Flow Characteristics
- Lecture 13 : Groundwater Intakes and Issues
- Lecture 14 : Groundwater Yield
- Lecture 15 : Surface Water Intakes
- Week 3 Lecture Material
- Quiz: Week 3 : Assignment 3
- Week 3 Feedback Form

Week 4

Week 5

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Week 11

Week 12

Detail Solution

Live Interactive session

Week 3 : Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-08-25, 23:59 IST.

As per our records you have not submitted this assignment.

1) The different factors affecting run-off include

A. Area, slope and shape of catchment
 B. Intensity and duration of rainfall
 C. Soil type
 D. Artesian well

Choose the correct answer:

a. A, B, C
 b. A, C, D
 c. A, C
 d. A, B, C, D

a.
 b.
 c.
 d.

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

2) A real estate project on a 15-hectare site contains: 8 High-rise apartment buildings each with ground coverage of 2% of the site area and houses a residential population of 18,000. 40% of the site area is for landscaped gardens, and parks. The rest of the area is for roads and open parking. The site experiences rainfall of 1580 mm annually. Assume Coefficient of runoff for landscaped area and roads/paved area to be 0.15 and 0.65 respectively. The average surface runoff from the site after a heavy rainfall of 150 mm in two hours (corrected to 2 decimal places) is:

a. 1.08 m³/s
 b. 3.50 m³/s
 c. 0.69 m³/s
 d. 3.48 m³/s

a.
 b.
 c.
 d.

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

3) Which among the following statements are/is correct?

a. Greater the intensity of rainfall, the higher the runoff.
 b. High intensity storms usually have higher frequency.
 c. Frequency of rainfall cannot be predicted.
 d. Intensity of rainfall can be predicted

a.
 b.
 c.
 d.

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

4) _____ is defined as the percentage of voids present in a given volume of soil or aggregate.

a. Void ratio
 b. Porosity
 c. Water content
 d. Level of saturation

a.
 b.
 c.
 d.

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

5) Match the following terms with their definitions

| Term | Definition |
|---------------------------|--|
| P. Permeability | I. An imaginary surface joining the water level in many wells in a confined aquifer |
| Q. Specific yield | II. Ratio of the quantity of water retained by the material against gravity drainage to the total volume of material of sub soil |
| R. Potentiometric surface | III. Ratio of volume of water obtained by gravity drainage to the total volume of the subsoil |
| S. Specific retention | IV. Capability of a formation of soil to pass water through it |

The correct match from the set of options given below is:

a. P-I; Q-II; R-IV; S-III
 b. P-III; Q-I; R-II; S-IV
 c. P-IV; Q-III; R-I; S-II
 d. P-III; Q-IV; R-II; S-I

a.
 b.
 c.
 d.

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

6) Among the following statements, the incorrect statement is:

a. Infiltration is directly proportional to porosity of soil
 b. At a slow rate of rainfall, less quantity percolates to the ground and more goes into runoff.
 c. Ability of water bearing stratum to store water depends on porosity and size of particles.
 d. Sand and gravel are the important aquifers for public water supplies.

a.
 b.
 c.
 d.

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

7) The major problems plaguing groundwater management in India are:

A. Over-abstraction
 B. Depleted aquifers
 C. Pollution in the form of industrial pollutants, human wastes, and agricultural chemicals.

Choose the correct answer.

a. A, B
 b. B, C
 c. A, C
 d. A, B, C

a.
 b.
 c.
 d.

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

8) The major chemicals found in groundwater include:

a. calcium, magnesium, chloride, sulphate
 b. iron, magnesium, sulphate, lead
 c. lead, calcium, fluoride, arsenic
 d. arsenic, chloride, fluoride, nitrate

a.
 b.
 c.
 d.

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

9) _____ are constructed to intercept groundwater flow by digging trench or a tunnel with holes on sides at right angles to the direction of flow of underground water.

a. Infiltration galleries
 b. Infiltration well
 c. Percolation well
 d. Tube well

a.
 b.
 c.
 d.

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

10) The flow of groundwater depends on:

a. hydraulic gradient
 b. characteristics of aquifer
 c. hydraulic gradient and characteristics of aquifer
 d. none of these

a.
 b.
 c.
 d.

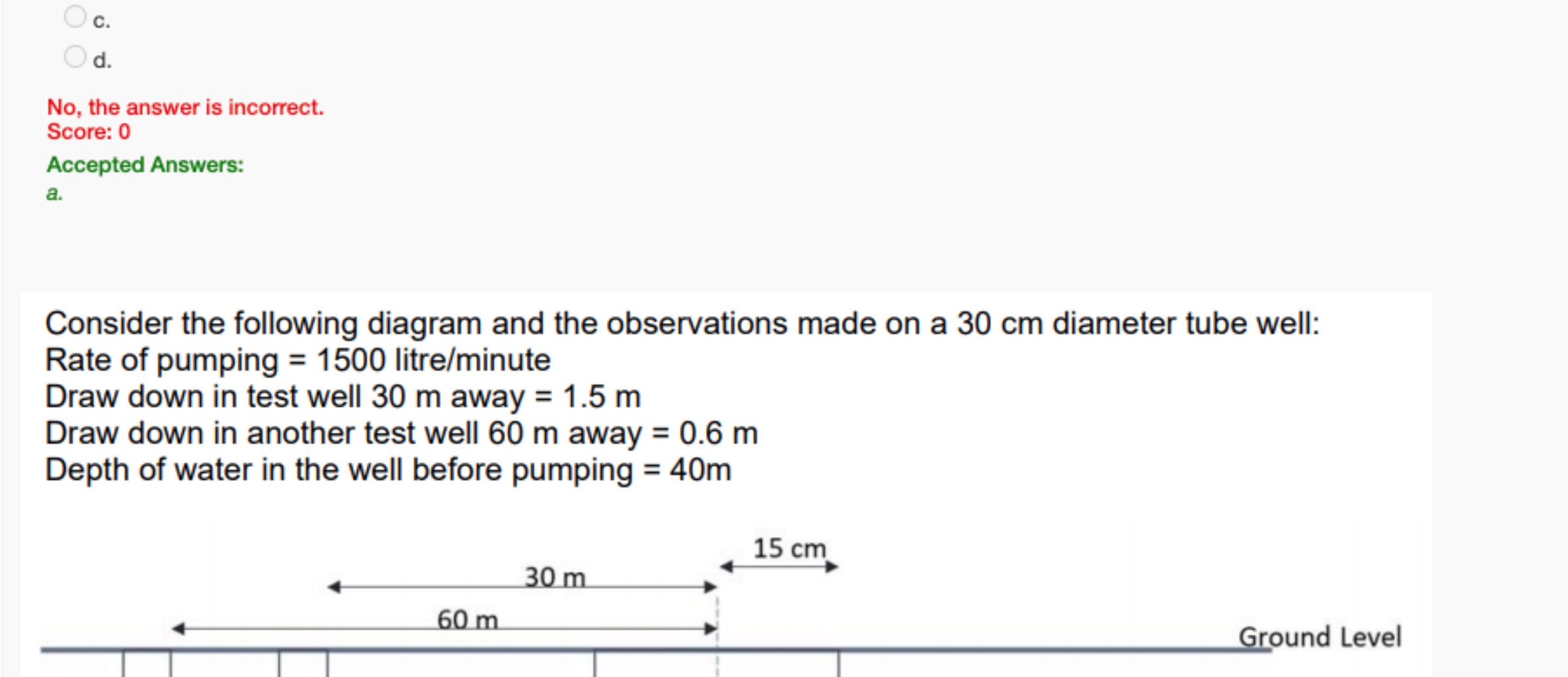
No, the answer is incorrect.
 Score: 0
 Accepted Answers:
 c.

11) _____ states that the rate of flow (laminar flow) is directly proportional to the hydraulic gradient and the area of cross-section of the soil.

a. Darcy's law
 b. Bernoulli's principle
 c. Archimedes' principle
 d. Newton's law of motion

a.
 b.
 c.
 d.

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



Answer question 12, 13 and 14 based on the above given data.

12) The radius of the circle of influence, R (in meters) is

a. 100
 b. 110
 c. 96
 d. 130

a.
 b.
 c.
 d.

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

13) The transmission constant of the aquifer, K_m is:

a. 7
 b. 8.5
 c. 6.4
 d. 5

a.
 b.
 c.
 d.

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

14) Maximum rate of discharge of the well, Q_{max} (correct to 2 decimal places) is

a. 5.26 m³/min
 b. 6.84 m³/min
 c. 3.65 m³/min
 d. 4.86 m³/min

a.
 b.
 c.
 d.

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

15) _____ are structures which essentially consist of strainer through which the raw water from river, canal or reservoir enters and is connected to a sump well by means of conduits.

a. Intakes
 b. Infiltration well
 c. Infiltration gallery
 d. Dug well

a.
 b.
 c.
 d.

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

16) Among the following statements, the incorrect statement is:

a. Intake should be located at site where sufficient quantity of water is available
 b. Intakes should have sufficient self-weight to prevent up thrust of water/ current.
 c. Intakes should be constructed close to navigation channels
 d. Intakes should be constructed as far as possible from sewage disposal.

a.
 b.
 c.
 d.

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

17) Which among the following is not a primary source of water?

a. River
 b. Glacier melts
 c. Canals
 d. Rainwater

a.
 b.
 c.
 d.

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