

VESTIBULAR  **FGV**

GRADUAÇÃO EM ECONOMIA – SP

1ª FASE | PROCESSO SELETIVO
1º SEMESTRE DE 2021

002. PROVAS DE INGLÊS, FÍSICA QUÍMICA E LÍNGUA PORTUGUESA

GABARITO

BLOCO 3

INGLÊS

Read the text to answer questions from **01** to **03**.

The image depicts a nearly naked man amid a vast area of rainforest, spear pointed at the helicopter hovering above him – a man defending his territory and people from outside influence. This very scene made front-page news some years ago in the UK. It instantly highlighted the loss of ancestral homelands some tribal communities round the world face.

Bad news has a way of dominating the headlines, so we're of the opinion that *all* indigenous communities and their culture are in decline – and that's not true. But the allure of propagating the "disappearing tribe" narrative is strong. It's frustrating to see journalists who go on assignment with a set story in mind and then seek out quotes, experiences or interviews to fit their predetermined angle.

(Jonny Bealby. www.newsweek.com, 27.08.2019. Adapted.)

01. In the text the author expresses his opinion that

- ☐ a number of indigenous communities round the world are losing their lands but, fortunately, not all of them.
- ☒ it is improper for journalists to search for information that will conform to a narrative previously decided on.
- ☐ it is a duty of journalism to take a stand against menaces to indigenous communities round the world.
- ☐ the "disappearing tribe" narrative is powerful, but it can in fact harm rather than help the populations affected.
- ☐ endangered native peoples should have all the right to protect themselves and their ancestral homelands.

02. In the fragment from the second paragraph "so we're of the opinion that", the underlined word refers to

- ☐ the writers of the text.
- ☐ journalists by and large.
- ☒ the general public who watch the news about native populations.
- ☐ people who do research on indigenous populations.
- ☐ journalists worried about the potential loss of lands by their original inhabitants.

03. In the context of the second paragraph, the expression "the allure of" means

- ☐ the argument against.
- ☐ the justification for.
- ☒ the appeal to.
- ☐ the motive for.
- ☐ the longing for.

Read the text to answer questions from **04** to **06**.

The aliens among us

Humans think of themselves as the world's apex predators. Hence the silence of sabre-tooth tigers, the absence of moas from New Zealand and the long list of endangered megafauna. But sars-cov-2 shows how people can also end up as prey. Viruses have caused a litany of modern pandemics, from Covid-19, to hiv/aids to the influenza outbreak in 1918-20, which killed many more people than the first world war. Before that, the colonisation of the Americas by Europeans was abetted – and perhaps made possible – by epidemics of smallpox, measles and influenza brought unwittingly by the invaders, which annihilated many of the original inhabitants.

(www.economist.com, 22.08.2020. Adapted.)

04. In the second sentence in the text, the term “hence” can be replaced, with no change in meaning, by

- ☐ For instance.
- ☒ Accordingly.
- ☐ Nevertheless.
- ☐ Alternatively.
- ☐ Furthermore.

05. According to the text,

- ☐ humans can be either victims or aggressors, depending on the virus we refer to.
- ☐ viruses have always posed a threat, not only to humans but also to the megafauna.
- ☐ the absolute silence of viruses contradicts their extensive destructive power.
- ☐ pandemics have always existed despite human efforts throughout centuries to control them.
- ☒ the settlement of new peoples in the Americas was favoured by the epidemics decimating native populations.

06. In the fragment “epidemics of smallpox, measles and influenza brought unwittingly by the invaders”, the underlined word can be replaced, with no change in meaning, by

- ☐ unfavorably.
- ☐ unhelpfully.
- ☐ irresponsibly.
- ☒ inadvertently.
- ☐ dishonestly.

Read the text to answer questions **07** and **08**.

It wasn't the first attempt to deter foreign students, but it could have been the most disruptive. The U.S. Immigration and Customs Enforcement agency sought to bar visas for international students at colleges that offer only virtual instruction. Students on existing visas would have had to transfer to a school that offers at least some in-person teaching if they wanted to remain in the U.S.

The policy swiftly brought together a broad coalition of colleges, states and businesses that opposed it. "The overwhelming negative reaction to this proposal in a very short period of time shows that the administration really struck a nerve with this," says Terry Hartle, from the American Council on Education. "It's unprecedented for that many colleges and universities to file suit against the federal government."

(Bloomberg Businessweek, 20.07.2020. Adapted.)

07. The expressions from the first paragraph "could have been" and "would have had" help understand that, as to exclusively virtual instruction in U.S. universities and colleges,

- ☒ the government has backed down from its proposal to bar visas for foreign students.
- ☐ the barrier against international students is still a possibility.
- ☐ foreign students have no alternative but to transfer to a new school.
- ☐ impeding foreign students to attend school in the U.S. will disrupt their lives.
- ☐ the veto of the proposal resulted from coordinated action by colleges, states and the police.

08. The expression from the second paragraph "struck a nerve" means, in the context:

- ☐ made the wrong decision.
- ☐ triggered nervous breakdowns.
- ☐ created an unmanageable situation.
- ☐ provoked a student uprising.
- ☒ stirred anger and outrage.

Read the text to answer questions **09** and **10**.



We are at the beginning of a long road to rethinking and rebuilding supply chain models to encompass not just financial priorities but also business operations continuity in the most trying of circumstances. Executives from France and Italy, for example, are discussing ways to remake their businesses in the wake of the Covid-19 pandemic. Their specialty is supply chains. They are smart people at the core of the world's most sophisticated and valuable systems of manufacture, shipment, and inventory, and yet many of their supply systems staggered in the past few months – the byproduct of reliance on old business models.

(Antonio Gulli. www.forbes.com, 28.07.2020. Adapted.)

09. One problem concerning supply chains after the outbreak of Covid-19 relates to

- ☐ the way the pandemic has thoroughly affected supply businesses.
- ☐ the resistance of top executives to redesign existing business paradigms in novel circumstances.
- ☐ the long-term difficulty in establishing financial priorities in the supply chain business.
- ☒ the instability of supply systems which still follow old business models.
- ☐ the sophistication of supply chain processes, which renders innovation onerous.

10. In the fragment “and yet many of their supply systems staggered in the past few months”, the underlined word introduces a

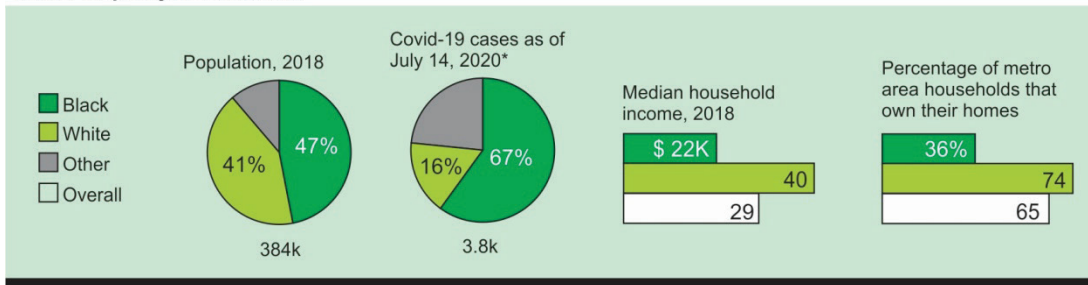
- ☒ contrast.
- ☐ time relation.
- ☐ purpose.
- ☐ consequence.
- ☐ justification.

11. Read the text and the graphs.

Bypassed by the rescue

In a pandemic that's wreaked widespread economic havoc, Cleveland has been among the hardest-hit cities in the U.S. And at a time when the U.S. is engaged in another conversation about its foundational racial inequalities, not much of Washington' \$2 trillion has reached Cleveland's predominantly Black neighborhoods.

Racial disparity in Cleveland



(Bloomberg Businessweek, 20.07.2020. Adapted.)

By comparing the text and the graphs it is possible to state that

- the help provided by the government has amplified the percentage of American Black families who own their homes.
- racial disparity in Cleveland was not narrowed over the first months of the Covid-19 pandemic.
- the financial aid from Washington has mitigated long-standing racial imbalances in the country.
- minority neighborhoods have been the least penalized of all in Cleveland.
- the government should be made responsible for the high number of Covid-19 cases between Black Americans.

12. The American embassy escaped the blast in Beirut's port unscathed. Many Western countries either have missions in the city centre or diplomats who live in the area. The wife of the Dutch ambassador was killed, as was a German diplomat. But America's embassy sits in the mountain village of Awkar, five miles from the port. Security measures are onerous, a hangover from the bombing of the American embassy in Beirut in 1983, which killed 63 people. It took a week before the ambassador, Dorothy Shea, a career diplomat, toured the port. Even on social media it has been far quieter than other foreign powers.

(www.economist.com, 13.08.2020. Adapted.)

The descriptions in the paragraph

- underscore the extent of the damage brought about by a bombing in Beirut last August.
- display differences in approach between American diplomacy and other countries' in the moments shortly following the explosion.
- depict covert and behind-the-scenes divergences between the American and the Lebanese governments.
- accuse the American government of omission for fear of a new threat against American citizens.
- point out the low visibility of America's diplomacy in the Beirut's event due to both, the Embassy's location and attitude.

13.



(nytimes.com)

Shimmering white and gracefully statuesque, the Mount Washington Hotel is a granite fortress, a manmade anomaly among the raw wilderness of the surrounding White Mountains in remote northern New Hampshire, U.S. Even to this day, the hotel is geographically secured by 800,000 acres of the White Mountain National Forest around it. This was the main reason why the Hotel was chosen for a World War Two meeting – a meeting that shaped present-day global economic policies.

(Linda Laban. www.bbc.com, 26.08.2020. Adapted.)

The term “this”, which introduces the last sentence in the text, refers to the fact that the Mount Washington Hotel

- ☐ displays gracefulness and imponence.
- ☐ served as home to a crucial World War meeting.
- ☐ stands as strong as a granite fortress.
- ☐ is isolated and nearly secret.
- ☐ marvels visitors with its beautiful surrounding scenery.

Read the text to answer questions **14** and **15**.

The formula for calculating people's environmental footprint is simple, but widely misunderstood: Impact = Population x Affluence x Technology (I = PAT). The global rate of consumption growth, before the pandemic, was 3% a year. Population growth is 1%. Some people assume this means that the rise in population bears one-third of the responsibility for increased consumption. But population growth is overwhelmingly concentrated among the world's poorest people, who have scarcely any A or T to multiply their P.

Yet it is widely used as a blanket explanation of environment breakdown. Panic about population growth enables the people most responsible for the impacts of rising consumption (the affluent) to blame those who are least responsible.

(George Monbiot. www.theguardian.com, 26.08.2020. Adapted.)

14. The text states that

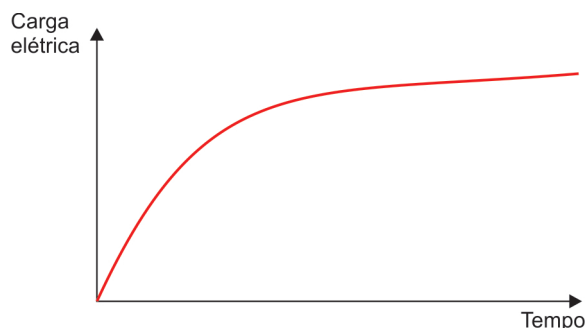
- ☐ population growth has proven to have overwhelming impact on environmental degradation.
- ☐ population growth is the main determinant in consumption growth.
- ☒ the wealthy should be most directly accountable for global ecological damage.
- ☐ the poor should be most directly accountable for global ecological damage.
- ☐ poor access to technology and other resources reduces environmental breakdown.

15. The formula for calculating people's environmental footprint

- ☐ is inadequate because it does not capture all sides of the relation between population growth and environmental degradation.
- ☐ has proved inefficient to properly relate world's population and ecological damage during the present pandemic times.
- ☐ has been wrongly used as the only explanation of causes for ecological breakdown.
- ☐ has demonstrated that a 3% rise in the world population represents 1% of the responsibility for consumption growth.
- ☒ is often too plainly interpreted as equating population growth with an equivalent increase in ecological damage and in consumption.

FÍSICA

16. O gráfico mostra a variação da quantidade de carga elétrica armazenada em um capacitor em função do tempo, quando ligado a certo circuito elétrico.



O coeficiente angular da reta tangente a um ponto correspondente a um instante qualquer da curva representa

- ☐ o valor da resistência elétrica do capacitor.
 - ☐ a quantidade de carga elétrica armazenada pelo capacitor até aquele instante.
 - ☒ a intensidade da corrente elétrica no capacitor naquele instante.
 - ☐ a energia armazenada pelo capacitor até aquele instante.
 - ☐ o valor da capacitância do capacitor.
17. Um motorista, que conduz seu caminhão com velocidade constante de 25 m/s (90 km/h) por uma estrada retilínea, plana e horizontal, aciona os freios quando percebe um ônibus a sua frente deslocando-se lentamente no mesmo sentido, com velocidade constante de 5 m/s (18 km/h). Supondo-se que a distância entre o caminhão e o ônibus no instante em que o motorista do caminhão aciona os freios é de 80 m, que o ônibus não altera sua velocidade e que não há mudança nas direções dos movimentos de ambos os veículos, o módulo da aceleração mínima, admitida constante, que deve ser imprimida ao caminhão para evitar a colisão é
- ☐ 1,5 m/s².
 - ☒ 2,5 m/s².
 - ☐ 3,0 m/s².
 - ☐ 3,5 m/s².
 - ☐ 4,0 m/s².

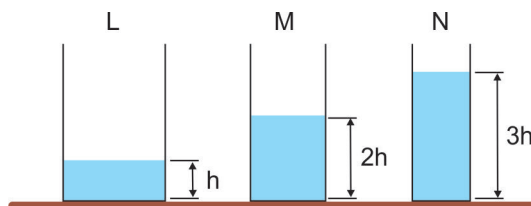
18. Um bloco de massa 100 g, apoiado sobre uma superfície horizontal sem atrito, está preso à extremidade de uma mola de constante elástica 1,6 N/m, que tem a outra extremidade presa a um suporte vertical fixo. O bloco realiza movimento harmônico simples, e sua posição x é dada pela equação $x = 0,20 \cos(4,0 \cdot t + 0,80)$. A máxima aceleração a que o bloco está sujeito nesse movimento tem módulo igual a
- ☐ 0,2 m/s².
 - ☐ 0,4 m/s².
 - ☐ 0,8 m/s².
 - ☐ 1,6 m/s².
 - ☒ 3,2 m/s².
19. Uma bola de massa 60 g é solta, a partir do repouso, de uma altura igual a 80 cm. Após colidir com o solo, a bola sobe verticalmente até a altura de 45 cm. Considerando-se a aceleração gravitacional igual a 10 m/s² e desprezando-se a resistência do ar, a intensidade do impulso recebido pela bola na colisão com o solo foi de
- ☐ 0,12 N·s.
 - ☐ 0,21 N·s.
 - ☐ 0,35 N·s.
 - ☒ 0,42 N·s.
 - ☐ 0,64 N·s.
20. Um asteroide com tamanho semelhante ao de um pequeno automóvel passou perto da Terra no último domingo. Chamado de 2020QG, ele esteve a 2 950 quilômetros do planeta, uma distância pequena em termos astronômicos.

(O Estado de S.Paulo, 20.08.2020. Adaptado.)

Considere que a constante de gravitação universal é igual a $6,7 \times 10^{-11} \text{ N} \cdot \text{m}^2/\text{kg}^2$, que a massa da Terra é $6,0 \times 10^{24} \text{ kg}$ e que a menor distância entre o centro do asteroide e o centro da Terra foi, aproximadamente, $1,0 \times 10^7 \text{ m}$ (resultado da soma do raio da Terra com a distância do asteroide ao planeta). Uma vez que o asteroide não foi capturado gravitacionalmente pela Terra, sua velocidade, ao passar pelo ponto mais próximo da Terra, era de, no mínimo,

- ☐ $4,6 \times 10^3 \text{ m/s}$.
- ☐ $6,4 \times 10^3 \text{ m/s}$.
- ☒ $8,8 \times 10^3 \text{ m/s}$.
- ☐ $3,2 \times 10^4 \text{ m/s}$.
- ☐ $7,3 \times 10^4 \text{ m/s}$.

21. A figura mostra três recipientes, L, M e N, que contêm água, sendo que a altura da água no recipiente L é h , no recipiente M é $2h$ e no recipiente N é $3h$. A área da base do recipiente L é igual ao dobro da área da base do recipiente M e ao triplo da área da base do recipiente N.



Comparando-se as pressões P_L , P_M e P_N exercidas pela água nas bases dos recipientes L, M e N, respectivamente, tem-se

- ☐ $P_L = 4P_M = 9P_N$
- ☐ $P_L = 2P_M = 3P_N$
- ☐ $P_L = P_M = P_N$
- ☒ $P_L = \frac{1}{2}P_M = \frac{1}{3}P_N$
- ☐ $P_L = \frac{1}{4}P_M = \frac{1}{9}P_N$

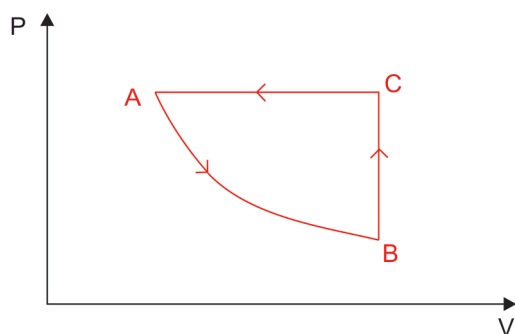
22. Um recipiente graduado de vidro, de volume interno igual a 800 cm^3 , contém certa quantidade de glicerina, ambos a 20°C , temperatura para a qual o recipiente foi calibrado. Aquecendo-se o conjunto, nota-se que a indicação do volume de glicerina no interior do recipiente não se altera enquanto a substância estiver no estado líquido. Sendo os coeficientes de dilatação volumétrica do vidro e da glicerina, respectivamente, iguais a $3,0 \times 10^{-5} \text{ }^\circ\text{C}^{-1}$ e $5,0 \times 10^{-4} \text{ }^\circ\text{C}^{-1}$, a quantidade de glicerina no recipiente, a temperatura de 20°C , é igual a

- ☐ 24 cm^3 .
- ☐ 32 cm^3 .
- ☒ 48 cm^3 .
- ☐ 56 cm^3 .
- ☐ 64 cm^3 .

23. Dois objetos de materiais, massas e temperaturas diferentes foram colocados no interior de um calorímetro ideal de capacidade térmica desprezível e, após certo tempo, atingiram o equilíbrio térmico. É indubitável que, ao fim desse processo,

- ☒ a quantidade de calor cedida por um dos objetos foi igual à absorvida pelo outro.
- ☐ as quantidades de calor contidas nos objetos resultaram iguais.
- ☐ as variações de temperatura foram iguais para os dois objetos.
- ☐ o objeto de menor temperatura inicial cedeu calor ao de maior temperatura.
- ☐ o objeto de maior massa cedeu calor ao de menor massa.

24. Certa massa de gás ideal sofreu três transformações. A primeira, AB, foi isotérmica, a segunda, BC, foi isovolumétrica e a terceira, CA, foi isobárica, como mostra a figura.



Considerando-se que o calor absorvido pelo gás seja positivo, que o calor cedido seja negativo, que o trabalho realizado pela força aplicada pelo gás no meio exterior seja positivo e que o trabalho realizado pela força aplicada pelo meio exterior sobre o gás seja negativo, montou-se o quadro a seguir.

Transformação	Calor envolvido	Trabalho realizado	Energia interna do gás
AB	positivo	positivo	X
BC	positivo	Y	aumenta
CA	Z	negativo	diminui

Completam, respectivamente, as células X, Y e Z do quadro:

- ☒ não se altera, nulo e negativo.
- ☐ não se altera, positivo e negativo.
- ☐ aumenta, positivo e positivo.
- ☐ aumenta, nulo e positivo.
- ☐ diminui, negativo e nulo.

25. A imagem mostra duas fotografias da Lua, obtidas em uma mesma localidade.



(www.zenite.nu)

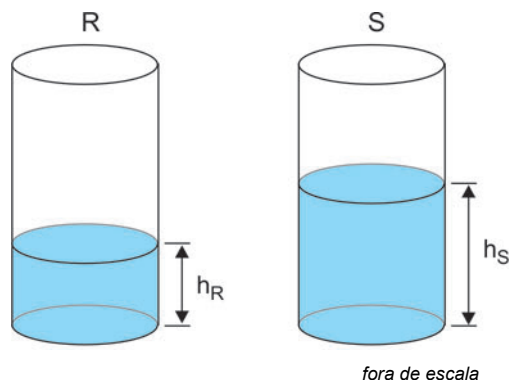
O intervalo de tempo mínimo entre os instantes em que as fotos foram obtidas é de, aproximadamente,

- ☐ 6 horas.
- ☐ 12 horas.
- ☐ 7 dias.
- ☒ 14 dias.
- ☐ 1 mês.

26. Uma lente convergente de distância focal igual a 6,0 cm é colocada entre duas fontes de luz puntiformes, de modo que fiquem localizadas sobre o eixo principal da lente. Sabendo-se que a distância entre uma das fontes e a lente é 12 cm e que as imagens das duas fontes são coincidentes, a distância entre as fontes de luz é

- ☒ 16 cm.
- ☐ 18 cm.
- ☐ 20 cm.
- ☐ 24 cm.
- ☐ 36 cm.

27. A figura mostra dois recipientes cilíndricos idênticos, R e S, de altura 35 cm, contendo água até diferentes alturas, h_R e h_S .



Colocando-se um alto-falante que emite um som de frequência 850 Hz sobre cada recipiente, separadamente, verifica-se que eles funcionam como tubos sonoros fechados em uma extremidade e abertos na outra, ocorrendo ressonância em ambos. Considerando-se a velocidade de propagação do som no ar igual a 340 m/s, a diferença entre as alturas da água nos dois recipientes, $h_S - h_R$, é igual a

- ☐ 10 cm.
- ☐ 12 cm.
- ☐ 15 cm.
- ☐ 18 cm.
- ☒ 20 cm.

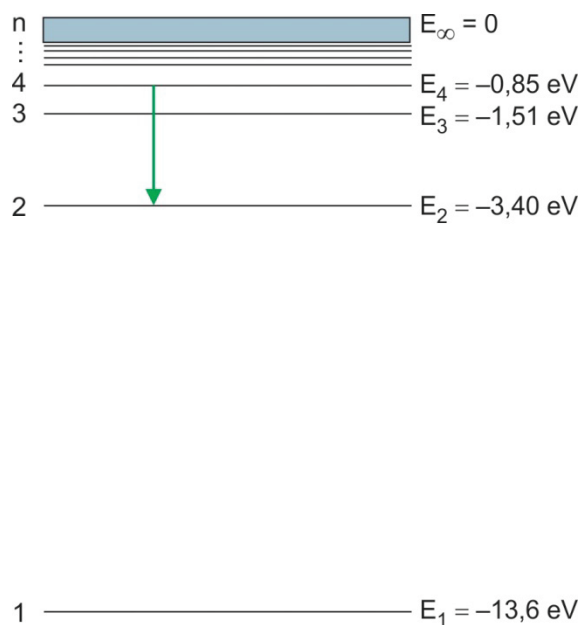
28. Uma esfera metálica oca, cujo raio da superfície externa é R , está eletrizada com carga positiva e localizada no vácuo. Considere o ponto X, localizado no centro da esfera, e dois pontos, Y e Z, localizados fora da esfera e distando, respectivamente, R e $3R$ da superfície externa da esfera. Adotando-se o potencial elétrico como nulo a uma distância infinita da esfera e denominando-se V_X , V_Y e V_Z os potenciais elétricos dos pontos X, Y e Z, respectivamente, tem-se:

- ☐ $V_X = V_Y = 2V_Z$
- ☒ $V_X = 2V_Y = 4V_Z$
- ☐ $2V_X = 2V_Y = V_Z$
- ☐ $V_X = 0$ e $V_Y = 4V_Z$
- ☐ $V_X = 0$ e $V_Y = 2V_Z$

29. Uma bateria de força eletromotriz ε e resistência interna r é ligada a um resistor ôhmico de resistência R , que, nessa situação, é percorrido por uma corrente elétrica de intensidade I . Se essa bateria for associada em paralelo com outra bateria idêntica e o conjunto, assim formado, for ligado ao mesmo resistor R , a intensidade da corrente elétrica I' que o percorrerá será tal que

- ☐ $I' = \frac{1}{2}I$
- ☐ $\frac{1}{2}I < I' < I$
- ☐ $I' = I$
- ☒ $I < I' < 2I$
- ☐ $I' = 2I$

30. A figura mostra o diagrama de níveis de energia, em elétrons-volt, para o átomo de hidrogênio, segundo o modelo proposto por Bohr. Nela está representada uma transição do elétron do nível $n = 4$ para o nível $n = 2$.



(<http://astro.if.ufrgs.br>. Adaptado.)

A quantidade de energia associada ao fóton emitido pelo átomo de hidrogênio na transição mostrada na figura é

- ☐ 0,85 eV.
- ☐ 1,51 eV.
- ☒ 2,55 eV.
- ☐ 4,25 eV.
- ☐ 5,76 eV.