Midterm Exam
Macro Economics

Institute for Financial Management & Research (Batch: 2018-20)

23 October, 2018

Maximum Points: 60   **Duration**: 150 minutes

Instructions and Advice:

- The question paper is divided in two sections- Part A and Part B.

- You need to answer 7 questions in all. [2 from Part A, and 5 from Part B]

- You can choose between Question 1 and Question 2, and between Question 3 and Question 4.

- All other questions are compulsory.

- Please be brief and precise in your answers. Unnecessarily lengthy answers will attract penalty.

- At no point of this examination you are allowed to ask clarificatory questions. Make reasonable assumption if you have doubts and proceed to answer the question.

- You are **not allowed** to use calculator in the exam.

- There is plenty of time. Use it wisely, do not rush.

- All the best!

Part A

1. (4 points) *Suppose that instead of cooking dinner for an hour, you decide to work an extra hour, earning an additional ₹1,000. You then purchase some Chinese food, which costs you ₹500*

   (a) (2 points) By how much does the measured GDP increase?

   (b) (2 points) Do you think the increase in measured GDP accurately reflect the effect of your decision to work on output? Explain briefly.

   Or

2. (4 points) *Consider the following economy.*

   i   A silver mining company pays its workers $200,000 to mine 75 pounds of silver. The sliver is then sold to a jewellery manufacturer for $300,000.

   ii The jewellery manufacturer pays its workers $250,000 to make silver necklaces, which are then sold directly to consumers for $1,000,000.

   (a) (2 points) Compute the GDP using the production of final goods approach.

   (b) (2 points) What is the value added at each stage of production? What is the GDP using this approach.

3. (6 points) Recall from the class on Phillips Curve that

$$u_n = \frac{(m + z)}{\alpha}$$

   (a) (3 points) Suppose that $m = 0.04$ and $z = 0.02$. Calculate the natural rate of unemployment when $\alpha = 1$ and when $\alpha = 2$. Explain your answer.

   (b) (3 points) Suppose that there is an oil price hike and m rises to 0.06. Calculate the new natural unemployment rate when $\alpha = 1$ and when $\alpha = 2$. Explain your answer.

   Or

4. (6 points) Suggest a policy mix to achieve each of the following in the short run:

   (a) Increase Y while keeping i constant.

   (b) Decrease budget deficit while keeping Y constant.

Part B

5. (10 points) Suppose the economy is characterized by the following behavioural equations

$$C = 100 + 0.6Y_D$$
$$I = 300 + 0.2Y$$
$$G = 200$$
$$T = 100$$

(a) (2 + 3 points) Solve for equilibrium output. What is the value of the multiplier?

(b) (1 + 1 + 3 points) Suppose that now business confidence is up, and there is a shift in the investment equation.

$$I = 500 + 0.3Y$$

Compute the change in equilibrium output, the change in investment, and the change in private savings.

6. (10 points) *Consider two economies, each with 100 people, divided into 25 households, each composed of four people. In each household, one person stays at home and prepares the food, two people work in the nonfood sector, and one person is unemployed. Assume that the workers outside food preparation produce the same actual and measured output in both economies.*
In the first economy, EatIn, the 25 food-preparation workers (one per household) cook for their families and do not work outside the home. All meals are prepared and eaten at home. The 25 food-preparation workers in this economy do not seek work in the formal labor market (and when asked, they say they are not looking for work). In the second economy, EatOut, the 25 food-preparation workers are employed by restaurants. All meals are purchased in restaurants. Calculate measured employment rate and unemployment and the measured labour force for each economy. Calculate the measured unemployment rate and participation rate for each economy. Which of the two economies has higher measured GDP?

7. (10 points) *Consider the following production function:*

$$Y = \sqrt{K}\sqrt{L}$$

(a) (1 point) Compute output when $K = 16$ and $L = 25$.

(b) (2 + 1 points) If both labour and capital double, compute the percentage change in output? Does this production function exhibit constant returns to scale?

(c) (1 point) Rewrite the production function as a relation between output per worker and capital per worker.

(d) (1 point) Let $K/L = 4$. What is Y/N? Now double K/L to 8. Compute the percentage change in output per worker.

(e) (2 points) Does the relation between output per worker and capital per worker exhibit constant returns to scale?

(f) (3 points) Are your answers for the second half of part (b) and part (e) same? Why or why not?

8. (10 points) *Assume the following*:

   i . The public holds no currency.

   ii . The ratio of reserves to deposits is 0.1

   iii . The demand for money is given by

   $$M^d = Y(0.8 - 4i)$$

   Initially, the monetary base is ₹100 billion, and nominal income is ₹5 trillion.

   (a) (2 points) Compute the demand for central bank money.
   (b) (2 points) Find the equilibrium interest rate.
   (c) (2 points) Estimate the overall money supply.
   (d) (2 points) What is the impact on the interest rate if central bank money is increased to ₹300 billion?
   (e) (2 points) If the overall money supply goes up by 10%, estimate the change in the interest rate.

9. (10 points) *Suppose the economy begins with output equal to its 'natural' level. Then, there is a reduction in income taxes*.

   (a) (5 points) Using the $AS - AD$ model, show the impact of this policy decision on the position of the AD, AS, IS, and LM curves in the medium run. Illustrate your answer graphically.
   (b) (5 points) What happens to output, the interest rate, and the price level in the medium run? What happens to consumption and investment in the medium run?