

**PROVA DE TRANSFERÊNCIA INTERNA, EXTERNA E PARA
PORTADOR DE DIPLOMA DE CURSO SUPERIOR – 28/06/2015**

Língua Inglesa

CANDIDATO: _____

CURSO PRETENDIDO: _____

OBSERVAÇÕES: 01 – Prova sem consulta.
02 – A prova pode ser feita a lápis.
03 – Duração: 2 HORAS.

TEXTO

Leia o texto abaixo e responda as questões 1 a 10.



Eating greens

Despite a sagging economy and a weakened president, the government is regaining its credibility on budget policy

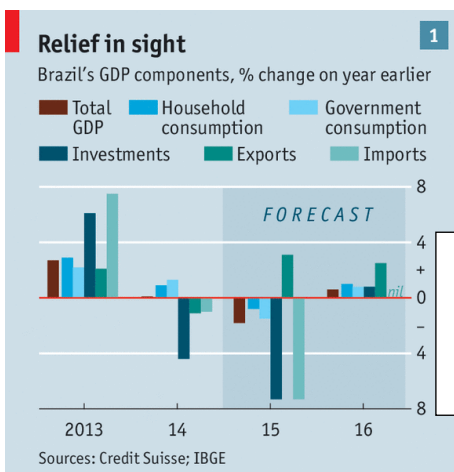
Jun 6th 2015 | SÃO PAULO | From the print edition



PEOPLE who live in São Paulo say their restaurants are the equivalent of Rio de Janeiro's beaches: the main sites of recreation and refuge from the teeming city. These days they are emptier than usual. When they eat at home, paulistanos are switching from beef to chicken and vegetables, which are cheaper.

This change in dietary habits is caused by the gloom that has enveloped Brazil for much of the past year. A recession is looming (see chart 1). The economy shrank by 0.2% in the first three months of 2015, and by 1.6% between that period and the same quarter a year before. Employment and real incomes are contracting (see chart

2); interest rates and inflation are rising. The country feels leaderless: the president, Dilma Rousseff, has been weakened by a mammoth scandal at Petrobras, the state-controlled oil company, as well as by the economy's dismal performance.



Changes in numbers of jobs shown in vertical lines



Unemployment rate shown in a continuous line

And yet Brazil's embattled government is making progress. In particular, it is beginning to restore the economic credibility that Ms Rousseff squandered during her first term as president, from 2011 to 2014. She has given strong backing to her budget-cutting finance minister, Joaquim Levy. The Central Bank has turned serious about fighting inflation since she was re-elected in October. Brazil's obstreperous Congress, which is dominated by unreliable allies of the government and outright opponents, has so far not managed to thwart them. "This is Brazil under new management," says Marcelo Carvalho of BNP Paribas, an investment bank

Mr Levy's top priority, to hold on to Brazil's investment-grade credit rating by cutting the budget deficit, came closer to realisation last week when Congress approved cuts to welfare spending, in particular to unemployment insurance and to survivors' pensions. This should save the government 8 billion reais (\$2.6 billion) in 2015. Earlier he had slashed 70 billion reais from planned discretionary spending for 2015, the biggest such cut in history, and raised taxes, including fuel duty, which should yield 26 billion reais in revenues this year.

Mr Levy has not got everything he wanted. A bill to end costly payroll-tax breaks faces opposition in Congress. Legislators tacked on to the welfare reform an innocuous-sounding measure that would change how pensions are calculated for civil servants who retire early. It would double the government's pension bill to 15% of GDP in less than a decade, calculates Fabio Klein of *Tendências*, a consultancy. Ms Rousseff is expected to veto it.

Few analysts expect Mr Levy to hit his main targets, a primary surplus (before interest payments) of 1.2% of GDP this year and 2% in 2016. This year's surplus is likely to be little better than half what he promised, says Mansueto Almeida, a public-finances expert. But that may be enough to satisfy credit raters. The policy shift under Mr Levy has been bigger than expected, says Lisa Schineller of Standard & Poor's.

Financial watchdogs are equally impressed with Alexandre Tombini, the Central Bank's governor, who has not allowed the threat of recession to deter him from fighting inflation, currently above 8%. On June 3rd the bank raised interest rates by half a percentage point, to 13.75%. Mr Tombini's goal is to bring inflation down to 4.5%, the midpoint of the bank's target range, by next year. That may require further rises in interest rates.

In the near term, the diligence of Messrs Levy and Tombini will further empty São Paulo's restaurants. The economy is even weaker than it looks at first sight. Investment, already low by the standards of emerging economies, dropped for the seventh quarter in a row in the first three months of 2015. Household consumption fell for the first time year on year since Ms Rousseff's left-wing Workers' Party came to power in 2003. Without a reduction in imports, the annual decline in the economy would have been even bigger. Mr Levy has made most of his savings by raising taxes, which will depress today's growth, and by slashing investment, which will hold back tomorrow's.

Restoring credibility is not enough. Brazil must also get rid of "supply-side bottlenecks", noted Christine Lagarde, the IMF's chief, who visited Brazil in May. They include an enterprise-crushing tax system, inadequate infrastructure and antiquated labour laws. Brazil's new managers have barely begun to deal with all that.

THE ECONOMIST. **Eating green.** Brazil's Economy. 06 jun 2015. Disponível em: <<http://www.economist.com/news/americas/21653637-despite-sagging-economy-and-weakened-president-government-regaining-its-credibility?zid=305&ah=417bd5664dc76da5d98af4f7a640fd8a>>. Acesso em: 06 jun. 2015.

1ª Questão (10 pontos): According to the text, people from São Paulo are eating vegetables and chicken because:

- a) They consider it a healthier choice.
- b) There have been problems in beef import.
- c) It is an attempt to cut down expenses.
- d) Beef consumption is a probable cause of cancer and heart attacks.

2ª Questão (10 pontos): From the article lead "*Despite a sagging economy and a weakened president, the government is regaining its credibility on budget policy*", it can be inferred that:

- a) The Economist is optimistic in relation to the Brazilian economy.
- b) The Economist is trying to present a neutral view of the facts.
- c) The Economist favors President Rousseff.
- d) The Economist is against President Rousseff.

3ª Questão (10 pontos): By using the verb *squandered* in the 2nd sentence of the 3rd paragraph, the author means that:

- a) Dilma Rousseff never had economic credibility.
- b) Dilma Rousseff was given a lot of economic credibility during her first term as president.
- c) Dilma Rousseff's economic credibility decreased in 2012.
- d) Dilma Rousseff's economic credibility has been increasing considerably.

4ª Questão (10 pontos): Which of the of the following is not true about the actions to cut down on costs taken by the government:

- a) Cuts in benefits for unemployed.
- b) Cuts in the benefits for widows and widowers.
- c) Increase pensions for civil servants who retire early.
- d) Increased taxes on some products.

5ª Questão (10 pontos): According to chart 2, it can be stated that:

- a) Unemployment rate dropped sharply in 2014.
- b) Unemployment rate had a peak in the 1st trimester of 2015.
- c) The number of jobs increased gradually from 2012 to 2013.
- d) The number of jobs was steady throughout 2014.

ANSWER THE QUESTIONS IN ENGLISH

6ª Questão (10 pontos): Is the Congress backing up the government cost reduction policy? Explain your answer.

No. It will be accepted answers that mention the opposition of congressional representatives, the presence of allies that are not reliable and the proposal of reform for the retirement plan of civil servants.

7ª Questão (10 pontos): According to the article, what are the odds of achieving the primary surplus rate aimed by the Finance Minister?

It will be accepted answers that mention Mansueto Almeida's forecast on 5th paragraph: it should be more than a half of the Joaquim Levy's prediction.

8ª Questão (10 pontos): Has the Central Bank supported the government policy? Explain your answer.

Yes. It will be accepted answers with measures taken by Alexandre Tombini. President of Central Bank to fight the inflation.

9ª Questão (10 pontos): What are the immediate consequences of the government policy?

It will be accepted answers expressing the following idea: the decrease of investments and consumption.

10ª Questão (10 pontos): Explain the term "supply-side bottlenecks" used in the last paragraph.

It will be accepted answers expressing the following idea: obstacles for the national companies, as excessive taxes, antiquated labor taxes and inadequate infrastructure.

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MATEMÁTICA

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OBSERVAÇÕES:

1. Prova **SEM** consulta;
2. A prova **PODE** ser feita a lápis;
3. **PROIBIDO** o uso de calculadoras e similares;
4. Duração: **2 HORAS**.

Questão 1 (10 pontos). Considere o sistema linear

$$\begin{cases} a_{11}x + a_{12}y + a_{13}z = 0 \\ a_{21}x + a_{22}y + a_{23}z = 0 \end{cases}$$

onde $a_{ij} \in \mathbb{R}$. Pode-se afirmar que este sistema

- a) admite apenas a solução trivial b) não admite soluções c) admite solução única
d) admite infinitas soluções e) admite duas soluções

Resposta: d)

O sistema homogêneo tem mais variáveis do que equações, logo existem infinitas soluções.

Questão 2 (10 pontos). Encontre o conjunto solução do sistema de inequações

$$\begin{cases} 3x + 2 > 5x - 2 \\ 4x - 1 \geq 3x - 4 \\ 3 - 2x \leq x - 6 \end{cases}$$

- a) $x \in (-3, 2)$ b) $x \in [-3, 2)$ c) \emptyset d) $x > 3$ e) $x \geq -3$

Resposta: c)

Resolvendo separadamente cada inequação, temos

$$\begin{cases} 3x + 2 > 5x - 2 \Leftrightarrow x \in A_1 = \{x \in \mathbb{R}, x < 2\} \\ 4x - 1 \geq 3x - 4 \Leftrightarrow x \in A_2 = \{x \in \mathbb{R}, x \geq -3\} \\ 3 - 2x \leq x - 6 \Leftrightarrow x \in A_3 = \{x \in \mathbb{R}, x \geq 3\} \end{cases}$$

Tomando a interseção, vem $A_1 \cap A_2 \cap A_3 = \emptyset$.

Questão 3 (10 pontos). Calcule:

$$\lim_{x \rightarrow 1} \frac{3x^3 - 8}{x - 2}$$

- a) 3 b) -3 c) 5 d) 2 e) \nexists

Resposta: c)

Como a função é racional e o ponto de interesse está em seu domínio, temos

$$\lim_{x \rightarrow 1} \frac{3x^3 - 8}{x - 2} = 5$$

Questão 4 (10 pontos). Avalie $f'(0)$ para

$$f(x) = \frac{2 - x}{3x + 1}$$

- a) 0 b) \nexists c) 6 d) -6 e) -7

Resposta: e)

Avaliando a derivada, temos

$$f'(x) = \frac{-(3x + 1) - 3(2 - x)}{(3x + 1)^2}$$

Como a expressão é racional e 0 está em seu domínio temos $f'(0) = -7$.

Questão 5 (10 pontos). A densidade populacional numa cidade é dada por

$$D(r) = \frac{15r + 5}{r^2 + r + 2},$$

onde r indica a distância até o centro da cidade. Para quais valores de r a densidade populacional é decrescente?

- a) $r \in [0, 1)$ b) $r \in (-\frac{5}{3}, 1)$ c) $r < 1$ d) $r > 1$ e) a densidade nunca decresce.

Resposta: d)

Queremos encontrar os valores de $r > 0$ para os quais $D'(r) < 0$. Calculando a derivada temos,

$$D'(r) = -\frac{5(3r^2 + 2r - 5)}{(r^2 + r + 2)^2}$$

Vemos que $D'(r) < 0 \Leftrightarrow r > 1$.

Questão 6 (10 pontos). Um fabricante de celulares observa que a cada N milhares de celulares produzidos, todos são vendidos quando o preço é modelado por

$$P(N) = \frac{1000}{N^2 + 9}$$

Quantos celulares devem ser vendidos para que a receita da empresa seja a maior possível?

Resposta:

A receita é dada pela custo de venda vezes o número de milhares de aparelhos vendidos, logo

$$R(N) = \frac{1000N}{N^2 + 9}$$

Procuramos o ponto de máximo para $R(N)$. Derivando obtemos,

$$R'(N) = \frac{1000(3 - N)(3 + N)}{(N^2 + 9)^2}$$

Considerando N positivo, vemos que $R'(N) = 0$ quando $N = 3$.

Note que se $N < 3$, então $R'(N) > 0$ e quando $N > 3$, temos $R'(N) < 0$. Assim, devem ser vendidos 3000 celulares para que a receita seja máxima.

Questão 7 (10 pontos). Determine os valores de k para que o sistema

$$\begin{cases} x + y - z = 1 \\ 2x + 2z = 2 \\ 3x + y + z = k \end{cases}$$

seja impossível, isto é, não admita soluções.

Resposta:

Calculando o determinante associado ao sistema vemos que é nulo, logo as equações são dependentes. Somando a primeira e segunda equações e subtraindo a terceira temos

$$0 = 3 - k$$

Assim, se $k \neq 3$ o sistema não admite soluções.

Questão 8 (10 pontos). Encontre o conjunto solução da seguinte equação

$$\sqrt{x^2 + 5x + 1} = 2x - 1$$

Resposta:

Temos como condição para existência de solução, $x > 1/2$, para que o lado direito seja positivo e a equações esteja bem definida. Elevando ambos os membros ao quadrado e simplificando obtemos a equação

$$x^2 - 3x = 0$$

que tem como raízes $x_1 = 0$ e $x_2 = 3$. Logo, a solução é $x = 3$.

Questão 9 (10 pontos). Um fabricante de bolos vende-os a 38 reais cada. Se ele tem custos fixos de 600 reais e cada bolo custa 8 reais para ser produzido, qual a quantidade mínima de bolos para que o fabricante tenha lucro?

Resposta:

A expressão para o lucro obtido será a diferença entre receita e custo, logo

$$L(N) = 38N - 8N - 600$$

Vemos que L é positivo quando $N > 20$.

Questão 10 (10 pontos). Seja a função

$$f(x) = \begin{cases} \frac{x-1}{x^2-1}, & x \neq 1 \\ 0, & x = 1 \end{cases}$$

Avalie o limite de f quando x tende ao valor 1.

Resposta:

$$\lim_{x \rightarrow 1} \frac{x-1}{x^2-1} = \lim_{x \rightarrow 1} \frac{(x-1)}{(x-1)(x+1)} = \lim_{x \rightarrow 1} \frac{1}{x+1} = \frac{1}{2}.$$