香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

EXAMINATION *Answer Book*

Please complete the following :

Course Code : ECON 3123

Course Title : Macroeconomic Theory I

Date of Examination : 10/10/2025

Student Number : 2117 4490

Student Name : WONG Sum King

THE HKUST ACADEMIC HONOR CODE

Honesty and integrity are central to the academic work of HKUST. Students of the University must observe and uphold the highest standards of academic integrity and honesty in all the work they do throughout their program of study.

As members of the University community, students have the responsibility to help maintain the academic reputation of HKUST in its academic endeavors.

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Declaration of Academic Integrity

I confirm that I have answered the questions using only materials specifically approved for use in this examination, that all the answers are my own work, and that I have not received any assistance during the examination.

Student's Signature : WSK

Instructions :

1. Write your answers on the **RIGHT-HAND** page. Use the left-hand page only for rough work. Any work that appears on the left-hand page will **NOT** be marked.
2. Begin **EACH** question on a **NEW** page. Write down the question number at the top of each page.
3. No supplementary sheets may be submitted, unless allowed by the examiner.
4. No part of this answer book is to be taken away from the examination.

Enter the question numbers below in the **SAME ORDER** as you have answered the questions :

Question No.	For use by the examiner	
	Marks	
1-5		
6		
7		
8		
Total marks	102	

No. of answer books used : _____

Checked by Yanglu.

MC Questions

1. D
2. D
3. C
4. D
5. C

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Short-Answer Questions : Question 6

(a) $Y = C + I + G$

$= c_0 + c_1(Y - (t_0 + t_1 Y)) + b_0 + b_1 Y - b_2 \bar{i} + G$

$= \frac{1}{1 - c_1(1 - t_1) - b_1} (c_0 - c_1 t_0 + b_0 - b_2 \bar{i} + G)$

$T = t_0 + \frac{t_1}{1 - c_1(1 - t_1) - b_1} (c_0 - c_1 t_0 + b_0 - b_2 \bar{i} + G)$

(I drops[1], demand line shifts downwards[2],)

(b) When b_0 drops, Y drops[3]. As a result, T drops[4]. To keep the budget balanced, the government should cut[5] its spending G (1), which results in a further (2) drop in Y[8], reinforcing[9] the effect of the drop in b_0 on output.

(, while $\bar{i}$ does not change)

(c) - Since b_0 and Y drop, I drops
- Since Y drops, T drops.
- The government cuts its spending G to keep the budget balanced, i.e. drop in G equals drop in T.
- Given that $S = I + G - T$,
- S drops.

(1) = by the magnitude of the decrease in T[6]

(2) = downward shift of the demand line[7]

Question 7

(a) $Y = Z$

$= C + I + G$

$= 0.5 + 0.2(Y - 1) + 0.2 + 0.3Y - 2.5(\bar{i} + 5\%) + 1$

$= 2.75 - 5\bar{i}$

(b) $Y = 2.75 - 5(5\%)$

$= 2.5$

$\frac{M^d}{2} = 2.5 \times (0.7 - 4(5\%))$

$M^d = 2.5$

$H = (c + \theta(1 - c))M^d$

$= (20\% + 25\%(1 - 20\%))(2.5)$

$= 1$

(c) $H' = (20\% + 30\%(1 - 20\%))(2.5)$

$= 1.1$

(d) $Y'' = 0.5 + 0.2(Y - 1) + 0.2 + 0.3Y - 2.5(\bar{i} + 15\%) + 1$

$= 2.25 - 5\bar{i}$

$= 2.25 - 5(5\%)$

$= 2$

$\frac{M^{d''}}{2} = 2 \times (0.7 - 4(5\%))$

$M^{d''} = 2$

$H'' = (20\% + 30\%(1 - 20\%))(2)$

$= 0.88$

Question 8

(a) $\$P_{3,t} = \dfrac{\text{Face value}}{(1+i_{1,t}+x)(1+i^{e}_{1,t+1})}$

$= \dfrac{100}{(1+4\%+5\%)(1+3\%)}$

$= \$89.07$ (cor. to 2 d.p.)

(b) $\$P_{3,t} = \dfrac{\text{Face value}}{(1+i_{1,t}+x)(1+i^{e}_{1,t+1}+x)(1+i^{e}_{1,t+2})}$

$= \dfrac{100}{(1+4\%+5\%)(1+3\%+5\%)(1+2\%)}$

$= \$83.28$ (cor. to 2 d.p.)

(c) $i_{3,t} = \sqrt[3]{\dfrac{\text{Face value}}{\$P_{3,t}}} - 1$

$= \sqrt[3]{\dfrac{100}{83.28}} - 1$

$= 0.063$ (cor. to 2 s.f.)

$= 6.3\%$

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