Exam 3/A
Answer Sheet

Name: _____

CU email: _____

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MQuestion	Answer	SQuestion	Answer
1.	**B**	1.	**$300 million**
2.	**B**		
3.	**C**	2.	**$200 million**
4.	**C**		
5.	**B**	3.	**$300 million**
6.	**B**		
7.	**A**	4.	**$3.3 billion**
8.	**B**		
9.	**B**	5.	**$300 million**
10.	**A**		
11.	**D**	6.	**$200 million**
12.	**B**		
13.	**A**	7.	**$500 million**
14.	**A**		
15.	**C**	8.	**$0**
16.	**C**		
17.	**A**	9.	**None**
18.	**C**		
19.	**A**	10.	**Country 3**
20.	**A**		

I have neither given nor received unauthorized assistance on this exam.
Signature: _____

Exam 3/A
Multiple Choice Questions

Read each question and the possible answer choices carefully, and write the letter associated with the correct answer into the appropriate bracket on your answer sheet.

1. What is the nominal interest rate in the economy if the real interest rate is 5% and there is 4% deflation?
   a. -1%
   b. 1%
   c. 9%
   d. Not enough information to determine.

Solution: B

Explanation: Nominal interest rate = real interest rate - deflation
                Nominal interest rate = real interest rate + Inflation

In this question, you should use the first equation. Nominal interest rate = 5%-4%=1%

2. If the owners invest a total of $2 million into purchasing machinery for a construction company but $500,000 of that investment is used to replace outdated safety equipment, how much is the net investment of the firm?
   a. $500,000
   b. $1.5 million
   c. $2 million
   d. Not enough information to determine.

Solution: B

Explanation: Net investment = gross investment($2 million) – depreciation($500,000)=$1.5 million

Depreciation is the reduction in the value of a fixed asset due to usage, wear and tear, the passage of time, or obsolescence. Thus, $500,000 used to replace outdated safety equipment is depreciation.

3. Which of the following is NOT a type of financial market?
   a. Loans market
   b. Bonds market
   c. Crops market
   d. All the above are financial markets.

Solution: c

Explanation: Financial markets:

    (1) Loans market: borrowing under given terms
    (2) Bonds market: agreement for a payment later
    (3) Stock market: shares in firms that serve as claim for partial profits

4. What is the present value of a stock that pays out $10,000 in 20 years and earns an annually compounded real interest rate of 2% for the first 10 years and 4% for the second 10?
    a. $3,705
    b. $3,744
    c. $5,542
    d. None of the above.

Solution: c

Explanation: Present value * $(1 + r)^n = Future\ value$

For this question: Present value * $(1 + 0.02)^{10} * (1 + 0.04)^{10} = 10000$

5. At the earliest when should you cash out a bond that you bought for $1,000 to earn at least $2,500 if the interest rate of the bond starts at 2% but doubles after every 5 years? (The interest rate for years 1-5 is 2%, then for years 6-10 it is 4% etc.)
    a. At the end of year 16.
    b. At the end of year 17.
    c. At the end of year 18.
    d. Not enough information to determine.

Solution: b

Explanation:

For year 16: $1000* (1 + 0.02)^5 * (1 + 0.04)^5 * (1 + 0.08)^5 * (1 + 0.16) = 2293$

For year 17: $2293*(1 + 0.16) = 2660 > 2500$

6. You are considering a land purchase. You know that the given parcel costs $25,000 and in 5 years a developer will be willing to buy it from you for $28,000. Should you make the purchase if the real interest rate in the economy is 3%?
    a. Yes, make the purchase.
    b. No, don't make the purchase.
    c. Either choice makes sense.
    d. Not enough information to determine.

Solution: b

Explanation: Future value $= 25,000 * (1 + 0.03)^5 = 28982 > 28000$

You shouldn't make the purchase since the price you will get is lower than the value you just save it in a bank(opportunity cost). So why not just save the money in the bank?

7. You are considering a land purchase. You know that the given parcel costs $10,000 and in 3 years a developer will be willing to buy it from you for $13,310. Should you make the purchase if the real interest rate in the economy is 10%?
    a. **Yes, make the purchase.**
    b. No, don't make the purchase.
    c. Either choice makes sense.
    d. Not enough information to determine.

Solution: a

Explanation: **Future value $= 10,000 * (1 + 0.1)^3 = 13310$**

Recall when MB≥MC, we are willing to make the investment. In this question, the marginal benefit is the price you get ($13,310). The marginal cost is how much you get if you save the money in a bank, also 13310 (Opportunity cost). Thus MB=MC, we make the purchase.

8. What is the real interest rate of a bond that costs $16,000 and in 9 years it will pay $20,000?
    a. 1.025%
    b. **2.5%**
    c. 25%
    d. Not enough information to determine.

Solution: b

Explanation: $16,000 * (1 + r)^9 = 20000$

$$(1 + r)^9 = 1.25$$

$$1 + r = 1.025$$

$$1 + r = 1.025$$

$$r = 0.025 = 2.5\%$$

9. In how many years will a $2,000 bond pay out $10,000 if the annually compounded real interest rate is 5%?
    a. 5 years
    b. 33 years
    c. Never
    d. Not enough information to determine.

Solution: b

Explanation: $$2000 * (1 + 0.05)^n = 10000$$

$$(1 + 0.05)^n = 5$$

Take log on both sides: $$n * ln1.05 = ln5$$

$$n = \frac{ln5}{ln1.05} = 33$$

Or you can just calculate the future value at the 33 year, and check if it's greater than 10000.

10. Which of the following statements is FALSE?
    a. The demand for loanable funds is not subject to the Law of Demand.
    b. The demand for loanable funds is dependent on firms' expected future profits.
    c. Both above statements are false.
    d. Neither of the above statements are false.

Solution: a

Explanation: The law of demand is basically satisfied in all markets, such as good market, financial market, labor market, etc. Thus, the demand for loanable funds is subject to the Law of Demand.

11. Which of the following events will shift the supply of US loanable funds LEFT?
    a. All households receive an unexpected stimulus payment.
    b. A large gold reserve is discovered which lowers the value of gold over the world.
    c. Both above events will shift the supply of loanable funds left.
    d. Neither above event will shift the supply of loanable funds left.

Solution: d

Explanation: For (a), all households received an unexpected stimulus payment, which meant their disposable income increased. This usually leads to an increase in household savings, which increases the supply of loanable funds. (shifting right)

(b): Lower value of gold decrease people's wealth, making them save more due to consideration for the future. (shift right)

12. When does the government act as a borrower on the market for loanable funds?
    a. In case of a government budget surplus.
    b. In case of a government budget deficit.
    c. When the Ricardo-Barro effect holds.
    d. When the Ricardo-Barro effect fails.

Solution: b

Explanation: A budget deficit occurs when the government spends more than it takes in. At this point, the government needs to borrow to cover its expenditures, which is usually financed by issuing bonds, so it appears as a borrower in the market for loanable funds.

13. Which of the following would NOT be considered money?
    a. Checks
    b. Checking deposits
    c. Traveler's checks
    d. All the above would be considered money.

Solution: a

Explanation: Types of money: currency (coins, notes), deposits at banks etc.
→ NOT money: credit cards, checks!

14. What must hold to ensure the profitability of banks?
    a. The interest on deposits must be less than the interest on loans.
    b. The interest on deposits must be equal to the interest on loans.
    c. The interest on deposits must be greater than the interest on loans.
    d. None of the above would ensure the profitability of banks.

Solution: a

Explanation: Banks make money from the spread between deposits and loans, known as the spread. Banks pay interest to depositors but charge higher interest to borrowers. If deposit rates are lower than lending rates, banks can profit from the difference.

15. What is the Federal Reserve?
  a. A commercial bank.
  b. A money market mutual fund.
  c. A central bank.
  d. None of the above.

16. If the required reserve ratio is 8%, how much new money would a $100 deposit create in the economy?
  a. $12.5
  b. $100
  c. $1250
  d. Not enough information to determine.

Solution: c

Explanation: Money multiplier $= \frac{1}{r} = \frac{1}{0.08} = 12.5$; The money created = 100*12.5=1250

17. Which of the following will shift the real money demand RIGHT?
  a. The economy goes through a rapid expansion and rGDP skyrockets.
  b. Apple Pay becomes universally accepted.
  c. Neither of the above events will shift the real money demand right.
  d. Both above events will shift the real money demand right.

Solution: a

Explanation: (a) When the economy expands rapidly and real GDP rises, economic activity increases, expected profits increase. People's demand for transactions also increases, leading to an increase in the real demand for money. (b) the widespread acceptance of Apple Pay may reduce the need for traditional currencies such as cash, as digital means of payment and actual money are alternatives.

18. Which of the following would shift the real money supply LEFT?
  a. A decrease of the required reserves ratio.
  b. An open market purchase.
  c. An open market sale.
  d. A decrease of the federal funds rate.

Solution: c

Explanation: In an open market sale, Central Bank sells bonds that banks or financial institutions buy with cash, thereby reducing the supply of money in circulation.

19. Everything else held constant, how would an increase in the change of the velocity of money impact inflation?
    a. **It would increase the inflation rate.**
    b. It would not change the inflation rate.
    c. It would decrease the inflation rate.
    d. Not enough information to determine.

Solution: a

Explanation: MV=PY

We assume the money supply is exogenous; it doesn't change until monetary authorities adjust it. Then according to this assumption, M is fixed. Also, Y is fixed in the long run.

With V increase, P increase for equality hold. P increase means the inflation rate increases.

20. Which of the followings statements is TRUE about inflation?
    a. **Inflation happens when the money supply grows faster than the economy.**
    b. Inflation happens when the money supply grows slower than the economy.
    c. Inflation happens when the money supply grows at the rate of the economy.
    d. Inflation is unrelated to the growth rate of the money supply and the economy.

Solution: a

Explanation: According to the quantity theory of money, if the money supply grows faster than the economy, then too much money chases a limited number of goods and services, causing prices to rise and thus triggering inflation.

Or by **MV=PY. If the M grows faster than Y, P will increase holding v fixed. (If something is not mentioned in the question, you can just assume it's fixed)**

Short Answer Questions

Consider the following scenario and write you answers to each question into the correct space on your answer sheet.

	Country 1	Country 2	Country 3
Y	$1 billion	**3.3 billion**	$2 billion
C	$500 million	$2 billion	**500 million**
T	**300million**	$1 billion	$500 million
G	$200 million	$800 million	**0**
Private S	**200 million**	**300 million**	$1 billion
Public S	$100 million	**200 million**	$500 million
Total S	**300 million**	$500 million	$1.5 billion

Private saving = Y – C – T
Public saving = T – G
Total saving = private saving + public saving
Total saving = I = Y-C-G

1. What is the amount of taxes in Country 1?

   By Public saving = T – G , 100 million= T – 200 million, we get T=300million.

2. What is the amount of private savings in Country 1?

   Private saving = Y – C – T= 1 billion – 500 million -300 million = 200 million

3. What the amount of total savings in Country 1?

   Total saving = private saving + public saving= 200 million +100 million=300 million

4. What is the amount of household income in Country 2?

   Total saving = Y-C-G
   500 million= Y - 2billion – 800 million
   Y = 3.3 billion

5. What is the amount of private savings in Country 2?

   Private saving = Y – C – T= 3.3 billion - 2 billion - 1 billion = 300 million

6. What is the amount of public savings in Country 2?

Public saving = T – G = 1 billion – 800 million =200 million

7. What is the amount of household consumption in Country 3?

   Private saving = Y – C – T

   1 billion = 2 billion – C – 500 million

   C = 500 million

8. What is the amount of government expenditure in Country 3?

   Public saving = T – G
   500 million = 500 million – G
   G = 0

9. Which of the above countries exhibits a government budget deficit?

   If budget deficit exists, then public saving =T - G < 0.
   None of public saving is less than 0, meaning budget deficit doesn't exist in these three countries.

10. Which of the above countries has the highest amount of private investment?

    private investment = private saving
    Country 3 with the highest private saving.

    Plus: public investment = public saving, this equation also hold.