Classical Methods of Structural Analysis
Quiz for Session 5: Indeterminate Structures and the General Method – July 15, 2019
Due: August 5, 8:00 a.m. EDT – Submit through the online form

Problem 1

1. Using the conjugate beam method, the moment at the fixed support on the propped cantilever shown is approximately:
   a. 45 ft-kips
   b. 60 ft-kips
   c. 80 ft-kips
   d. 90 ft-kips
   e. None of these are correct.

2. When a structure is indeterminate it can be solved by the general method which involves which of the following?
   a. Removing all the reactions on the structure.
   b. Determining the displacements that correspond to the removed redundants.
   c. Calculating deflections due to unit loads.
   d. a and b
   e. b and c

3. A beam with three “extra” reactions is said to be 3 degrees indeterminate. To use the method of consistent deflections, how many deflections must be calculated if you apply Maxwell’s Law of Reciprocal deflections?
   a. 3
   b. 6
   c. 9
   d. 12
   e. It depends on the selected redundants.
Problem 4

Using the general method, the force in member BD is approximately:

- a. 22.6 kips
- b. 30.1 kips
- c. 40.8 kips
- d. 29.1 kips
- e. None of these are correct

Problem 5

Using the general method, the moment in the beam at support B is approximately:

- a. 50.8 ft-kips
- b. 109 ft-kips
- c. 218 ft-kips
- d. 1307 ft-kips
- e. None of the above

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6. Using the general method, the force in member BC is approximately:
   a. 1.80 kips
   b. 5.90 kips
   c. 0.76 kips
   d. 1.38 kips
   e. None of the above

7. For the structure of Problem 6, if you ignored the flexure in the beam, the force in member BC is approximately:
   a. 1.80 kips
   b. 5.90 kips
   c. 0.76 kips
   d. 1.38 kips
   e. None of the above
Problems 8, 9 and 10

8. The structure for Problem 8 is 2 degrees indeterminate. Determine the vertical and horizontal reactions at A. The horizontal reaction at A is approximately:
   a. 12 kips
   b. 6.0 kips
   c. 27 kips
   d. 18 kips
   e. None of the above

9. For the structure of Problem 8, the vertical reaction at A is approximately:
   a. 12 kips
   b. 6.0 kips
   c. 27 kips
   d. 18 kips
   e. None of the above

10. For the structure of Problem 8, the moment at C is approximately:
    a. 180 ft-kips
    b. 0 ft-kips
    c. 90 ft-kips
    d. 810 ft-kips
    e. None of the above