Activity 1

At this time, complete Activity 1 in your Study Guide to review the material just covered. After finishing the Activity, compare your answers by referring to "Activity Solutions" near the back of this module. When you are satisfied that you understand the material, continue with the Study Guide text.

1. A hydraulic structure is a device designed to_____, or _____the flow of water. It can be manufactured or it can be constructed in the field.
2. The two hydraulic parameters to consider in selecting a structure type are:

   a. _____(flow), cfs
   b. _____, _____,ft
3. A structure is to be designed to handle a discharge of 200 cfs and have a controlled head of 8 feet. What type of structure should be used?

Activity 2

At this time, complete Activity 2 in your Study Guide to review the material just covered. After finishing the Activity, compare your answers by referring to "Activity Solutions" near the back of this module. When you are satisfied that you understand the material, continue with the Study Guide text.

1. The three flow factors common to all types of structures are_____ _____, and _____ _____, and _____ _____.

2._____, _____ and _____ are the three characteristics of the approach channel that affect the head-discharge relationship.

3. T _F An approach channel several times as wide as the structure inlet helps to decrease the discharge capacity of the structure.

4. Why did you answer question 3 as you did?

5. An increase in the depth of the approach channel increases the _____and therefore increases the discharge_____.

6. Improved alignment of the approach channel improves the discharge capacity of a structure by aiming the water directly at the _____.

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7. The four kinds of inlets a structure can have are _____ wall, _____ box,_____ pipe drop and_____-_____pipe.

8. Two appurtenances that are added to structure inlets to improve flow conditions are_____and_____devices.

9. An anti-vortex device prevents the formation of a vortex(_____) which would allow air to displace_____in the structure.

10. Tailwater at the outlet of a structure helps dissipate_____ _____ in the water.

11. If there is too much tailwater, it can_____ the structure and _____ the discharge capacity.

Activity 3

At this time, complete Activity 3 in your Study Guide to review the material just covered. After finishing the Activity, compare your answers by referring to "Activity Solutions" near the back of this module. When you are satisfied that you understand the material, continue with the Study Guide text.

1.A weir is a_____ _____through which water flows.

2 . Two kinds of drop structures are_____drop spillway and _____drop spillway.

3. T _F The length of a weir is the horizontal length along the surface of the notch plus a vertical length of each side of the notch.

4.Conservation structures are usually *Sharp Crested/Broad* Crested. (Choose one).

5. T _F The cross sectional shape of a broad crested weir is rectangular.

6. How far upstream from the crest should the height of the water over the crest (H) be measured? About_____H.

7. Velocity head helps to *increase/Decrease* discharge capacity. (Choose one).

8. The tailwater of a drop structure is found to be level with the spillway crest. This in itself would not be a problem, but if more tailwater depth occurs, the _____ _____could be reduced.

Activity 4

At this time, complete Activity 4 in your Study Guide to review the material just covered. After finishing the Activity, compare your answers by referring to "Activity Solutions" near the back of this module. When you are satisfied that you understand the material, continue with the Study Guide text.

1. Name the flow factors common to all conduits, including culverts.
   a. _____and shape
   b. material and _____.
   c. _____conditions
   d. _____

2. _T _F Discharge varies inversely to the roughness of a conduit.

3. Slope provides energy in the form of_____ _____in a conduit to increase discharge.

4. What are the two types of culvert flow?
   a._____control
   b._____control

5. Culvert flow type is determined for a given set of conditions by comparing the slope of the culvert to_____ _____.

6. A culvert found to have a slope greater than the neutral slope is *Inlet Controlled/Outlet Controlled.* (Choose one).

7. What are the two factors affecting the capacity of an inlet controlled culvert?

a._____

b._____

8. What two additional factors affect the capacity of an outlet controlled culvert?

a._____

b._____

Activity 5

At this time, complete Activity 5 in your Study Guide to review the material just covered. After finishing the Activity, compare your answers by referring to "Activity Solutions" near the back of this module. When you are satisfied that you understand the material, continue with the Study Guide text.

1.- T _F A hooded inlet conduit is formed by cutting the inlet end of the conduit at an angle and placing the long side of the cut at the top.

2. Both a hooded inlet and an inlet controlled culvert are installed on slopes greater than the neutral slope. What flow characteristic distinguishes the hooded inlet from the inlet controlled culvert.

3.The maximum slope for a hooded inlet is_____%.

4. How much headwater is required for a hooded inlet to flow full?

5.The term used to describe the flow condition when the headwater is greater than the pipe diameter, but not enough to give pipe-full flow is_____ _____.

6. How is the head determined for a hooded inlet?

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Activity 6

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1.The two types of flow used in drop inlet structures are_____ flow and _____ flow.

2. The two parts of a drop inlet structure are_____ and _____.

3. - T _F The riser controls the discharge rate.

4. The flow in the barrel is similar to that in what other types of structure?

5. - T _F The flow factors for the riser of a drop inlet are similar to those for a drop structure.

6. The two dimensions of the riser that must be sized to pro vide adequate flow to the barrel are _____length and _____height.

7. If the barrel of a drop inlet structure is installed on a slope greater than a neutral slope, the minimum allowable height of the riser is _____times the barrel diameter.

8. Since the barrel of a drop inlet restricts the discharge, this type of structure requires_____ _____.

9. What equations shows the relationship between discharge and storage?

10. What are two special adaptations of the drop inlet structure?

a._____

b._____

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