A. Consider the following extensive form game. Terminal history in any extensive form game is a set of sequences with the property that no sequence is a proper sub-history of any other sequence.

1. No. of sub games this game has
   a. 1
   b. 2
   c. 3
   d. 4

2. No. of proper sub games this game has
   a. 1
   b. 2
   c. 3
   d. 4

3. No of terminal histories in this game are
   a. 1
   b. 2
   c. 3
   d. 4

4. Outcome of strategy pair (DG, E) and (CH, E) are
   a. Terminal histories (C, F) and (C, E, G) respectively
   b. Terminal histories (D) and (C, E, H) respectively
   c. Terminal histories (C, E, H) and (D) respectively
   d. None

5. No. of Nash equilibria of this game are
   a. 1
   b. 2
   c. 3
   d. 4

6. No. of SPNE(s) of this game is (are)
   a. 1
   b. 2
7. Which one of the following is a SPNE of this game
   a. (CH, F)
   b. (DH, E)
   c. (DG, E)
   d. None

B. Initially there is one firm in a market for cars. The firm has a linear cost function: \( C(q) = 2q \). The market inverse demand function is given by \( P (Q) = 9 – Q \). A second firm enters the market and the second firm has an identical cost function.

8. The Cournot Equilibrium output of the two firms will be
   a. 7/3, 8/3 respectively
   b. 8/3, 7/3 respectively
   c. 7/3 for each firm
   d. 8/3 for each firm

9. The Stackelberg Equilibrium output for both firms is
   a. 7/2, 7/4 respectively
   b. 7/4, 7/2 respectively
   c. 7/2 for each firm
   d. 7/4 for each firm

C. Two players use the following procedure to divide a cake. Player 1 divides the cake into two pieces, and then player 2 chooses one of the two pieces; player 1 obtains the remaining piece. The cake is continuously divisible (no lumps!) and perfectly homogeneous, so that each player cares only about size of the piece she obtains.

10. How many SPNE(s) does this game have
    a. 1
    b. 2
    c. Infinitely many
    d. Finitely many

11. Which of the following is an SPNE of this game
    a. Player 1 gets bigger part and player 2 gets the smaller part of the cake
    b. Player 1 gets smaller part and player 2 gets the bigger part of the cake
    c. Both players get pieces of equal size
    d. None

D. Consider a variant of ultimatum game in which the amount of money is available only in multiples of a cent.

12. In this game, each player has
    a. Infinitely many actions
    b. Finitely many actions
    c. Only one action
    d. Only two actions

13. This game has
a. 1 SPNE  
b. 2 SPNEs  
c. Finitely many SPNEs  
d. Infinitely many SPNEs

E. 
Represent in a diagram like game tree the two player Extensive game with perfect information in which the terminal histories are (C, E), (C, F), (D, G), and (D, H), the player function is given by $P(\phi) = 1$ and $P(C) = P(D) = 2$, player 1 prefers (C, F) to (D,G) to (C, E) to (D, H), and player 2 prefers (D, G) to (C, F) to (D,H) to (C,E).

14. Which of the following is not a Nash Equilibrium of this game
   a. (C, FG)  
   b. (C, FH)  
   c. (D, EG)  
   d. (C, EG)

15. Which of the following is an SPNE of this game
   a. (C, FG)  
   b. (C, FH)  
   c. (D, EG)  
   d. (C, EG)