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Watershed Wise Landscape Professional Sample Test Questions

Given the following, answer the next two questions:

- Metal roof = 1,000 sq ft
- Runoff coefficient = 90%
- Average rainfall = 21"

1. How much total rainwater can be harvested in an average year?
 - a. **11,718 gallons**
 - b. 21,000 gallons
 - c. 18,900 gallons
 - d. 13,020 gallons
2. How many total cubic feet (cf) of water could be harvested from this roof?
 - a. 2100 cf
 - b. **1,567 cf**
 - c. 1,015 cf
 - d. 18,900 cf
3. If you were able to gather 10,000 gallons of rainwater from impermeable surfaces and had a 1,000 sf ft landscape area suitable for the holding the rainwater, how deep would you have to dig to create a BMP to capture all of the water?
 - a. 12 inches
 - b. 24 inches
 - c. 8 inches
 - d. **16 inches**

PASS/FAIL QUESTIONS – if you do not correctly answer the following sequence of seven (7) questions, you will not pass the exam.

Given the following, answer the next seven (7) questions:

Daily Plant Water Requirement (DWPR) = .025"

Plant root depth = 10"

Clay soil with Available Water Holding Capacity (AWHC) = 0.158"/inch

Infiltration rate = 0.20"/hour

MAD = 30%

Distribution Uniformity (DU) = 70%

Precipitation rate = 0.45"/hr

Show your work.

4. What is the Plant Available Water (PAW) in inches?

$$0.158" \times 10" = \mathbf{1.58"}$$

5. What is the Allowable Depletion (AD) in inches?

$$1.58" \times .3 = \mathbf{0.474"}$$

6. How many days are in the Irrigation Interval between irrigation events (round to the nearest whole number)?

$$0.474 / .025 = 18.96 \mathbf{(19 \text{ days})}$$

7. How much water has been depleted from the soil between irrigation events in inches?

$$19 \times .025 = \mathbf{0.475"}$$

8. How much water will need to be Applied during the irrigation event in inches?

$$0.475 / .70 = \mathbf{0.679"}$$

9. What is the Total Irrigation Run Time (TIRT)?

$$(0.679 \times 60) / 0.45 = 90.5 \text{ (91 minutes)}$$

a. 125 minutes

b. 91 minutes

c. 245 minutes

d. 72 minutes

10. If runoff is occurring at 15 minutes, how many cycles would be required to complete the TIRT?

$$91 / 15 = \mathbf{6 \text{ cycles}}$$

PASS/FAIL QUESTIONS – if you do not correctly answer the following sequence of six (6) questions, you will not pass the exam.

Show your work for the following questions: You've conducted an Irrigation Audit with the following information:

CAN #	ML OBSERVED	New Can Order
1	30	15
2	20	15
3	20	15
4	15	15
5	15	15
6	30	15
7	20	20
8	15	20
9	30	20
10	30	20
11	20	20
12	20	30
13	15	30
14	15	30
15	30	30
16	15	30

Note: for exam purposes, the audit includes only 16 cans.

11. List the catch cans in the proper order to complete a distribution uniformity analysis.

12. What is the total catch can average?

21.25

13. What is the Lowest Quarter Average?

60/4 = 15

14. What is the DU_{LQ}

15/21.25 = 0.71

15. What is the Lowest Half Average?

130/8 = 16.25

16. What is the DU_{LH} ?

$$16.25/21.25 = 0.76$$

Calculate the precipitation rate for each zone in inches per hour. Show your work:

17. Zone A - In-line drip, 0.6 gph, 12" apart, row spacing 15", 50 sf

$$231.1 \times .6 / (12 \times 15) = 138.66 / 180 = \mathbf{0.77'' / hour}$$

18. For Zone A, if the soil intake rate is 0.75"/hr, would we get runoff?

Yes/No

19. Zone B - Point Source drip, 1.0 gph, (12) 5-gallon plants, 2 emitters/plant, 85 sq ft

$$12 \times 2 = 24 \text{ gph} / 60 = 0.4 \text{ gpm}$$

$$(96.25 \times .4) / 85 \text{ sf} = \mathbf{0.45'' per hour}$$

20. For Zone B, if the soil intake rate is 0.75"/hr, would we get runoff?

Yes/No

Given the following, answer the next five (5) questions as they pertain to creating water budgets:

Annual ETo for Region = 45"

Hydrozone 1 = 500 sf

Plant Factor = 0.80

IE = 0.55

Hydrozone 2 = 350 sf

Plant Factor = 0.50

IE = 0.75

Show your work:

21. What is the landscape water requirement in **gallons** for Hydrozone 1?

$$\mathbf{Zone 1 - 500 \text{ sf} \times 45'' \times 0.8 / 0.55 \times 0.62 = 20,290 \text{ gal./yr.}}$$

22. What is the landscape water requirement in **gallons** for Hydrozone 2?

$$\mathbf{Zone 2 - 350 \text{ sf} \times 45'' \times 0.5 / 0.75 \times 0.62 = 6,510 \text{ gal./yr.}}$$

23. How many gallons could be saved if the IE of Zone 1 were raised to 0.85?

$$\mathbf{Zone 1 - 500 \text{ sf} \times 45'' \times 0.8 / 0.85 \times 0.62 = 13,129 \text{ gal./yr.}}$$

24. What would the landscape water requirement in Gallons be if we also changed the Plant Factor in Zone 1 to 0.5?

Zone 1 - $500 \text{ sf} \times 45'' \times 0.5 / 0.85 \times 0.62 = 8,205 \text{ gal./yr.}$

25. How many total gallons could be **saved** if the plant factor of Zone 1 were changed to 0.5, and the IE to 0.85?

Zone 1 - $500 \text{ sf} \times 45'' \times 0.5 / 0.85 \times 0.62 = 8,205 \text{ gal./yr.}$

Zone 2 - $350 \text{ sf} \times 45'' \times 0.5 / 0.75 \times 0.62 = 6,510 \text{ gal./yr.}$

**$(20,290 + 6,510) - (8,205 + 6,510) =$
 $26,800 - 14,715 = 12,085 \text{ gallons saved}$**