



2502842223289

Титульный лист

Направление информатика история математика
 обществознание политология русский язык
 социология физика химия
 филология

Класс 8 9 10 11

Фамилия ПУНЕНКО

Имя АЛЕКСЕЙ

Отчество ВЛАДИМИРОВИЧ

Дата рождения 27 05 2005

Город участия ЕКАТЕРИНБУРГ

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Дата 01 03 2022

Подпись

Пример
заполнения

А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф
Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я 1 2 3 4 5 6 7 8 9 0



Проверочный лист

Заполняется участниками

- Направление**
- | | | |
|---|--|---------------------------------------|
| <input type="checkbox"/> информатика | <input type="checkbox"/> история | <input type="checkbox"/> математика |
| <input type="checkbox"/> обществознание | <input type="checkbox"/> политология | <input type="checkbox"/> русский язык |
| <input type="checkbox"/> социология | <input checked="" type="checkbox"/> физика | <input type="checkbox"/> химия |
| <input type="checkbox"/> филология | | |
- Класс**
- | | | | |
|----------------------------|----------------------------|--|-----------------------------|
| <input type="checkbox"/> 8 | <input type="checkbox"/> 9 | <input checked="" type="checkbox"/> 10 | <input type="checkbox"/> 11 |
|----------------------------|----------------------------|--|-----------------------------|

Заполняется организаторами

Количество доп. листов

Время выхода с : до :

Примечание

Протокол проверки

Заполняется жюри

Номер задания	1	2	3	4	5	6	7	8	9	10
Балл члена жюри №1	08	12	20	20	--					
Балл члена жюри №2	08	12	20	20	00					
Номер задания	11	12	13	14	15	16	17	18	19	20
Балл члена жюри №1										
Балл члена жюри №2										

Итоговый балл 060

Подпись
члена жюри №1



Подпись
члена жюри №2



Пример
заполнения

А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф
Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я 1 2 3 4 5 6 7 8 9 0

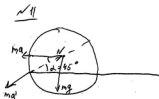


Бланк ответов

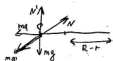
$$R = 23 \text{ м} = 0,23 \text{ м}; \quad r = 12 \text{ м} = 0,12 \text{ м}$$

При движении по кругу моток разбивает центростремительное ускорение $a = \frac{v^2}{R'}$

При движении по кругу моток центр мота перемещается по окружности радиуса $R' = R - r$



В таком случае:



Чтобы моток не упал в кольцо: $N' = mg$;

$$N' = N \cdot \cos \alpha = \frac{\sqrt{2}}{2} N; \quad N = ma'; \quad a' = ma \cdot \cos \alpha = \frac{\sqrt{2}}{2} ma$$

$$a = \frac{v^2}{R-r} \Rightarrow a' = \frac{\sqrt{2}}{2} \frac{v^2}{R-r}; \quad N' = \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} \cdot m \cdot \frac{v^2}{R-r}$$

$$\Rightarrow N' = \frac{1}{2} m \frac{v^2}{R-r} \Rightarrow \frac{1}{2} m \frac{v^2}{R-r} = mg \Rightarrow v^2 = 2g(R-r)$$

$$\Rightarrow v_{\alpha} = \sqrt{2g(R-r)} \approx 1,48 \text{ м/с}$$

2

$$P_0 V_0 = \nu RT_1$$

$$P_2 \cdot (V_1 + V_2) = \nu RT_1$$

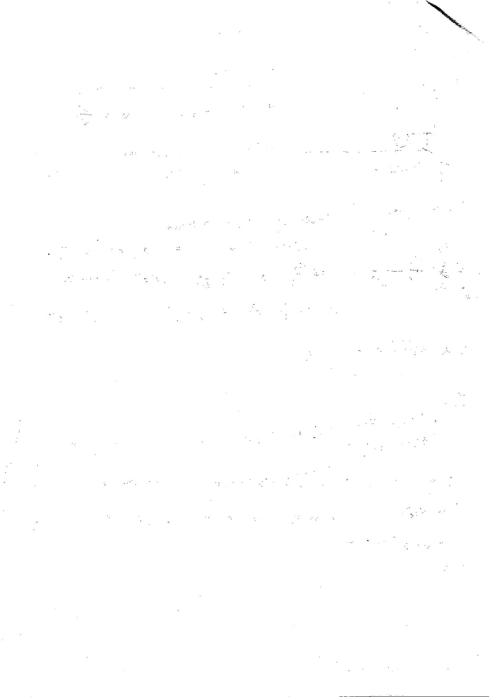
$$\Rightarrow P_0 V_1 = 0,6 P_0 V_1 + 0,6 P_0 V_2 \Rightarrow V_1 = 0,6 V_1 + 0,6 V_2$$

$$\Rightarrow 0,4 V_1 = 0,6 V_2 \Rightarrow V_2 = \frac{2}{3} V_1 \Rightarrow V_2 = \frac{2}{3} V_1; \text{ при распределении газа}$$

по объемам 1-й кол-во газа $\nu V_1 = 0,6 \nu V_1$; 2-й кол-во газа $\nu V_2 = 0,4 \nu V_1$

По закону Бойля-Мариотта:

$$P =$$



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$$1) P_0 \cdot V_1 = \downarrow R T_1$$

$$2) \text{ при открытом клапане: } 0,6 P_0 \cdot V_1 = (1-2') R T_1 \Rightarrow 0,6 \downarrow R T_1 = (1-2') R T_1$$

$$\Rightarrow 2' = 0,4$$

7
содержит газ $6 V_2$

$$\text{н.к. клапан открыт} \Rightarrow P_6 V_1 = P_6 V_2 \Rightarrow P_2 = 0,6 P_0$$

$$\Rightarrow \left\{ \begin{array}{l} 0,6 P_0 V_1 = 0,6 \downarrow R T_1 \\ 0,6 P_0 V_2 = 0,6 \downarrow R T_2 \end{array} \right. \Rightarrow \frac{V_1}{V_2} = \frac{1}{4}$$

$$\Rightarrow 0,6 P_0 (V_1 + V_2) = \downarrow R T_1 \Rightarrow 0,6 P_0 (V_1 + V_2) = P_0 V_1 \Rightarrow 0,6 V_2 = 0,4 V_1 \Rightarrow V_2 = \frac{2}{3} V_1 \Rightarrow \underline{V_2 = \frac{2}{3} V_1}$$

$$P_1' + P_2' = P' = 0,564 P_0 ; P_2' = 2 P_1'$$

$$\left\{ \begin{array}{l} P_1' \cdot V_1 = \downarrow R T_1 \\ P_2' \cdot V_2 = \downarrow R T_2 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} 2 P_1' \cdot V_1 = 0,6 \downarrow R T_1 \\ (2 P_1' - P_0) \cdot V_2 = 0,4 \downarrow R T_2 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} 2 P_1' \cdot V_1 = 0,6 \downarrow R T_1 \\ P_0 \cdot \frac{2}{3} V_1 (1-2') = 0,4 \downarrow R T_2 \end{array} \right.$$

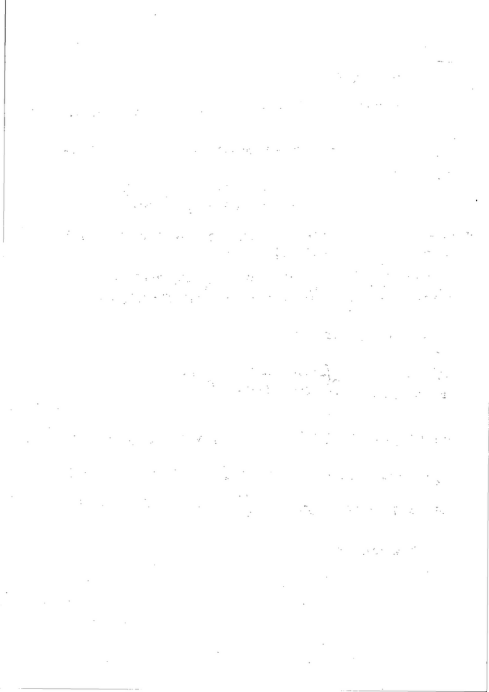
$$\Rightarrow \left\{ \begin{array}{l} 2 P_1' \cdot V_1 = 0,6 \downarrow R T_1 \\ P_0 \cdot \frac{2}{3} V_1 (1-2') = 0,4 \downarrow R T_2 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} 2 P_1' \cdot V_1 = 0,6 \downarrow R T_1 \\ (1-2') P_0 \cdot \frac{2}{3} V_1 = (1-2') \downarrow R T_2 \end{array} \right. \Rightarrow P_1' \cdot V_1 =$$

$$0,564 P_0 (V_1 + V_2) = \downarrow R (0,6 T_1 + 0,4 T_2) \Rightarrow 0,564 P_0 \frac{5}{3} V_0 = \downarrow R (0,6 T_1 + 0,4 T_2)$$

$$\frac{5}{3} \cdot 0,564 \downarrow R T_1 = \downarrow R (0,6 T_1 + 0,4 T_2) \Rightarrow \frac{5}{3} \cdot 0,564 T_1 - 0,6 T_1 = 0,4 T_2 \Rightarrow$$

$$\Rightarrow 0,34 T_1 = 0,4 T_2 \Rightarrow T_2 = \frac{17}{20} T_1 \Rightarrow T_1 = \frac{40}{39} T_2 \Rightarrow T_1 = \frac{40}{39} (-23 + 27) \Rightarrow$$

$$T_1 \approx 294,1 \text{ K}$$



Бланк ответов

√3/

$N_{\text{металлов}} \sim S \Rightarrow N_{\text{ком}} = \overset{\text{коэф. поперек}}{\downarrow} d \cdot S \Rightarrow S_{\text{сфера}} = 4\pi R^2$

для маленькой шариков:

для большого шара:

$$\tau_1 d \cdot S_1 = \lambda \cdot \frac{4}{3} \pi R_1^3 \cdot g_1 \Rightarrow$$

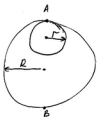
$$\tau_0 \cdot d \cdot S_2 = \lambda \cdot \frac{4}{3} \pi R_0^3 \cdot g_2$$

$$\tau_1 d \cdot 4\pi R_1^2 = \lambda \cdot \frac{4}{3} \pi R_1^3 \cdot g_1 \quad (1)$$

$$\tau_2 d \cdot 4\pi R_0^2 = \lambda \cdot \frac{4}{3} \pi R_0^3 \cdot g_2 \quad (2)$$

$$\frac{(1)}{(2)} = \frac{\tau_1 R_1^2}{\tau_2 R_0^2} = \frac{R_1^3}{R_0^3} \Rightarrow \frac{\tau_1}{\tau_2} = \frac{R_1}{R_0} \Rightarrow \tau_2 = \frac{R_0}{R_1} \tau_1 = 10 \cdot \tau_1 = \underline{10 \text{ секунд}}$$

√4/



Увеличение в вершине колебаний происходит из-за увеличения ускорения свободного падения около полюса

$$T = 2\pi \sqrt{\frac{R}{g}}$$

Ускорение в точке B:

$$g_B = G \frac{M_{\text{внут}}}{R^2} ; M = \frac{4}{3} \pi R^3 \cdot \rho ; \rho = \frac{M}{V} \Rightarrow g_B = \frac{4}{3} \pi G \rho R \cdot \frac{R^3}{R^2}$$

$$\Rightarrow g_B = \frac{4}{3} \pi G \rho R \cdot R$$

$$g_A = G \frac{M}{R^2} = G \frac{m}{r^2} ; m = \frac{4}{3} \pi r^3 \cdot \rho \Rightarrow g_A = \frac{4}{3} \pi G \rho r^3 \cdot \frac{1}{r^2} = \frac{4}{3} \pi G \rho r^3 \cdot \frac{1}{r^2}$$

$$\frac{T_A}{T_0} = \frac{\sqrt{\frac{R}{g_A}}}{\sqrt{\frac{R}{g_0}}} \Rightarrow \left(\frac{T_A}{T_0}\right)^2 = \frac{g_0}{g_A} \Rightarrow \left(\frac{T_A}{T_0}\right)^2 = \frac{g_0}{g_0 \cdot \frac{R}{(R-r)^2}} \Rightarrow \frac{T_A}{T_0} = \frac{R}{(R-r)^2}$$

$$\Rightarrow \frac{T_A}{T_0} \approx 1 \Rightarrow r = R - \frac{R}{\left(\frac{T_A}{T_0}\right)^2} \approx 1 \text{ км}$$

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

Furthermore, it is noted that regular audits are essential to identify any discrepancies or errors early on. By conducting these checks frequently, the organization can prevent small mistakes from escalating into larger financial issues.

In addition, the document highlights the need for clear communication between all departments involved in the financial process. This includes the accounting, sales, and procurement teams, ensuring that everyone is on the same page regarding the current status and requirements.

The second section focuses on the implementation of robust internal controls. These controls are designed to minimize the risk of fraud and mismanagement of resources. Key elements include segregation of duties, where no single individual has control over all aspects of a transaction, and the use of standardized procedures for all financial activities.

It is also stressed that training and education for staff are crucial. Employees should be well-versed in the company's financial policies and procedures. Regular training sessions can help reinforce these standards and ensure that all team members are equipped with the necessary skills to perform their roles effectively.

Finally, the document mentions the importance of staying up-to-date with the latest financial regulations and industry trends. The financial landscape is constantly evolving, and organizations must adapt their practices accordingly to remain compliant and competitive.

The third part of the document addresses the role of technology in modern financial management. It suggests that investing in reliable software solutions can significantly streamline operations and reduce the risk of human error. Cloud-based accounting systems, for example, offer real-time access to financial data and facilitate collaboration across different locations.

However, it is also important to consider the security of these systems. Organizations should implement strong cybersecurity measures, such as firewalls, encryption, and regular software updates, to protect sensitive financial information from unauthorized access and data breaches.

In conclusion, the document provides a comprehensive overview of the key factors that contribute to effective financial management. By adhering to these principles, organizations can ensure the accuracy, integrity, and security of their financial records, ultimately leading to better decision-making and long-term success.