Part A: Multiple Choice Questions (1.5 points each, total 45 points)
Please mark your answers on both the exam paper and the optic sheet.

1. Which of the following headlines is more closely related to what microeconomists study than to what macroeconomists study?
   a. Unemployment rate falls from 7.5 percent to 7.3 percent.
   b. Real GDP falls by 0.4 percent in the third quarter.
   c. Inflation was 2.4 percent last year.
   **d. The price of gasoline rises due to rising oil prices.**

2. For an economy as a whole, income must equal expenditure because
   a. the number of firms is equal to the number of households in an economy.
   b. individuals can only spend what they earn each period.
   **c. every dollar of spending by some buyer is a dollar of income for some seller.**
   d. every dollar of saving by some consumer is a dollar of spending by some other consumer.

3. If an economy’s GDP rises, then it must be the case that the economy’s
   a. income rises and saving falls.
   b. income and saving both rise.
   c. income rises and expenditure falls.
   **d. income and expenditure both rise.**

4. In the actual economy, households
   a. spend all of their income.
   b. divide their income among spending, taxes, and saving.
   c. buy all goods and services produced in the economy.
   d. Both (a) and (c) are correct.

5. If the prices of all goods and services produced in the economy rose while the quantity of all goods and services stayed the same, which would rise?
   a. both real GDP and nominal GDP.
   b. real GDP but not nominal GDP.
   **c. nominal GDP but not real GDP.**
   d. neither nominal GDP nor real GDP.
6. Which of the following is not correct?
   a. The consumer price index gives economists a way of turning dollar figures into meaningful measures of purchasing power.
   b. The consumer price index is used to monitor changes in the cost of living over time.
   c. The consumer price index is used by economists to measure the inflation rate.
   d. The consumer price index is used to measure the quantity of goods and services that the economy is producing.

7. When the consumer price index rises, the typical family
   a. has to spend more dollars to maintain the same standard of living.
   b. can spend fewer dollars to maintain the same standard of living.
   c. finds that its standard of living is not affected.
   d. can offset the effects of rising prices by saving more.

8. The GDP Deflator reflects
   a. the prices of all final goods and services currently produced domestically, as does the CPI.
   b. the price of a fixed basket of goods and services purchased by a typical consumer, as does the CPI.
   c. the prices of all final goods and services currently produced domestically, while the CPI reflects the price of a fixed basket of goods and services purchased by a typical consumer.
   d. the price of a fixed basket of goods and services purchased by a typical consumer, while the CPI reflects the prices of all final goods and services produced domestically.

9. Which of the following is a good gauge of economic progress?
   a. the level of real GDP per person, but not the growth rate of real GDP per person
   b. the level of real GDP per person and the growth rate of real GDP per person
   c. the growth rate of real GDP per person, but not the level of real GDP per person
   d. neither the level nor the growth rate of real GDP per person

10. Productivity is defined as the quantity of
    a. labor required to produce a nation's GDP.
    b. labor required to produce one unit of goods and services.
    c. goods and services produced from each unit of labor input.
    d. goods and services produced per unit of time.

11. Consider three imaginary countries. In Aire, saving amounts to $4,000 and consumption amounts to $12,000; in Bovina, saving amounts to $3,000 and consumption amounts to $24,000; and in Cartar, saving amounts to $10,000 and consumption amounts to $50,000. The saving rate is
    a. higher in Aire than in Cartar, and it is higher in Cartar than in Bovina.
    b. higher in Cartar than in Aire, and it is higher in Aire than in Bovina.
    c. higher in Cartar than in Bovina, and it is the same in Bovina and Aire.
    d. higher in Aire than in Bovina, and it is the same in Aire and Cartar.

12. For a given year, productivity in a particular country is most closely matched with that country's
    a. level of real GDP over that year.
    b. level of real GDP divided by hours worked over that year.
    c. growth rate of real GDP divided by hours worked over that year.
    d. growth rate of real GDP per person over that year.
13. In the economy of Talikastan in 2015, consumption was $200, exports were $150, GDP was $475, government purchases were $100, and investment was $100. What were Talikastan’s imports in 2015?
   a. -$75  b. -$225  c. $225  d. $75

14. If you were to start a business delivering documents, you might need to purchase cell phones, bicycles, desks, and chairs.
   a. These purchases are called capital investment. If you raise the funds to purchase them from others you are a saver.
   b. These purchases are called capital investment. If you raise the funds to purchase them from others you are a borrower.
   c. These purchases are called consumption. If you raise the funds to purchase them from others you are a saver.
   d. These purchases are called consumption. If you raise the funds to purchase them from others you are a borrower.

15. \( Y = C + I + G + NX \) is an identity because
   a. each symbol identifies a macroeconomic variable.
   b. the right-hand and left-hand sides are equal when an equilibrium is reached.
   c. the equality holds due to the way the variables are defined.
   d. None of the above is correct.

16. The consumption component of GDP includes spending on
   a. durable goods and nondurable goods, but not spending on services.
   b. durable goods and services, but not spending on nondurable goods.
   c. nondurable goods and services, but not spending on durable goods.
   d. durable goods, nondurable goods, and services.

17. In a closed economy, what does \( Y - T - C \) represent?
   a. national saving
   b. government tax revenue
   c. public saving
   d. private saving

18. In a small closed economy investment is $50 billion and private saving is $45 billion. What are public saving and national saving?
   a. $5 billion and $45 billion  b. -$5 billion and $45 billion
   c. $5 billion and $50 billion  d. -$5 billion and $50 billion

19. Which of the following is correct?
   a. The maturity of a bond refers to the amount to be paid back.
   b. The principal of the bond refers to the person selling the bond.
   c. A bond buyer cannot sell a bond before it matures.
   d. None of the above is correct.

20. When the government’s budget deficit increases
   a. the government is borrowing less and public savings falls.
   b. the government is borrowing less and public savings increases.
   c. the government is borrowing more and public savings falls.
   d. the government is borrowing more and public savings increases.
21. Which of the following statements is correct?
   a. The expected future profitability of a corporation influences the demand for that corporation’s stock.
   b. When a corporation sells stock as a means of raising funds it is engaging in debt finance.
   c. The owners of bonds sold by the Microsoft Corporation are part owners of that corporation.
   d. All bonds are, by definition, perpetuities.

22. Factor markets for chocolate bars are influenced by the
   a. demand for chocolate bars.
   b. marginal productivities of labor and capital.
   c. market prices for final goods and services.  
   d. All of the above are correct.

23. When a production function exhibits a diminishing, but positive, marginal product of labor,
   a. output increases, but at an increasing rate, as more workers are employed.
   b. output increases, but at a decreasing rate, as more workers are employed.
   c. output declines as more workers are employed.
   d. the effects on marginal product are ambiguous.

24. For a profit-maximizing, competitive firm, the value of the marginal product of labor
   a. increases when the price of output decreases.
   b. is the firm’s demand for labor.
   c. equals the marginal product of labor divided by the wage rate.
   d. All of the above are correct.

25. The value of the marginal product of any input is equal to the marginal product of that input multiplied by the
   a. Wage.  
   b. marginal cost of the output.
   c. change in total profit.  
   d. market price of the output.

26. If the value of the marginal product of labor exceeds the wage, then the firm could
   a. increase profit by hiring additional labor.
   b. increase profit by reducing the amount of labor hired.
   c. increase revenue by lowering output.
   d. reduce total cost by hiring additional workers.

27. Cyclical unemployment refers to
   a. the relationship between the probability of unemployment and a worker's changing level of experience.
   b. how often a worker is likely to be employed during her lifetime.
   c. year-to-year fluctuations of unemployment around its natural rate.
   d. long-term trends in unemployment.

28. In June 2009 the Bureau of Labor Statistics reported an adult population of 234.9 million,
   unemployment of 12.4 million, and employment of 141.6 million. Based on these numbers the labor-force participation rate was
   a. \( \frac{154}{234.9} \)
   b. \( \frac{141.6}{234.9} \)
   c. \( \frac{141.6}{154} \)  
   d. None of the above is correct.
29. Minimum wages create unemployment in markets where they create a
a. shortage of labor. Unemployment of this type is called frictional.
b. shortage of labor. Unemployment of this type is called structural.
c. surplus of labor. Unemployment of this type is called frictional.
d. surplus of labor. Unemployment of this type is called structural.

30. Wages set above the equilibrium wage by
a. firms to increase morale are called collective bargaining wages.
b. lawmakers to decrease cyclical unemployment are called minimum wages laws.
c. firms to increase productivity are called efficiency wages.
d. lawmakers to decrease the length of a job search are called efficiency wages.

Part B: Essay Questions (65 points)

Question 1. The country of Caspir produces only cereal and milk. Quantities and prices of these goods for the last several years are shown below. The base year is 2010.

<table>
<thead>
<tr>
<th>Prices and Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
</tbody>
</table>

a. What are the real and nominal GDP for each year? (Calculate and write into the table below. (Show your calculations). (10 pts)

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal GDP</th>
<th>Real GDP</th>
<th>GDP deflator</th>
<th>Inflation Rate</th>
<th>Economic Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>670</td>
<td>670</td>
<td>100</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>2011</td>
<td>880</td>
<td>780</td>
<td>112.8</td>
<td>12.8%</td>
<td>16.4%</td>
</tr>
<tr>
<td>2012</td>
<td>1250</td>
<td>900</td>
<td>138.8</td>
<td>23%</td>
<td>15.38%</td>
</tr>
<tr>
<td>2013</td>
<td>1920</td>
<td>1080</td>
<td>177.7</td>
<td>28%</td>
<td>20%</td>
</tr>
</tbody>
</table>

(4 pts) (4 pts) (2 pts) (3 pts) (3 pts)

Answers:
Nominal GDP 2010 = 4*100 + 1,5*180
2011 = 4*120 + 2*200
2012 = 5*150 + 2,5*200
2013 = 6*180 + 3,5*240

Real GDP 2010 = Nominal GDP 2010
2011 = 4*120 + 1,5*200
2012 = 4*150 + 1,5*200
2013 = 4*180 + 1,5*240
b. What are the inflation and economic growth rates in 2011, 2012 and 2013? Calculate and write into the table below. (Show your calculations) (6 pts)

**Answers:**
Inf 2011 = \(((112,8-100)/100)= 12.8\% \\
Inf 2012 = \(((138,8-112,8)/112,8)= 23\% \\
Inf 2013 = \(((177,7-138,8)/138,8)= 28\% \\

GR 2011 = ((780-670)/670) = 16,4\% \\
GR 2012 = ((900-780)/780) = 15,38\% \\
GR 2013 = ((1080-900)/900) = 20\%

**Question 2.** Calculate A, B, C, D, and E in the table below. Show your calculations. (10 pts)

<table>
<thead>
<tr>
<th>Year</th>
<th>Price Index</th>
<th>Inflation Rate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>117</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>125</td>
<td>B</td>
</tr>
<tr>
<td>4</td>
<td>120</td>
<td>C</td>
</tr>
<tr>
<td>5</td>
<td>D</td>
<td>8.3</td>
</tr>
<tr>
<td>6</td>
<td>150</td>
<td>E</td>
</tr>
</tbody>
</table>

**Answers:**
A - \(((117-100)/100) = 17\% (2 pts each) \\
B - \(((125-117)/117) = 6,84\% \\
C - \(((120-125)/125) = - 4\% \\
D - 0,083 = ((x -120)/120) = 129,96 \\
E - ((150-129,96)/129,96 = 15,4\%

**Question 3.** The following table presents information about a closed economy whose market for loanable funds is in equilibrium.

<table>
<thead>
<tr>
<th>GDP</th>
<th>$ 13.9 trillion</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>Consumption Spending</td>
</tr>
<tr>
<td>GDP</td>
<td>Taxes Net of Transfers</td>
</tr>
<tr>
<td>GDP</td>
<td>Government Purchases</td>
</tr>
</tbody>
</table>

a. Determine the quantity of private saving? (4 pts)

**Answer:** \(Y-C-T = [13.9-6.1-6.2] =1.6\)

b. Determine the quantity of public saving? (4 pts)

**Answer:** \(T-G = [6.2-0.8] = 5.4\)

c. Determine the quantity of loanable funds demanded? (5 pts)

**Answer:** \(S=I, \text{ National Saving} = 1.6+5.4 = 7\)
d. Now suppose, the following table shows the economy's demand for loanable funds and the supply of loanable funds schedule, when the government's budget is balanced. What is the equilibrium real interest rate in the market? (2 pts)

**Answer:** The equilibrium real interest rate is 7

<table>
<thead>
<tr>
<th>Real interest Rate (%)</th>
<th>Loanable Funds Demanded ($ trillion)</th>
<th>Loanable Funds Supplied ($ trillion)</th>
<th>New Loanable Funds Supplied ($ trillion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>8.5</td>
<td>5.5</td>
<td>6.5</td>
</tr>
<tr>
<td>5</td>
<td>8.0</td>
<td>6.0</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>7.5</td>
<td>6.5</td>
<td>7.5</td>
</tr>
<tr>
<td>7</td>
<td>7.0</td>
<td>7.0</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>6.5</td>
<td>7.5</td>
<td>8.5</td>
</tr>
<tr>
<td>9</td>
<td>6.0</td>
<td>8.0</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>5.5</td>
<td>8.5</td>
<td>9.5</td>
</tr>
</tbody>
</table>

e. If the government has a budget surplus of $1 trillion, how will this budget surplus affect the loanable funds supplied? Fill the table above according to your decision. (3 pts)

**Answer:** See the table above.

f. What is the new equilibrium real interest rate in the market? (2 pts)

**Answer:** The new equilibrium interest rate is 6%

g. Is there any crowding out caused by the budget surplus above? Briefly explain. (4 pts)

**Answer:** Since the interest rate is decreasing (from 7% to 6%), there is no crowding out.

Question 4. Sally runs a hair styling salon. Sally is a profit-maximizing owner whose firm operates in a competitive market. The marginal cost of a haircut is $15 and marginal productivity of the last worker that Sally hired was 4 haircuts. What is the maximum wage that Sally will pay her stylists? (10 pts)

**Answer:**

\[
MC = P = 15 \\
MPL = 4 \\
W = VMPL = P \times MPL \\
W = VMPL = 15 \times 4 = 60
\]

**Bonus Question:** Briefly explain two determinants of productivity. (5 pts.)

**Answer:** Brief explanation of any of the following determinants could be accepted:

- Physical Capital per Worker: the stock of equipment and structures that are used to produce goods and services;
- Human Capital per Worker: the knowledge and skills that workers acquire through education, training, and experience;
- Natural Resources per Worker: the inputs into the production of goods and services that are provided by nature, such as land, rivers, and mineral deposits;
- Technological Knowledge: society’s understanding of the best ways to produce goods and services.