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Final Exam

Continuing Education Course #304
Floodplain Engineering
An Overview of Floodplain Management

1. Floodplains can be divided into riverine floodplain, coastal floodplains and tidal floodplains
- ○ a. True.
- ○ b. False.

2. What does BFE stand for on a FEMA map?
- ○ a. It depends on the type of map.
- ○ b. It is not used on FEMA maps.
- ○ c. It stands for base flood elevation.
- ○ d. It represents the basis for flood evaluation.

3. The amount of flood insurance coverage required by the Federal Disaster Protection Act of 1973 (as amended by the National Flood Insurance Reform Act of 1994) is the outstanding principal on the loan.
- ○ a. True.
- ○ b. False.

4. If a homeowner owns property within the 100 year floodplain and has a 20 year mortgage, what is the chance that the property will be flooded at least once within the life of the mortgage?
- ○ a. 10%,
- ○ b. 18%.
- ○ c. 56%.
- ○ d. 64%.

5. What does Zone V signify on a FEMA flood map?
- ○ a. It is a numbered zone that specifies a BFE.
- ○ b. It is an area that is inundated by tidal floods with velocity. A BFE is not specified.
- ○ c. It is an area beyond the detailed limits of the flood mapping.

6. When can a homeowner apply for a Letter of Map Amendment (LOMA) of a FEMA flood map?
- ○ a. When the property is located within the 100 year floodplain.
- ○ b. When the property is located within an AR flood zone.
- ○ c. When the property is not located within the 500 year plain.
- ○ d. When he or she believes that an area has been incorrectly mapped within the Special Flood Hazard Area (SFHA).

7. On New Jersey state-adopted flood maps what is the flood called that is equivalent to a 100 year storm plus 25?
- ○ a. The New Jersey Flood Hazard Area Design Flood.
- ○ b. The 125 year flood.
- ○ c. The 500 year flood.

8. Which of the following hazards are associated with flooding?

- a. Hydrostatic forces.
- b. Hydrodynamic forces.
- c. Buoyancy forces.
- d. None of the above.
- e. All of the above.

9. What is the hydrostatic force on a wall due to water 4 feet deep? Assume that the floodwater is fresh water.
- a. 49 lbs.
- b. 499 lbs.
- c. 299 lbs.
- d. 4499 lbs.

10. At what height above the ground would the force calculated in question #9 act?
- a. 1.33 feet.
- b. 4 feet.
- c. 2 feet.

11. What is the differential between the water and soil pressures of saturated soil against a retaining wall? The depth of the soil is 6 feet. Assume that the floodwaters are salt and the soil is a very soft clay.
- a. 57 lbs.
- b. 5760 lbs.
- c. 756 lbs.
- d. There is not enough data to determine the answer.

12. When calculating low velocity hydrodynamic forces, the engineer must use a drag coefficient. This coefficient is a function of which of the following?
- a. The velocity of the floodwater.
- b. The material of the building on which the force is acting.
- c. The depth of the floodwater.
- d. None of the above.

13. Calculalte the equivalent head due to low velocity flows for the following situation:
Flood depth = 5 feet.
Width of building = 50 feet.
Velocity of floodwaters = 7 feet per second.
- a. 7 feet.
- b. 3.5 feet.
- c. 2.33 feet.
- d. 0.95 feet.

14. What is the term for a derived unit of mass that is accelerated by 1 ft/sec^2 when a force of 1 pound is exerted on it?
- a. hydrodynamic force.
- b. slug.
- c. Momentum
- d. Energy.

15. What causes impact loads in a flood?
- a. The floodwaters.
- b. Objects carried by the floodwaters.
- c. Drag operating alongside structures subject to high velocity flows.
- d. All of the above.

16. In determining impact loads, what would be the depth coefficient in Flood Zone A on a FEMA map?
- a. 1.0.
- b. 0.5.
- c. 0.25.
- d. There is not enough information given to determine the coefficient.

17. Signs are an important part of flood evacuation plans.
- a. True.
- b. False.

18. Which if the following is not a flood control measure.
- a. Levee.
- b. Flood gate.
- c. Bypass channel.
- d. All of the above are flood control measures.

19. The NFIP includes a checklist of preparedness for people living in flood-prone areas. However, this checklist is only applicable to people living in the northeastern united states.
- a. True
- b. False

20. Which is an example of a lake with no outlet?
- a. Lake Michigan
- b. Lake Superior.
- c. Great Salt Lake.
- d. Lake Ontario.

21. What type of flooding is characterized by hazards associated with (i) the velocity of the floodwaters and debris carried by the flood, (ii) sediment, rock, and debris deposited by the floodwaters, and (iii) the potential for the channel to move during the flood?
- a. Floods associated with ice jams.
- b. Floods associated with dam breaks.
- c. Alluvial fan flooding.
- d. Floods caused by a 100 year storm.

22. What are the most common causes of dam breaks?
- a. The foundation fails.
- b. The design, construction, materials, or operation of the dam are faulty.
- c. Flooding exceeds the capacity of the dam’s spillways.
- d. All of the above.

23. The impact of a sudden break-up of an ice jam can be as devastating as what other type of flood?
- a. A flood caused by a dam break.
- b. A flood caused by a 500 year storm.
- c. An alluvial fan flood.

24. FEMA has guidelines for reducing the magnitude of flood events. Which is one of the overall strategies that FEMA employs in this regard?
- a. Working with local officials to prevent dam breaks.
- b. Working with meteorologists to predict the occurrence of ice jams.
- c. Working to modify human susceptibility to flood damage.
- d. Working with engineers to better predict the magnitude of impact loads associated with flooding.

25. Building dams and reservoirs that store excess water upstream of developed areas is one way that FEMA works to modify flooding.

- ○ a. True.
- ○ b. False.