University/College/School Name

Institute Name

Departament Name

Prof. Name

Exam/Test 1 – Physics 101 – 01 Jan 2023

Any important message to students, if necessary

Fórmulas e Constantes

$$I = \frac{P_s}{4\pi r^2}; \quad E = hf; \quad p = \frac{hf}{c} = \frac{h}{\lambda}$$

$$hf = K_{\max} + \Phi; \quad \Delta\lambda = \frac{h}{mc}(1 - \cos\phi)$$

$$\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m}{h^2}[E - U(x)]\psi = 0$$

$$T \approx e^{-2bL}, \text{ onde } b = \sqrt{\frac{8\pi^2 m(U_b - E)}{h^2}}$$

$$E_n = \left(\frac{h^2}{8mL^2}\right) n^2, \text{ para } n = 1, 2, 3\ldots$$

$$\psi_n(x) = A\sin\left(\frac{n\pi}{L}x\right), \text{ para } n = 1, 2, 3\ldots$$

$$\Delta x \Delta p = h/2\pi$$

$$\epsilon_0 = 8,854 \times 10^{12} \text{ F/m}; \quad \mu_0 = 1,257 \times 10^{-6} \text{ H/m}$$

$$c = 3,0 \times 10^8 \text{ m/s}; \quad h = 6,63 \times 10^{-34} \text{ J/s} = 4,14 \times 10^{-15} \text{ eV.s}$$

$$hc = 1240 \text{ eV.nm}$$

Eletron : $mc^2 = 511$ keV

Por exemplo, se seu número de matrícula for 12.1.3579, temos que

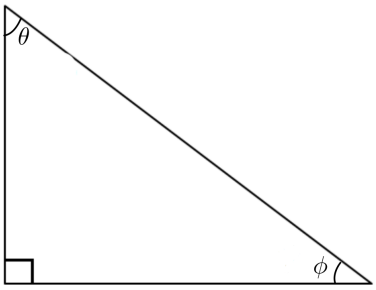
12.1.3579

1º 2º 3º 4º 5º 6º 7º

e a tabela deve ser preenchida assim:

xx	0	1	2	3	4	5	6	7	8	9
1°		■								
2°			■							
3°		■								
4°				■						
5°						■				
6°								■		
7°										■

1. Consider the rectangle triangle of the figure below and knowing $\theta = 20°$, determine ϕ **in rad**.



(a)1.282 (b)1.076 (c)1.152 (d)1.321 (e)1.222

2. Mark the true alternative.
(a) If $\vec{A}$ and $\vec{B}$ are vectors, then $\vec{A} \times \vec{B}$ is a vector perpendicular to both $\vec{A}$ and $\vec{B}$.
(b) The result of summing a vector and a scalar is a scalar.
(c) Vectors can not be multiplied by scalars.
(d) The result of a scalar product between vectors is a vector itself.
(e) A vector multiplied by a scalar results is a vector with different direction.

3. A particle of mass 7.3 kg is subject to an external force of 18.4 N. Calculate the acceleration in m/s^2 in a one-dimensional movement.
(a)10.5 (b)7.0
(c)12.3 (d)2.5
(e)4.3

NÃO MARCAR										
un	–	■	–	–	–	–	–	–	–	–
GABARITO										
–	1	2	3	–	–	–	–	–	–	–
a				–	–	–	–	–	–	–
b				–	–	–	–	–	–	–
c				–	–	–	–	–	–	–
d				–	–	–	–	–	–	–
e				–	–	–	–	–	–	–
MATRÍCULA										
–	0	1	2	3	4	5	6	7	8	9
1°										
2°										
3°										
4°										
5°										
6°										
7°										

MATRÍCULA:

NOME:

TURMA: