INSTRUCTIONS (***Read Carefully***):

ON YOUR QUESTION BOOKLET:
Fill in your name, Student ID, Discussion Section Number (e.g. D5) and your signature.

ON YOUR SCANTRON:
Enter the Course Number (EC101 DD or EE) and date on the lines at the top-left. In the boxes below, enter your Student ID, your DISCUSSION SECTION number (D1 - D9, E0 - E9), your NAME and your EXAM VERSION into the Scantron computer sheet. Be sure that you “bubble” all entries. I will subtract up to 5 points as punishment for errors in these data!

DURING THE EXAM:
Students who wish to leave the room for any reason must leave the Question Booklet and Scantron sheet with the instructor or teaching fellow. Students in EC101EE (Dec 15) MUST turn in both the Question Booklet and the Scantron sheet at the end of the exam and exit from the front of the room. Students in EC101DD (Dec 17) should keep their Question Booklet and turn in only their Scantrons. All students must show their BU Student IDs as they leave the exam room.

MULTIPLE-CHOICE QUESTIONS:
Choose the BEST answer for each of the multiple-choice questions. (Only ONE answer is allowed, even when more than one of the answers is technically correct.) On the Question Booklet, CIRCLE the letter that you chose, so that you have a record of your answers. Then BUBBLE it on the Scantron sheet for grading.

Never cross out an answer on your Scantron. Use a pencil to bubble your answers, and keep a good eraser with you. If you bubble the wrong answer on the Scantron, erase your mark COMPLETELY, and then bubble the correct answer.

***YOU MAY NOT USE A CALCULATOR, CELL PHONE OR LAPTOP.

***However, INTERNATIONAL STUDENTS may use electronic translators or dictionaries.

You have 2 hours (120 minutes) to complete 60 questions. Good luck!

DO NOT OPEN THIS BOOKLET OR TURN IT OVER
[until told to do so]
Scenario BST. Suppose farmers begin to treat cows with the hormone BST, which causes the cows to produce a lot more milk. However, many people believe that milk from BST-treated cows can cause cancer in humans.

[You may draw in the space below to help you answer. The drawing will NOT be graded.]

1. See Scenario BST. The supply curve for milk will
   a. shift left.
   b. shift right.
   c. rotate.
   d. be unaffected.

2. See Scenario BST. The demand curve for milk will
   a. rotate.
   b. be unaffected.
   c. shift right.
   d. shift left.

3. See Scenario BST. The equilibrium quantity of milk
   a. will not change.
   b. could increase or decrease.
   c. will decrease.
   d. will increase.

4. Anandi is planning to attend Purdue University, but she decides to go to Bentley College instead after Bentley offers her a scholarship that reduces her tuition charge by $25,000. The economic cost of the scholarship to Bentley is
   a. $25,000.
   b. zero, because Bentley does not pay anything to the student or to her family.
   c. much less than $25,000 if Bentley has plenty of room for more students in its courses.
   d. $25,000 minus any other payments Anandi makes to Bentley.

5. A statistical study demonstrated that smokers have 50 percent more automobile accidents than nonsmokers. We can be sure that
   a. bad drivers are more likely to smoke.
   b. smokers tend to take more risks than nonsmokers.
   c. smoking causes drivers to have accidents.
   d. NONE of the above

Figure TXM. Suppose the government enacts an excise tax in this market as shown below.

6. See Figure TXM. Consumers effectively pay a larger portion of the tax than producers do, because in the relevant price range
   a. the demand curve is elastic.
   b. the supply curve is inelastic.
   c. supply is more elastic than demand.
   d. demand is more elastic than supply.

7. See Figure TXM. The loss of social surplus caused by the tax is
   a. 120.
   b. 0.
   c. 60.
   d. 40.

8. See Figure TXM. The total reduction in consumer surplus as a result of the tax is
   a. 0.
   b. 120.
   c. 20.
   d. 240.

9. Which of the following does not affect a consumer's demand curve for cotton shirts?
   a. the consumer’s income
   b. expectations about future clothing prices
   c. manufacturing costs
   d. current fashion
10. Social surplus is maximized
   a. by a nondiscriminating monopolist.
   b. by a monopolist with perfect price discrimination.
   c. under monopolistic competition.
   d. **NONE** of the above

11. A key determinant of the price elasticity of supply is
   a. the ability of sellers to change the amount of the good they produce.
   b. how responsive buyers are to changes in sellers' prices.
   c. the slope of the demand curve.
   d. the ability of sellers to change the price of the good they produce.

*Figure SDA.* Supply and Demand in the market for milk.

12. **See Figure SDA.** At a price of $35, there would be a
   a. shortage of 200 units.
   b. surplus of 200 units.
   c. surplus of 300 units.
   d. surplus of 100 units.

13. **See Figure SDA.** When the price increases from $25 to $30, the price elasticity of supply is approximately
   a. 2.75
   b. 1.25
   c. 0.5
   d. 5.0

14. **See Figure SDA.** Suppose bad weather kills half the dairy cows. The new equilibrium price of milk would be about ____. *[Hint: Draw on the graph in Figure SDA.]*
   a. 40
   b. 32
   c. 25
   d. 18

15. A private foundation offers financial aid for attending college to high school students with excellent grades. This would
   a. decrease the supply of college education.
   b. increase the supply of college education.
   c. increase the demand for college education.
   d. decrease the demand for college education.

*Figure CCV.* Suppose that a firm in a competitive market has the following cost curves, and assume that competing firms do **not** enter or exit the market.

16. **See Figure CCV.** If the market price is exactly $16 then the firm should
   a. stay in business in the long run.
   b. stay in business in the short run, but not in the long run.
   c. stay in business until fixed costs become avoidable, and then shut down.
   d. shut down immediately.

17. **See Figure CCV.** The firm’s short-run supply curve is the same as
   a. its marginal cost curve.
   b. its average total cost curve at prices above $12.60 and is on the vertical axis at lower prices.
   c. its marginal cost curve at prices above $9.00 and is on the vertical axis at lower prices.
   d. its average total cost curve at prices above $9.00 and is on the vertical axis at lower prices.

18. **See Figure CCV.** The firm should shut down immediately if the market price is
   a. above $9 but less than $12.60.
   b. less than $9
   c. above $12.60 but less than $16.
   d. above $16.
Scenario CAV. Wei and Yao make cakes and pies in their bakery. The time required is shown in the table below.

<table>
<thead>
<tr>
<th>Minutes Needed to Make One</th>
<th>cake</th>
<th>pie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wei</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Yao</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

19. In Scenario CAV, Yao’s opportunity cost of 1 pie is
   a. 2 cakes.
   b. 2/3 cake.
   c. 8 cakes.
   d. 1/2 cake.

20. In Scenario CAV, which of the following is true?
   a. Neither Wei nor Yao should specialize.
   b. Wei should specialize in making pies.
   c. Wei should specialize in making cakes.
   d. Yao should specialize in making cakes.

Table EXR. Residents of a small town can buy watch dogs to keep theives away from their houses. Unfortunately, the dogs bark a lot and annoy the neighbors. Each watch dog has the costs and benefits listed here.

<table>
<thead>
<tr>
<th>Dog Number</th>
<th>Private Benefit</th>
<th>Private Cost</th>
<th>External Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$22</td>
<td>$6</td>
<td>$5</td>
</tr>
<tr>
<td>2</td>
<td>$20</td>
<td>$8</td>
<td>$5</td>
</tr>
<tr>
<td>3</td>
<td>$18</td>
<td>$11</td>
<td>$5</td>
</tr>
<tr>
<td>4</td>
<td>$16</td>
<td>$14</td>
<td>$5</td>
</tr>
<tr>
<td>5</td>
<td>$14</td>
<td>$18</td>
<td>$5</td>
</tr>
<tr>
<td>6</td>
<td>$12</td>
<td>$23</td>
<td>$5</td>
</tr>
</tbody>
</table>

21. See Table EXR. The market-equilibrium quantity of watch dogs bought would be
   a. 6.
   b. 5.
   c. 3.
   d. 4.

22. See Table EXR. What excise tax per dog would be enough to move the market from the equilibrium number of watch dogs to the socially optimal number?
   a. $6
   b. $10
   c. $3
   d. $1

23. An increase in stock-market values implies that
   a. most people are wealthier.
   b. the GDP is higher.
   c. unemployment is lower.
   d. NONE of the above

24. The own-price elasticity of an upward sloping supply curve
   a. must be negative.
   b. must be positive (but not always 1).
   c. is always 1.
   d. can be either positive or negative.

25. Private firms will not produce nonexcludable goods, because
   a. people can consume the goods without paying for them.
   b. demand for nonexcludable goods is inelastic.
   c. production costs are high.
   d. ALL of the above

Figure RMN. This graph represents the Cheetam company, a profit-maximizing nondiscriminating monopoly. [AC represents average total cost.]

26. See Figure RMN. What price will Cheetam charge?
   a. 20
   b. 46
   c. 60
   d. 90

27. See Figure RMN. What price would a monopoly regulator set if the regulator wants to maximize social surplus?
   a. 46
   b. 60
   c. 90
   d. 20

28. See Figure RMN. How many units would Cheetam produce if Cheetam could price-discriminate perfectly?
   a. 40
   b. 46
   c. 50
   d. 35
29. In competitive economies, many workers are often paid more than would be required to make them willing to do their jobs, because
   a. firms will not pay economic rents to workers under competition.
   b. a fair wage maximizes profits.
   c. good workers receive economic rents when firms compete with each other for labor.
   d. firms cannot receive economic rents under competition.

30. Which of the following could be the cross-price elasticity of supply for two goods that are complements in production?
   a. –1.3
   b. –0.2
   c. 0
   d. 1.4

**Scenario CDO.** This table shows a game played between two firms, Firm A and Firm B. In this game each firm must decide how much output (Q) to produce: 12 units or 20 units. The profit for each firm is given in the table as Profit for Firm A, Profit for Firm B.

<table>
<thead>
<tr>
<th></th>
<th>Firm A</th>
<th>Firm B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q=12</td>
<td>48, 48</td>
<td>20, 60</td>
</tr>
<tr>
<td>Q=20</td>
<td>60, 20</td>
<td>38, 38</td>
</tr>
</tbody>
</table>

31. **See Scenario CDO.** A’s dominant strategy is to produce _____, and B’s is to produce ______.
   a. 12; 12
   b. 20; 20
   c. 12; 20
   d. 20; 12

32. **See Scenario CDO.** If both firms cooperate in order to maximize their total profits, then A will produce _____, and B will produce ______.
   a. 20; 20
   b. 20; 12
   c. 12; 20
   d. 12; 12

33. **See Scenario CDO.** What is true about this game?
   a. There is one Nash equilibrium: both A and B produce 20.
   b. There is no Nash equilibrium.
   c. There is one Nash equilibrium: both A and B produce 12.
   d. There are two Nash equilibria: both A and B produce 12, and both A and B produce 20.

**Scenario CPM.** Suppose a nondiscriminating profit-maximizing monopolist has a demand curve that can be expressed as \( P = 90 - 2Q \), so that the monopolist’s marginal revenue curve would be given by \( MR = 90 - 4Q \). The monopolist has constant marginal costs and average total costs of $10.

<table>
<thead>
<tr>
<th></th>
<th>Q=12</th>
<th>Q=20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm A</td>
<td>48</td>
<td>20</td>
</tr>
<tr>
<td>Firm B</td>
<td>60</td>
<td>38</td>
</tr>
</tbody>
</table>

34. **See Scenario CPM.** The monopolist will produce an output level of
   a. 40 units.
   b. 10 units.
   c. 20 units.
   d. 80 units.

35. **See Scenario CPM.** The monopolist will earn profits of
   a. $1600.
   b. $800.
   c. $400.
   d. $200.

36. **See Scenario CPM.** Suppose now that the monopolist could price-discriminate perfectly. Her output level then would be
   a. 90.
   b. 40.
   c. 60.
   d. 80.

37. Suppose a thief breaks your car window and steals $100 that you left on the driver’s seat. You decide to be more careful in the future. Which of the following does not represent a loss of social surplus?
   a. the stolen $100
   b. the thief’s labor
   c. the broken car window
   d. your future theft-prevention efforts
38. A reduction in a monopolist's fixed costs would
a. increase the profit-maximizing price and
decrease the profit-maximizing quantity produced.
b. not affect the profit-maximizing price or
c. quantity.
d. decrease the profit-maximizing price and
increase the profit-maximizing quantity produced.
d. have an effect that depends on the elasticity of
demand.

Figure MNC. The graph below describes the short-run situation of Tor Inc, a typical profit-maximizing firm in a monopolistically competitive industry.

39. See Figure MNC. As described in this figure, Tor will
a. have to shut down.
b. earn a short-run economic profit.
c. suffer a short-run loss.
d. earn a long-run economic profit.

40. See Figure MNC. In the short run, how many units of output will Tor produce?
a. 0
b. 30
c. 20
d. 15

41. See Figure MNC. In long-run equilibrium, Tor would produce approximately _____ units.
a. 40
b. 0
c. 50
d. 20

42. Which of the following statements is not correct about a competitive market in equilibrium?
a. Consumer surplus will be equal to producer surplus.
b. Consumers who buy have a higher willingness
to pay than consumers who don’t buy.
c. Those sellers whose costs are less than the price
choose to produce and sell the good.
d. The price determines which buyers and which sellers participate in the market.

43. Negative externalities from a good create inefficiency, because
a. the price of the good will be too high.
b. production of the good involves private costs
that are not opportunity costs.
c. demand for the good is extremely elastic.
d. too much of the good is produced and consumed.

Scenario DDH. Michael has exactly 280 students in EC101 EE. He asks each student to close his eyes and raise either his left hand or his right hand, without knowing what other students are doing. If Michael sees an unequal number of right hands and left hands raised, he asks all students in the minority to pay $20 each, and he uses the total amount collected to make equal payments to all students in the majority. If the same number of students have raised their left hands and right hands, no one pays or receives anything.

44. See Scenario DDH. Suppose a student expects that among the other students, 179 will raise their left hands and 100 will raise their right hands. Then the student’s best response is
a. to raise his right hand.
b. to raise his left hand.
c. to raise either his left or his right hand.
d. MORE information needed

45. See Scenario DDH. If 140 students raise their left hands and 140 students raise their right hands, then which students will want to deviate?
a. no students
b. half of the students
c. all students
d. MORE information needed

46. See Scenario DDH. How many pure-strategy Nash equilibria does this game have?
a. 3
b. 2
c. 1
d. 0
47. Suppose your roommate is very messy. Being messy is worth $50 to her because it makes her life easier, but the mess makes you feel $100 worse off. One efficient solution would be for you to
a. pay your roommate $60 to stop being messy.
b. pay your roommate $120 to stop being messy.
c. pay $120 to a cleaning company to clean up her mess.
d. offer to clean up her mess if she pays you $60.

48. When the demand for a good increases and the supply of the good remains unchanged, consumer surplus
a. is unchanged.
b. may increase, decrease, or remain unchanged.
c. decreases.
d. increases.

49. A perfectly competitive market is efficient, partly because
a. those willing to pay the most obtain the goods.
b. goods are produced if and only if the value to the consumer exceeds the cost of production.
c. those with the lowest costs sell the goods.
d. ALL of the above

Scenario QON. Two firms, A and B, each produce the same product with costs \( AC \equiv MC = 8 \). They each set prices: \( PA \) and \( PB \). If \( PA \neq PB \), consumers buy 10 units from the low-price firm, and 0 from the high-price firm. If \( PA = PB \), consumers buy 5 from each firm. The payoffs are the profits of each firm.

50. See Scenario QON. Which of the following strategy profiles forms a Nash equilibrium?
a. firm A charges $48 and B charges $8
b. both firms charge $8
c. firm B charges $48 and A charges $8
d. both firms charge $48

51. See Scenario QON. If both firms charge $48 per unit, then
a. only firm B will want to deviate.
b. neither firm will want to deviate.
c. only firm A will want to deviate.
d. both firms will want to deviate.

52. See Scenario QON. If \( PA = 8 \) then what price is B’s best response?
a. $32
b. $48
c. $8
d. ALL of the above

47. Suppose your roommate is very messy. Being messy is worth $50 to her because it makes her life easier, but the mess makes you feel $100 worse off. One efficient solution would be for you to
a. pay your roommate $60 to stop being messy.
b. pay your roommate $120 to stop being messy.
c. pay $120 to a cleaning company to clean up her mess.
d. offer to clean up her mess if she pays you $60.

53. In Cournot competition, the firms
a. compete by choosing the quantities they will produce.
b. match price cuts by rivals but not price increases.
c. collude to fix prices and earn monopoly profits.
d. compete by choosing their prices.

Figure CRQ. Firm A and firm B produce exactly the same product. They each set the quantity produced, but they accept the market price for their output. Market demand is given by \( QD = 70 - P \). For each firm, \( AC = MC = 25 \).

54. See Figure CRQ. In order to maximize social surplus, firm A and firm B, together, should produce a total of ___ units.
a. 45
b. 65
c. 20
d. 70

55. See Figure CRQ. If firm B plans to produce 5 units, firm A’s best response would be to produce ___ units.
a. 20
b. 65
c. 25
d. 50

56. See Figure CRQ. In Nash equilibrium, each firm produces ___ units.
a. 20
b. 10
c. 15
d. 35
57. A student spends $80 for a ticket to a concert of the Ungrateful Living. But after an hour, she decides that loud music is hurting her ears. If she is economically rational, she should
   a. stay at the concert, because she doesn’t want to waste $80.
   b. stay at the concert, because $80 is a sunk cost.
   c. stay at the concert, because the tickets are not refundable.
   d. leave and do something less painful.

*Figure LFR.* In the game tree below, Arthur decides whether to buy a ticket for football (F) or the opera (R). Thea looks at his ticket, and then she decides between football and opera. Payoffs are given as (Arthur’s payoff, Thea’s payoff).

![Game Tree Diagram]

58. See *Figure LFR.* Which of the following is true about Arthur?
   a. He would rather see football than opera, no matter what Thea does.
   b. He would rather see football and opera alone than see either one with Thea.
   c. He would rather see football with Thea than see it alone.
   d. *NONE* of the above

59. See *Figure LFR.* Thea has _____ possible strategies; Arthur has _____ possible strategies.
   a. four; two
   b. two; four
   c. two; two
   d. four; four

60. See *Figure LFR.* In a subgame-perfect equilibrium, Arthur gets ____ and Thea gets ____.
   a. 9; 2
   b. 3; 4
   c. 5; 6
   d. 8; 3